

**05-71 DEPARTMENT OF EDUCATION****Chapter 132 – Learning Results: Parameters for Essential Instruction**

**SUMMARY:** The Maine Department of Education Regulation 132 - The Maine *Learning Results: Parameters for Essential Instruction* establishes parameters for essential teaching and learning in grades Pre-Kindergarten through Diploma across eight content areas and supports the goals outlined in the Guiding Principles. The Maine *Learning Results: Parameters for Essential Instruction* will inform the blueprint for item development of the large-scale State assessments aligned to the federal accountability standards found in Maine Department of Education Regulation 131 – The Federal, State, and Local Accountability Standards. High school, middle school, and elementary school programming in Maine’s publicly supported schools must be aligned to the knowledge and skills described in the *Maine Learning Results: Parameters for Essential Instruction*.

The Maine Department of Education Regulation 132 - The Maine *Learning Results: Parameters for Essential Instruction* augments and expands upon the content standards for federal accountability (Maine Department of Education Regulation 131: The Maine Federal, State, and Local Accountability Standards) by describing details for essential teaching and learning for eight content areas. These learning goals identify the knowledge and skills required for college, career and citizenship in the 21<sup>st</sup> century.

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**THE GUIDING PRINCIPLES** – The knowledge and skills described in the Maine Department of Education Regulation 132 support Maine students in achieving the goals established in Maine’s Guiding Principles. The Guiding Principles state that each Maine student must leave school as:

A. A clear and effective communicator who:

1. Demonstrates organized and purposeful communication in English and at least one other language;
2. Uses evidence and logic appropriately in communication
3. Adjusts communication based on the audience; and
4. Uses a variety of modes of expression (spoken, written, and visual and performing including the use of technology to create and share the expressions);

B. A self-directed and lifelong learner who:

1. Recognizes the need for information and locates and evaluates resources;
2. Applies knowledge to set goals and make informed decisions;
3. Applies knowledge in new contexts;
4. Demonstrates initiative and independence;
5. Demonstrates flexibility including the ability to learn, unlearn, and relearn;
6. Demonstrates reliability and concern for quality; and
7. Uses interpersonal skills to learn and work with individuals from diverse backgrounds;

C. A creative and practical problem solver who: [1995, c. 649, §1 (new).]

1. Observes and evaluates situations to define problems;
  2. Frames questions, makes predictions, and designs data/information collection and analysis strategies;
  3. Identifies patterns, trends, and relationships that apply to solutions;
  4. Generates a variety of solutions, builds a case for a best response and critically evaluates the effectiveness of the response;
  5. Sees opportunities, finds resources, and seeks results;
  6. Uses information and technology to solve problems; and
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7. Perseveres in challenging situations;

D. A responsible and involved citizen who:

1. Participates positively in the community and designs creative solutions to meet human needs and wants;
2. Accepts responsibility for personal decisions and actions;
3. Demonstrates ethical behavior and the moral courage to sustain it;
4. Understands and respects diversity;
5. Displays global awareness and economic and civic literacy; and
6. Demonstrates awareness of personal and community health and wellness;

E. An integrative and informed thinker who:

1. Gains and applies knowledge across disciplines and learning contexts and to real life situations with and without technology;
  2. Evaluates and synthesizes information from multiple sources;
  3. Applies ideas across disciplines; and
  4. Applies systems thinking to understand the interaction and influence of related parts on each other and on outcomes.
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## **CAREER AND LIFE READY STANDARDS INTRODUCTION**

Life and Career Ready standards in Maine include an emphasis on multiple pathways toward meaningful careers and focus on life skills and experiences that will allow students to pivot as economic needs change and personal interests evolve. They have been crafted to allow flexibility and variation in focus and implementation, while ensuring all students exhibit key skills required to successfully navigate the changing career landscape.

Maine's economic future depends on a well-prepared, resilient, adaptable and skilled workforce. To achieve this, schools must creatively offer relevant opportunities that include interactive experiences and allow for direct exposure between students and a variety of career options. Schools must partner with local communities to bridge the gap between traditional K-12 education and ongoing career development. Networking with local community partners can provide opportunities which may include internships/pre-apprenticeships, job shadows, work-based learning options, early college courses, service learning, volunteering, guest speakers, field trips, and first-time work experiences.

These standards are a dynamic approach that frame multiple pathways for our students as they progress through grades K-12 and begin their post high school journey. To meet the needs of all youth, institutions need to examine educational practices and strategies, understanding the need to prepare students to experience and explore a variety of roles within their communities and recognizing students will choose to enter the workforce in different ways.

### **Outline of Life and Career Ready Standards**

#### **Strand A: Self-Knowledge and Life Skills**

- **Standard A.1 Self-Knowledge**
- **Standard A. 2 Life Skills**
- **Standard A. 3 Problem Solving**

#### **Strand B: Aspirations**

- **Standard B.1 Exploring Opportunities**

#### **Strand C: Building Pathways for the Future**

- **Standard C.1 Planning**
- **Standard C.2 Career Awareness and Adaptability**

### **How to Represent the Life and Career Ready Standards and Performance Expectations**

**Grade or Grade Span**  **9-Diploma A.1**  **Standard and Performance Expectation**

<b>Strand</b>	<b>A. Self-Knowledge and Life Skills</b>		
<b>Standard</b>	<b>A.1 Self-Knowledge</b> Students demonstrate an understanding of their own capabilities, characteristics, attitudes and how these attributes impact their future choices, including local, state, national, and global opportunities.		
	<b>Childhood</b>		
<b>Performance Expectations</b>	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
	Students demonstrate and reflect on likes and dislikes.	Students demonstrate and reflect on likes and dislikes that impact future choices.	Students demonstrate and reflect on personal characteristics and attitudes that impact future choices.
<b>Performance Expectations</b>	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
	Students demonstrate and reflect on personal characteristics, attitudes, and interests that develop life skills and lead to career readiness.	Students demonstrate and reflect on personal characteristics, attitudes, and interests that develop life skills and lead to career readiness with a local community focus.	Students demonstrate and reflect on personal characteristics, attitudes, and interests that develop life skills and lead to career readiness with a state of Maine focus.
	<b>Early Adolescence</b>		
<b>Performance Expectation</b>	<b>Grades 6-8</b>		
	Students demonstrate and reflect on personal characteristics, attitudes, and interests that develop life skills and lead to career readiness, emphasizing national and global awareness.		
	<b>Adolescence</b>		
<b>Performance Expectation</b>	<b>Grades 9-Diploma</b>		
	Students demonstrate and reflect on personal characteristics, attitudes, and interests that develop life skills and assist in making post high school career and life decisions.		

Strand	A. Self-Knowledge and Life Skills		
Standard	A.2 Life Skills Students demonstrate positive interpersonal and life skills and understand how they are important to success in relationships, school, work, and community.		
	Childhood		
Performance Expectations	Kindergarten	Grade 1	Grade 2
	Students demonstrate and reflect on social skills that influence interpersonal relationships in positive ways in the classroom. <ul style="list-style-type: none"> <li>a. Get along with others</li> <li>b. Follow established expectations for observing and listening.</li> </ul>	Students demonstrate and reflect on social skills that influence interpersonal relationships in positive ways in the classroom. <ul style="list-style-type: none"> <li>a. Accept and give constructive feedback.</li> </ul>	Students demonstrate and reflect on social skills that influence interpersonal relationships in positive ways in the classroom. <ul style="list-style-type: none"> <li>a. Use effective communication to manage conflict.</li> </ul>
Performance Expectations	Grade 3	Grade 4	Grade 5
	Students demonstrate and reflect on social skills that influence interpersonal relationships in positive ways in school. <ul style="list-style-type: none"> <li>a. Be a responsible member or leader of a team.</li> </ul>	Students demonstrate and reflect on social skills that influence interpersonal relationships in positive ways in school and the local community. <ul style="list-style-type: none"> <li>a. Exhibit ethical behavior.</li> </ul>	Students demonstrate and reflect on skills that influence interpersonal relationships in positive ways in school and the Maine community. <ul style="list-style-type: none"> <li>a. Use strategies to cope with interpersonal issues.</li> <li>b. Use organizational skills and time management strategies.</li> </ul>

<b>Strand</b>	<b>A. Self-Knowledge and Life Skills</b>		
<b>Standard</b>	<b>A.2 Life Skills</b> Students demonstrate positive interpersonal and life skills and understand how they are important to success in relationships, school, work, and community.		
	<b>Early Adolescence</b>		
<b>Performance Expectation</b>	<b>Grades 6-8</b>		
	Students demonstrate and reflect on skills that influence interpersonal relationships in positive ways in school, work, and the regional and national community. <ul style="list-style-type: none"> <li>a. Work independently to solve problems.</li> <li>b. Work as a productive member or leader of a team.</li> <li>c. Demonstrate the ability to resolve conflicts and to negotiate acceptable solutions.</li> </ul>		
	<b>Adolescence</b>		
<b>Performance Expectation</b>	<b>Grades 9-Diploma</b>		
	Students demonstrate and reflect on skills that influence interpersonal relationships in positive ways in school, work, and the global community. <ul style="list-style-type: none"> <li>a. Use a variety of communication skills in a responsible manner.</li> <li>b. Exhibit ethical behavior, including responsibility for self and others.</li> <li>c. Understand and exhibit professionalism in changing situations and environments.</li> </ul>		

<b>Strand</b>	<b>A. Self-Knowledge and Life Skills</b>		
<b>Standard</b>	<b>A.3 Problem Solving</b> Students are engaged community members who identify problems and apply skills to resolve problems within local and global communities		
	<b>Childhood</b>		
<b>Performance Expectations</b>	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
	Students use and analyze communication skills in their classroom.	Students use and analyze problem-solving skills in their classroom.	Students use and analyze communication and problem-solving skills in their school.

<b>Performance Expectations</b>	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
	Students integrate and analyze communication, collaboration, and problem-solving skills in their school.	Students integrate and analyze communication, collaboration, and problem-solving skills in their local community.	Students apply skills to analyze and creatively solve problems that impact their schools and local communities.
<b>Early Adolescence</b>			
<b>Performance Expectation</b>	<b>Grades 6-8</b>		
	Students evaluate and develop problem-solving skills and resolve problems within the community. <ul style="list-style-type: none"> <li>a. Evaluate skills and understand gaps in skill sets.</li> <li>b. Develop creative solutions to meet local and global needs.</li> </ul>		
<b>Adolescence</b>			
<b>Performance Expectation</b>	<b>Grades 9-Diploma</b>		
	Students evaluate and implement strategies to manage multiple roles and responsibilities as involved members of their local and global communities. <ul style="list-style-type: none"> <li>a. Evaluate responsibilities and potential impact as students, community members and employees.</li> <li>b. Engage in issues impacting local and global communities.</li> </ul>		

<b>Strand</b>	<b>B. Aspirations</b>		
<b>Standard</b>	<b>B.1 Exploring Opportunities</b> Students understand their options and can navigate choices and experiences concerning interests and future opportunities.		
	<b>Childhood</b>		
<b>Performance Expectations</b>	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
	Students engage in new experiences and ask questions to promote creativity and curiosity about their interests.	Students use resources, seeking help proactively and asking questions when needed, to promote creativity and curiosity about their interests.	Students recognize and analyze available resources, using strategies described by others to promote creativity and curiosity about their interests.
<b>Performance Expectations</b>	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
	Students integrate communication, collaboration, and problem-solving skills to identify and reflect on interests.	Students analyze and apply learning strategies to discover emerging questions and pursue new interests.	Students use learning strategies and available resources to explore future opportunities.
	<b>Early Adolescence</b>		
<b>Performance Expectation</b>	<b>Grades 6-8</b>		
	Students use and analyze resources to purposely and creatively explore a variety of post high school options.		
	<b>Adolescence</b>		
	<b>Grades 9-Diploma</b>		
<b>Performance Expectation</b>	Students articulate a variety of post high school options based on individualized, in-depth exploration.		

<b>Strand</b>	<b>C. Building Pathways for the Future</b>		
<b>Standard</b>	<b>C.1 Planning Students develop goals and implement career and life plans.</b>		
<b>Childhood</b>			
<b>Performance Expectations</b>	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
	Students participate in the development of classroom guidelines.	Students reflect upon and adjust classroom guidelines with guidance.	Students develop an awareness of goals and goal-setting practices.
<b>Performance Expectations</b>	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
	Students engage in the goal-setting process.	Students reflect upon and adjust individual academic goals.	Students use feedback and experiences to develop, implement, and adjust goals. <ul style="list-style-type: none"> <li>a. Demonstrate ability to learn from mistakes.</li> </ul>
<b>Early Adolescence</b>			
<b>Performance Expectation</b>	<b>Grades 6-8</b>		
	Students develop, implement, and adjust goals as they relate to potential future paths. <ul style="list-style-type: none"> <li>a. Demonstrate awareness of available academic opportunities, course levels, alternate options, and timelines.</li> <li>b. Draw on curiosity to seek out meaningful career exploration opportunities in interactive settings.</li> </ul>		
<b>Adolescence</b>			
<b>Performance Expectation</b>	<b>Grades – 9-Diploma</b>		
	Students develop, take steps to implement, and reflect on individualized, post high school plans. <ul style="list-style-type: none"> <li>a. Analyze educational achievement and performance strategies as it relates to future choices, adapting plans as needed.</li> <li>b. Seek out meaningful career exploration opportunities, both individually and in small-group interactive settings.</li> <li>c. Understand the financial impact of post high school credentialing programs, using that awareness to inform plans.</li> </ul>		

<b>Strand</b>	<b>C. Building Pathways for the Future</b>		
<b>Standard</b>	<b>C.2 Career Awareness and Adaptability</b> Students integrate personal aptitudes and interests, changing employment trends, community and societal needs, and current economic conditions into ongoing career plans, adapting as necessary.		
<b>Childhood</b>			
<b>Performance Expectations</b>	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
	Students explore jobs/careers and how these roles contribute to the community.	Students explore jobs/careers of individual interest and how these roles contribute to the community.	Students connect classroom learning with workplace skills and roles in the community.
<b>Performance Expectations</b>	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
	Students explore the concept of career clusters.	Students identify and reflect on skills and education related to various career clusters.	Students identify and reflect on skills and education requirements of occupations within and across career clusters of interest to them.
<b>Early Adolescence</b>			
<b>Performance Expectation</b>	<b>Grades 6-8</b>		
	Students consider personal aptitudes, evolving personal interests and current employment trends, locally and globally, as they develop future plans. <ul style="list-style-type: none"> <li>a. Identify horizontal and vertical opportunities (within career cluster hierarchies) related to personal aptitudes and interests and the skills needed for potential career options.</li> <li>b. Recognize that career planning to attain career goals is a lifelong process.</li> <li>c. Use knowledge of career clusters to develop and adapt career plans.</li> </ul>		
<b>Adolescence</b>			
<b>Performance Expectation</b>	<b>Grades 9-Diploma</b>		
	Students are aware of changing career and economic trends and can adapt their personal plan to meet situational needs, personal aptitudes and interests. <ul style="list-style-type: none"> <li>a. Reflect on personal growth and alternative perspectives.</li> <li>b. Analyze and adjust approach, timeline, and plan as needed.</li> <li>c. Explore credentialing requirements.</li> </ul>		

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|  | <p>d. Plan strategically (informed by changing career and economic trends) and choose learning experiences/courses/classes that strengthen knowledge and skills needed for individual next steps after high school.</p> |
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## ENGLISH LANGUAGE ARTS STANDARDS INTRODUCTION

Literacy is a basic human right, achievable by all students. Today's learners need to know how to read, write, speak, and communicate effectively in order to survive in an ever-changing and challenging global society. English Language Arts/Literacy is the foundation for learning in all of the content areas. The literacy continuum develops across an individual's lifetime, but literacy does not reside solely in the individual person; it requires and creates relationships with others through communication and interaction. Literacy is a developmental process that empowers students to become lifelong, effective learners and communicators.

The Maine Learning Results English Language Arts/Language standards are organized into four strands: Language, Speaking and Listening, Reading, and Writing. Each strand represents a body of knowledge and skills that students need to become lifelong learners. These strands are further broken down into standards that identify enduring understandings and skills that transfer across contexts, content areas, and grade levels. As students progress through the curriculum, the standards are broken down into Performance Expectations that are grouped by grade level through grade 5 and then are banded 6-8 and 9-Diploma. The Performance Expectations define skills and establish measurable articulations of what the student understands and can do.

The standards reference "Various Text Types" rather than emphasizing any one particular genre. Teachers are encouraged to use a variety of text types, including literature and informational texts in multiple formats. The skills outlined by the standards are designed so that students can receive literacy instruction with each text they encounter across all disciplines.

### Guiding Principles

The Guiding Principles steer education in Maine and are reflected and embedded throughout the English Language Arts/Literacy standards. Examples of how students can show evidence of those guiding principles in English Language Arts/Literacy may include (but are not limited to) the following suggestions:

- A. Clear and effective communicator:** Students participate in a range of evidence-based discussions and generate detailed writing that are both used to communicate ideas clearly with others.
  - B. A self-directed and lifelong learner:** Students apply knowledge in new contexts and demonstrate flexibility including the ability to learn, unlearn and relearn.
  - C. A creative and practical problem solver:** Students use inquiry and writing processes that require adaptation to feedback through the use of reflection, sometimes persevering through multiple attempts.
  - D. A responsible and involved citizen:** Students demonstrate ethical behavior, particularly during the discussion of ideas, maintaining awareness of, and respect for, multiple and diverse perspectives.
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**E. An integrative and informed thinker:** Students frequently read, evaluate, and synthesize information and ideas from multiple sources, incorporating it into both oral and written communication.

### LANGUAGE

Throughout the developmental continuum in English Language Arts/Literacy and across all content areas, language is the core of understanding and comprehension. Context is key. Human understanding is founded in communication and language, and organic experiences are the most effective means of learning language skills. While the language standards are presented separately from reading, writing, speaking, and listening, they are best utilized and presented as embedded skills within the other strands. A balance must be found between direct instruction of standards, like vocabulary acquisition and spelling, and integrated instruction of standards, like vocabulary use and nuance.

These standards are not a checklist, but key components of reading, writing, speaking, and listening instruction, and they should be treated as such. Frequent, intentional reference to and instruction in these skills is essential to teaching students to be clear communicators in every medium and field.

Each language standard may contain multiple concepts, at different levels of complexity. In early adolescence and adolescence grade spans, these are best taught in order as listed, even across grade levels, to provide students with the foundational knowledge required for success as they progress, not just through school, but through life. Developing facility with the language standards is key to building comprehension and fluency with increasingly complex texts and communications.

Strand	LANGUAGE: CONVENTIONS OF STANDARD ENGLISH		
Standard 1	Demonstrate command of the conventions of Standard English grammar and usage when writing or speaking.		
Grade	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	a. Use frequently occurring nouns and verbs. b. Form regular plural nouns orally by adding /s/ or /es/ (e.g., <i>dog, dogs; wish, wishes</i> ). c. Understand and use question words (interrogatives) (e.g., <i>who, what, where, when, why, how</i> ).	a. Use common, proper, and possessive nouns. b. Use singular and plural nouns with matching verbs in basic sentences (e.g., <i>He hops; We hop</i> ). c. Use personal, possessive, and indefinite pronouns (e.g., <i>I, me,</i>	a. Use collective nouns (e.g., <i>group</i> ). b. Form and use frequently occurring irregular plural nouns (e.g., <i>feet, children, teeth, mice, fish</i> ). c. Use reflexive pronouns (e.g., <i>myself, ourselves</i> ).

	<p>d. Use the most frequently occurring prepositions (e.g., <i>to, from, in, out, on, off, for, of, by, with</i>).</p> <p>e. Produce and expand complete sentences in shared language activities.</p>	<p><i>my; they, them, their; anyone, everything</i>).</p> <p>d. Use verbs to convey a sense of past, present, and future (e.g., <i>Yesterday I walked home; Today I walk home; Tomorrow I will walk home</i>).</p> <p>e. Use frequently occurring adjectives.</p> <p>f. Use frequently occurring conjunctions (e.g., <i>and, but, or, so, because</i>).</p> <p>g. Use determiners (e.g., <i>articles, demonstratives</i>).</p> <p>h. Use frequently occurring prepositions (e.g., <i>during, beyond, toward</i>).</p> <p>i. Produce and expand complete simple and compound declarative, interrogative, imperative, and exclamatory sentences in response to prompts.</p>	<p>d. Form and use the past tense of frequently occurring irregular verbs (e.g., <i>sat, hid, told</i>).</p> <p>e. Use adjectives and adverbs; choose between them depending on what is to be modified.</p> <p>f. Produce, expand, and rearrange complete simple and compound sentences (e.g., <i>The boy watched the movie; The little boy watched the movie; The action movie was watched by the little boy</i>).</p>
Grade	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	<p>a. Explain the function of nouns, pronouns, verbs, adjectives, and adverbs in general and their functions in particular sentences.</p> <p>b. Form and use regular and irregular plural nouns.</p> <p>c. Use abstract nouns (e.g., <i>childhood</i>).</p> <p>d. Form and use regular and irregular verbs.</p>	<p>a. Use relative pronouns (<i>who, whose, whom, which, that</i>) and relative adverbs (<i>where, when, why</i>).</p> <p>b. Form and use the progressive (e.g., <i>I was walking; I am walking; I will be walking</i>) verb tenses.</p> <p>c. Use modal auxiliaries (e.g., <i>can, may, must</i>) to convey various conditions.</p>	<p>a. Explain the function of conjunctions, prepositions, and interjections in general and their function in particular sentences.</p> <p>b. Form and use the perfect (e.g., <i>I had walked; I have walked; I will have walked</i>) verb tenses.</p> <p>c. Use verb tense to convey various times, sequences, states, and conditions.</p>

	<ul style="list-style-type: none"> <li>e. Form and use the simple (e.g., <i>I walked; I walk; I will walk</i>) verb tenses.</li> <li>f. Ensure subject-verb and pronoun-antecedent agreement.</li> <li>g. Form and use comparative and superlative adjectives and adverbs, and choose</li> <li>h. between them depending on what is to be modified.</li> <li>i. Standards for Language 3</li> <li>j. Use coordinating and subordinating conjunctions.</li> <li>k. Produce simple, compound, and complex sentences.</li> </ul>	<ul style="list-style-type: none"> <li>d. Order adjectives within sentences according to conventional patterns (e.g., <i>a small red bag rather than a red small bag</i>).</li> <li>e. Form and use prepositional phrases.</li> <li>f. Produce complete sentences, recognizing and correcting inappropriate fragments and run-ons. *</li> <li>g. Correctly use frequently confused words (e.g., <i>to, too, two; there, their</i>).</li> </ul>	<ul style="list-style-type: none"> <li>d. Recognize and correct inappropriate shifts in verb tense.</li> <li>e. Use correlative conjunctions (e.g., <i>either/or, neither/nor</i>).</li> </ul>
Grade Span	<p>Early Adolescence</p> <p>Grades 6-8</p>		
Performance Expectations	<ul style="list-style-type: none"> <li>a. Ensure that pronouns are in the proper case (subjective, objective, possessive).</li> <li>b. Use intensive pronouns (e.g., <i>myself, ourselves</i>).</li> <li>c. Recognize and correct inappropriate shifts in pronoun number and person.</li> <li>d. Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).</li> <li>e. Recognize variations from standard English in their own and others' writing and speaking and identify and use strategies to improve expression in conventional language.</li> <li>f. Explain the function of phrases and clauses in general and their function in specific sentences.</li> <li>g. Choose among simple, compound, complex, and compound-complex sentences to signal differing relationships among ideas.</li> <li>h. Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers</li> <li>i. Explain the function of verbals (gerunds, participles, infinitives) in general and their function in particular sentences.</li> <li>j. Form and use verbs in the active and passive voice.</li> <li>k. Form and use verbs in the indicative, imperative, interrogative, conditional, and subjunctive mood.</li> <li>l. Recognize and correct inappropriate shifts in verb voice and mood.</li> </ul>		

Grade Span	Adolescence Grades 9-Diploma
	<ul style="list-style-type: none"> <li>a. Use parallel structure.</li> <li>b. Use various types of phrases (noun, verb, adjectival, adverbial, participial, prepositional, absolute) and clauses (independent, dependent; noun, relative, adverbial) to convey specific meanings and add variety and interest to writing or presentations.</li> <li>c. Apply the understanding that usage is a matter of convention, can change over time, and is sometimes contestable.</li> <li>d. Resolve issues of complex or contested usage, consulting references as needed.</li> </ul>

Strand	LANGUAGE: CONVENTIONS OF STANDARD ENGLISH		
Standard 2	<b>Demonstrate command of the conventions of Standard English capitalization, punctuation, and spelling when writing.</b>		
Grade	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	<ul style="list-style-type: none"> <li>a. Capitalize the first word in a sentence and the pronoun <i>I</i>.</li> <li>b. Recognize and name end punctuation.</li> <li>c. Write a letter or letters for most consonant and short-vowel sounds (phonemes).</li> <li>d. Spell simple words phonetically, drawing on knowledge of sound-letter relationships.</li> </ul>	<ul style="list-style-type: none"> <li>a. Capitalize dates and names of people.</li> <li>b. Use end punctuation for sentences.</li> <li>c. Use commas in dates and to separate single words in a series.</li> <li>d. Use conventional spelling for words with common spelling patterns and for frequently occurring irregular words.</li> <li>e. Spell untaught words phonetically, drawing on phonemic awareness and spelling conventions.</li> </ul>	<ul style="list-style-type: none"> <li>a. Capitalize holidays, product names, and geographic names.</li> <li>b. Use commas in greetings and closings of letters.</li> <li>c. Use an apostrophe to form contractions and frequently occurring possessives.</li> <li>d. Generalize learned spelling patterns when writing words (e.g., cage→ badge; boy→ boil).</li> <li>e. Consult reference materials, including beginning dictionaries, as needed to check and correct spellings.</li> </ul>

Grade	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	<ul style="list-style-type: none"> <li>a. Capitalize appropriate words in titles.</li> <li>b. Use commas in addresses.</li> <li>c. Use commas and quotation marks in dialogue.</li> <li>d. Form and use possessives.</li> <li>e. Use conventional spelling for high-frequency and other studied words and for adding suffixes to base words (e.g., <i>sitting, smiled, cries, happiness</i>).</li> <li>f. Use spelling patterns and generalizations (e.g., word families, position-based spellings, syllable patterns, ending rules, meaningful word parts) in writing words.</li> <li>g. Consult reference materials, including beginning dictionaries, as needed to check and correct spellings.</li> </ul>	<ul style="list-style-type: none"> <li>a. Use correct capitalization.</li> <li>b. Use commas and quotation marks to mark direct speech and quotations from a text.</li> <li>c. Use a comma before a coordinating conjunction in a compound sentence.</li> <li>d. Spell grade-appropriate words correctly, consulting references as needed.</li> </ul>	<ul style="list-style-type: none"> <li>a. Use punctuation to separate items in a series.</li> <li>b. Use a comma to separate an introductory element from the rest of the sentence.</li> <li>c. Use a comma to set off the words <i>yes</i> and <i>no</i> (e.g., <i>Yes, thank you</i>), to set off a tag question from the rest of the sentence (e.g., <i>It's true, isn't it?</i>), and to indicate direct address (e.g., <i>Is that you, Steve?</i>).</li> <li>d. Use underlining, quotation marks, or italics to indicate titles of works.</li> <li>e. Spell grade-appropriate words correctly, consulting references as needed.</li> </ul>

Grade Span	Early Adolescence	
	Grades 6-8	
Performance Expectations	<ul style="list-style-type: none"> <li>a. Spell correctly.</li> <li>b. Use punctuation (commas, parentheses, dashes) to set off nonrestrictive/parenthetical elements.</li> <li>c. Use a comma to separate coordinate adjectives (e.g., <i>It was a fascinating, enjoyable movie</i> but not <i>He wore an old[,] green shirt</i>).</li> <li>d. Use punctuation (comma, ellipsis, dash) to indicate a pause or break.</li> <li>e. Use an ellipsis to indicate an omission.</li> </ul>	
Grade Span	Adolescence	
	Grades 9-Diploma	
Performance Expectations	<ul style="list-style-type: none"> <li>a. Use a semicolon (and perhaps a conjunctive adverb) to link two or more closely related independent clauses.</li> <li>b. Use a colon to introduce a list or quotation.</li> <li>c. Observe hyphenation conventions.</li> <li>d. Spell correctly.</li> </ul>	

<b>Strand</b>	<b>LANGUAGE: KNOWLEDGE OF LANGUAGE</b>		
<b>Standard 3</b>	<b>Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style in writing and speaking, and to comprehend more fully when reading or listening.</b>		
Grade	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	Use knowledge of language and its conventions when speaking or listening.	Use knowledge of language and its conventions when writing, speaking, reading, or listening.	Use knowledge of language and its conventions when writing, speaking, reading, or listening. <ul style="list-style-type: none"> <li>a. Compare formal and informal uses of English.</li> </ul>
Grade	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	Use knowledge of language and its conventions when writing, speaking, reading, or listening.	Use knowledge of language and its conventions when writing, speaking, reading, or listening.	Use knowledge of language and its conventions when writing, speaking, reading, or listening.

	<ul style="list-style-type: none"> <li>a. Choose words and phrases for effect.</li> <li>b. Recognize and observe differences between the conventions of spoken and written standard English.</li> </ul>	<ul style="list-style-type: none"> <li>a. Choose words and phrases to convey ideas precisely.</li> <li>b. Choose punctuation for effect.</li> <li>c. Differentiate between contexts that call for formal English (e.g., presenting ideas) and situations where informal discourse is appropriate (e.g., small-group discussion).</li> </ul>	<ul style="list-style-type: none"> <li>a. Expand, combine, and reduce sentences for meaning, reader/listener interest, and style.</li> <li>b. Compare and contrast the varieties of English (e.g., dialects, registers) used in stories, dramas, or poems.</li> </ul>
Grade Span	Early Adolescence		
	Grades 6-8		
Performance Expectations	<ul style="list-style-type: none"> <li>a. Vary sentence patterns for meaning, reader/listener interest, and style.</li> <li>b. Maintain consistency in style and tone.</li> <li>c. Choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.</li> <li>d. Use verbs in the active and passive voice and in the conditional and subjunctive mood to achieve particular effects (e.g., emphasizing the actor or the action; expressing uncertainty or describing a state contrary to fact).</li> </ul>		
Grade Span	Adolescence		
	Grades 9-Diploma		
Performance Expectations	<ul style="list-style-type: none"> <li>a. Write and edit work so that it conforms to the guidelines in a style manual appropriate for the discipline and writing task.</li> <li>b. Vary syntax for effect, consulting references for guidance as needed; apply an understanding of syntax to the study of complex texts when reading.</li> </ul>		

<b>Strand</b>	<b>LANGUAGE: VOCABULARY ACQUISITION AND USE</b>		
<b>Standard 4</b>	<b>Use context clues, analyze meaningful word parts, and consult general and specialized reference materials as appropriate to determine or clarify the meaning of unknown and multiple-meaning words and phrases from grade level content.</b>		
Grade	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>kindergarten reading and content</i> .	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>grade</i>	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>grade</i>

	<p>a. Identify new meanings for familiar words and apply them accurately (e.g., knowing <i>duck</i> is a bird and learning the verb <i>to duck</i>).</p> <p>b. Use the most frequently occurring inflections and affixes (e.g., <i>-ed</i>, <i>-s</i>, <i>re-</i>, <i>un-</i>, <i>pre-</i>, <i>-ful</i>, <i>-less</i>) as a clue to the meaning of an unknown word.</p>	<p><i>1 reading and content</i>, choosing flexibly from an array of strategies.</p> <p>a. Use sentence-level context as a clue to the meaning of a word or phrase.</p> <p>b. Use frequently occurring affixes as a clue to the meaning of a word.</p> <p>c. Identify frequently occurring root words (e.g., look) and their inflectional forms (e.g., <i>looks</i>, <i>looked</i>, <i>looking</i>).</p>	<p><i>2 reading and content</i>, choosing flexibly from an array of strategies.</p> <p>a. Use sentence-level context as a clue to the meaning of a word or phrase.</p> <p>b. Determine the meaning of the new word formed when a known prefix is added to a known word (e.g., <i>happy/unhappy</i>, <i>tell/retell</i>).</p> <p>c. Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., <i>addition</i>, <i>additional</i>).</p> <p>d. Use knowledge of the meaning of individual words to predict the meaning of compound words (e.g., <i>birdhouse</i>, <i>lighthouse</i>, <i>housefly</i>; <i>bookshelf</i>, <i>notebook</i>, <i>bookmark</i>).</p> <p>d. Use glossaries and beginning dictionaries, both print and digital, to determine or clarify the meaning of words and phrases.</p>
Grade	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	<p>Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>grade 3 reading and content</i>, choosing flexibly from a range of strategies.</p> <p>a. Use sentence-level context as a clue to the meaning of a word or phrase.</p>	<p>Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>grade 4 reading and content</i>, choosing flexibly from a range of strategies.</p> <p>a. Use context (e.g., definitions, examples, or restatements in text) as a clue to the meaning of a word or phrase.</p>	<p>Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>grade 5 reading and content</i>, choosing flexibly from a range of strategies.</p> <p>a. Use context (e.g., cause/effect relationships and comparisons in text) as a clue to the meaning of a word or phrase.</p>

	<p>b. Determine the meaning of the new word formed when a known affix is added to a known word (e.g., <i>agreeable/disagreeable, comfortable/uncomfortable, care/careless, heat/preheat</i>).</p> <p>c. Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., <i>company, companion</i>).</p> <p>d. Use glossaries or beginning dictionaries, both print and digital, to determine or clarify the precise meaning of key words and phrases.</p>	<p>b. Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., <i>telegraph, photograph, autograph</i>).</p> <p>c. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.</p>	<p>b. Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., <i>photograph, photosynthesis</i>).</p> <p>c. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.</p>
Grade Span	<p>Early Adolescence Grades 6-8</p>		
Performance Expectations	<p>a. Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.</p> <p>b. Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., <i>audience, auditory, audible in 6th grade; belligerent, bellicose, rebel in 7th grade; precede, recede, secede in 8th grade</i>).</p> <p>c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses) to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech.</p> <p>d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).</p>		
Grade Span	<p>Adolescence Grades 9-Diploma</p>		
Performance Expectations	<p>a. Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.</p> <p>b. Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., <i>conceive, conception, conceivable</i>).</p>		

	<p>c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses) to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, its etymology, or its usage.</p> <p>d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).</p>
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Strand				LANGUAGE: VOCABULARY ACQUISITION AND USE		
Standard 5				Demonstrate understanding of figurative language, word relationships, and nuances in word meanings sufficient for reading, writing, speaking, and listening.		
Grade	Childhood					
	Kindergarten	Grade 1	Grade 2			
Performance Expectations	<p>With guidance and support from adults, explore word relationships and nuances in word meanings.</p> <p>a. Sort common objects into categories (e.g., shapes, foods) to gain a sense of the concepts the categories represent.</p> <p>b. Demonstrate understanding of frequently occurring verbs and adjectives by relating them to their opposites (antonyms).</p> <p>c. Identify real-life connections between words and their use (e.g., note places at school that are <i>colorful</i>).</p> <p>d. Distinguish shades of meaning among verbs differing in manner (e.g., <i>look, peek, glance, stare, glare, scowl</i>) and adjectives differing in intensity (e.g., <i>large, gigantic</i>) by defining or choosing them or by acting out the meanings.</p>	<p>With guidance and support from adults, demonstrate an understanding of word relationships and nuances in word meanings.</p> <p>a. Sort words into categories (e.g., colors, clothing) to gain a sense of the concepts the categories represent.</p> <p>b. Define words by category and by one or more key attributes (e.g., a <i>duck</i> is a bird that swims; a <i>tiger</i> is a large cat with stripes).</p> <p>c. Identify real-life connections between words and their use (e.g., note places at home that are <i>cozy</i>).</p> <p>d. Distinguish shades of meaning among verbs differing in manner (e.g., <i>look, peek, glance, stare, glare, scowl</i>) and adjectives differing in intensity (e.g., <i>large, gigantic</i>) by defining or choosing</p>	<p>Demonstrate understanding of word relationships and nuances in word meanings.</p> <p>a. Identify real-life connections between words and their use (e.g., describe foods that are <i>spicy</i> or <i>juicy</i>).</p> <p>b. Distinguish shades of meaning among closely related verbs (e.g., <i>toss, throw, hurl</i>) and closely related adjectives (e.g., <i>thin, slender, skinny, scrawny</i>).</p>			

		them or by acting out the meanings.	
Grade	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	<p>Demonstrate understanding of word relationships and nuances in word meanings.</p> <p>a. Distinguish the literal and nonliteral meanings of words and phrases in context (e.g., <i>take steps</i>).</p> <p>b. Identify real-life connections between words and their use (e.g., describe people who are <i>friendly</i> or <i>helpful</i>).</p> <p>c. Distinguish shades of meaning among related words that describe states of mind or degrees of certainty (e.g., <i>knew</i>, <i>believed</i>, <i>suspected</i>, <i>heard</i>, <i>wondered</i>).</p>	<p>a. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.</p> <p>b. Explain the meaning of simple similes and metaphors (e.g., <i>as pretty as a picture</i>) in context.</p> <p>c. Recognize and explain the meaning of common idioms, adages, and proverbs.</p> <p>d. Demonstrate understanding of words by relating them to their opposites (antonyms) and to words with similar but not identical meanings (synonyms).</p>	<p>Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.</p> <p>a. Interpret figurative language, including similes and metaphors, in context.</p> <p>b. Recognize and explain the meaning of common idioms, adages, and proverbs.</p> <p>c. Use the relationship between particular words (e.g., synonyms, antonyms, homographs) to better understand each of the words.</p>
Grade Span	Early Adolescence		
	Grades 6-8		
Performance Expectations	<p>a. Interpret figures of speech (e.g. personification in 6th grade; allusions in 7th grade; verbal irony, puns in 8th grade) in context.</p> <p>b. Use the relationship between particular words (e.g., cause/effect, part/whole, item/category in 6th grade; synonym/antonym, analogy in 7th grade) to better understand each of the words.</p> <p>c. Distinguish among the connotations of words with similar denotations (e.g., <i>stingy</i>, <i>scrimping</i>, <i>economical</i>, <i>unwasteful</i>, <i>thrifty</i> in 6th grade; <i>refined</i>, <i>respectful</i>, <i>polite</i>, <i>diplomatic</i>, <i>condescending</i> in 7th grade; <i>bullheaded</i>, <i>willful</i>, <i>firm</i>, <i>persistent</i>, <i>resolute</i> in 8th grade).</p>		
Grade Span	Adolescence		
	Grades 9-Diploma		
Performance Expectations	<p>a. Interpret figures of speech (e.g., euphemism, oxymoron, hyperbole, paradox) in context and analyze their role in the text.</p>		

	b. Analyze nuances in the meaning of words with similar denotations.
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Strand	LANGUAGE: VOCABULARY ACQUISITION AND USE		
Standard 6	<b>Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.</b>		
Grade	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	Use words and phrases acquired through conversations, reading and being read to, and responding to texts.	Use words and phrases acquired through conversations, reading and being read to, and responding to texts, including using frequently occurring conjunctions to signal simple relationships (e.g., <i>because</i> ).	Use words and phrases acquired through conversations, reading and being read to, and responding to texts, including using adjectives and adverbs to describe (e.g., <i>When other kids are happy that makes me happy</i> ).
Grade	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	Acquire and use accurately grade-appropriate conversational, general academic, and domain-specific words and phrases, including those that signal spatial and temporal relationships (e.g., <i>After dinner that night we went looking for them</i> ).	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal precise actions, emotions, or states of being (e.g., <i>quizzed, whined, stammered</i> ) and that are basic to a particular topic (e.g., <i>wildlife, conservation, and endangered</i> when discussing animal preservation).	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal contrast, addition, and other logical relationships (e.g., <i>however, although, nevertheless, similarly, moreover, in addition</i> ).

Grade Span	Early Adolescence
	Grades 6-8
Performance Expectations	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
Grade Span	Adolescence
	Grades 9-Diploma
Performance Expectations	Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

### SPEAKING AND LISTENING

Speaking and listening are essential components in our schools, our homes, our communities, and our places of work. Direct, interpersonal communication is the cornerstone of human relationships, and nowhere is this more clearly articulated than in dialogue, discussion, presentation, and debate. Successful students must be able to communicate in multiple mediums, through conversations, interviews, digital presentations, and countless day-to-day interactions that build understanding of their world and the perspectives of their peers. Key to success in our modern world is interaction with diverse others and ever-changing groups, and creating and following community guidelines and rules, which is critical practice for civic responsibility later in life.

Speaking and listening standards do not stand alone; like all Language Arts skills, they are interconnected. Early speaking and listening skills in primary grades are foundational to close reading skills in later grades, and throughout school and life the ability to understand, analyze, and evaluate others' words helps everyone develop a richer and deeper awareness of human motivation and purpose.

Strand	SPEAKING AND LISTENING: COMPREHENSION AND COLLABORATION		
Standard 1	<b>Prepare for and participate in conversations across a range of topics, types, and forums, building on others' ideas and expressing their own.</b>		
Grade	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	a. Participate in collaborative conversations about kindergarten topics and texts with peers and adults in small and larger groups. b. Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking	a. Participate in collaborative conversations about grade 1 topics and texts with peers and adults in small and larger groups. b. Follow agreed-upon rules for discussions (e.g., listening to	a. Participate in collaborative conversations about grade 2 topics and texts with peers and adults in small and larger groups. b. Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to

	<p>about the topics and texts under discussion).</p> <p>c. Continue a conversation through multiple exchanges.</p>	<p>others with care, speaking one at a time about the topics and texts under discussion).</p> <p>c. Build on others' talk in conversations by responding to the comments of others through multiple exchanges.</p> <p>d. Ask questions to clear up any confusion about the topics and texts under discussion.</p>	<p>others with care, speaking one at a time about the topics and texts under discussion).</p> <p>c. Build on others' talk in conversations by linking their comments to the remarks of others.</p> <p>d. Ask for clarification and further explanation as needed about the topics and texts under discussion.</p>
<b>Grade</b>	<b>Childhood</b>		
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	<p>a. Engage effectively in a range of collaborative discussions (one-on-one, in groups, student-led and teacher-led) on grade 3 topics and texts, building on others' ideas and expressing their own clearly.</p> <p>b. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.</p> <p>c. Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).</p> <p>d. Ask questions to check understanding of information</p>	<p>a. Engage effectively in a range of collaborative discussions (one-on-one, in groups, student-led, and teacher-led) on grade 4 topics and texts, building on others' ideas and expressing their own clearly.</p> <p>b. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.</p> <p>c. Follow agreed-upon rules for discussions and carry out assigned roles.</p> <p>d. Pose and respond to specific questions to clarify or follow up on information and make comments that contribute to the</p>	<p>a. Engage effectively in a range of collaborative discussions (one-on-one, in groups, student-led, and teacher-led) on grade 5 topics and texts, building on others' ideas and expressing their own clearly.</p> <p>b. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.</p> <p>c. Follow agreed-upon rules for discussions and carry out assigned roles.</p> <p>d. Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others.</p>

	<p>presented, stay on topic, and link their comments to the remarks of others.</p> <p>e. Explain their own ideas and understanding in light of the discussion.</p>	<p>discussion and link to the remarks of others.</p> <p>e. Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.</p>	<p>e. Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.</p>
Grade Span	Early Adolescence		
	Grades 6-8		
Performance Expectations	<p>a. Engage effectively in a range of collaborative discussions (one-on-one, in groups, <u>student-led</u>, and teacher-led) on grade 6-8 topics, texts, and issues, building on others' ideas and expressing their own clearly.</p> <p>b. Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.</p> <p>c. Follow rules for collegial discussions and decision-making, <u>set and</u> track progress toward specific goals and deadlines, and define individual roles as needed.</p> <p>d. Pose questions that <u>elicit elaboration</u>, connect the ideas of several speakers, and respond to others' questions and comments with relevant evidence, observations, and ideas.</p> <p>e. Review the key ideas expressed and demonstrate understanding of multiple perspectives through <u>paraphrasing and</u> reflection. Acknowledge new information expressed by others, and, when warranted, modify, qualify, or justify their own views in light of the evidence presented.</p>		
Grade Span	Adolescence		
	Grades 9-Diploma		
Performance Expectations	<p>a. Participate effectively in a range of collaborative discussions (one-on-one, in groups, <u>student-led</u>, and teacher-led)-on grades 9-Diploma topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.</p> <p>b. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.</p> <p>c. Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed.</p>		

	<p>d. Propel conversations by posing and responding to questions that probe reasoning and evidence.</p> <p>e. Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.</p>
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<b>Strand</b>	<b>SPEAKING AND LISTENING: COMPREHENSION AND COLLABORATION</b>		
<b>Standard 2</b>	<b>Integrate and evaluate information presented in diverse media and formats, including point of view, reasoning, and use of evidence and rhetoric.</b>		
Grade	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	<p>a. Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details to seek help if something is not understood.</p> <p>b. Ask and answer questions in order to seek help, gather information, or clarify something that is not understood.</p>	<p>a. Ask and answer questions about key details in a text read aloud or information presented orally or through other media.</p> <p>b. Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.</p>	<p>a. Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.</p> <p>b. Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.</p>
Grade	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	<p>a. Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats.</p>	<p>a. Paraphrase portions of a text read aloud or information presented in diverse media and formats.</p>	<p>a. Summarize a written text read aloud or information presented in diverse media and formats.</p>

	b. Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.	b. Identify the reasons and evidence a speaker provides to support particular points.	b. Summarize the points a speaker makes and explain how each claim is supported by reasons and evidence.
Grade Span	Early Adolescence		
	Grades 6-8		
Performance Expectations	<p>a. Interpret information, analyze the main ideas and supporting details, and analyze the purpose of information presented in diverse formats.</p> <p>b. Explain how the presentation contributes to or clarifies a topic under study, and evaluate the motives (e.g., social, commercial, political) behind its presentation.</p> <p>c. Delineate a speaker’s argument and specific claims, evaluate the soundness of the reasoning and sufficiency of the evidence, and identify when irrelevant evidence is introduced.</p>		
Grade Span	Adolescence		
	Grades 9-Diploma		
Performance Expectations	<p>a. Integrate multiple sources of information presented in diverse formats and media in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.</p> <p>b. Evaluate the speaker’s technique, including use of evidence, reasoning, stylistic and rhetorical elements, or other features appropriate to the task.</p>		

<b>Strand</b>	<b>SPEAKING AND LISTENING: PRESENTATION OF KNOWLEDGE AND IDEAS</b>		
<b>Standard 3</b>	<b>Present information and supporting evidence appropriate to task, purpose, and audience so listeners can follow the line of reasoning and incorporate multimedia when appropriate.</b>		
Grade	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	<p>a. Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.</p> <p>b. Add drawings or other visual displays to descriptions as</p>	<p>a. Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.</p> <p>b. Add drawings or other visual displays to descriptions when</p>	<p>a. Describe people, places, things, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.</p>

	desired to provide additional detail.	appropriate to clarify ideas, thoughts, and feelings.	b. Create audio/video recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.
Grade	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	<p>a. Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speak clearly at an understandable pace.</p> <p>b. Create audio/video recordings of stories or poems that demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details.</p>	<p>a. Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.</p> <p>b. Add audio/video recordings and visual displays to presentations when appropriate to enhance the development of main ideas or themes.</p>	<p>a. Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.</p> <p>b. Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes.</p>
Grade Span	Early Adolescence		
	Grades 6-8		
Performance Expectations	<p>a. Present claims and findings, emphasizing salient points in a sequenced, focused, coherent manner with relevant evidence, sound and valid reasoning, and well-chosen details.</p> <p>b. Use appropriate eye contact, adequate volume, and clear pronunciation.</p> <p>c. When appropriate, integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.</p>		

Grade Span	Adolescence
	Grades 9-Diploma
Performance Expectations	<p>a. Present information, findings, and supporting evidence, conveying a clear and distinct perspective so that listeners can follow the line of reasoning.</p> <p>b. Address alternative or opposing perspectives; the organization development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.</p> <p>c. Use appropriate eye contact, adequate volume, and clear pronunciation.</p> <p>d. Make strategic use of multimedia (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence.</p>

Strand	SPEAKING AND LISTENING: PRESENTATION OF KNOWLEDGE AND IDEAS		
Standard 4	Adapt speech to a variety of contexts, audiences, and communicative tasks.		
Grade	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	Speak audibly and express thoughts, feelings, and ideas clearly.	Produce complete sentences when appropriate to task and situation. (See grade 1 Language standards 1 and 3 for specific expectations.)	Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification. (See grade 2 Language standards 1 and 3 for specific expectations.)
Grade	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification. (See grade 3 Language standards 1 and 3 for specific expectations.)	Differentiate between contexts that call for different registers (e.g. formal English for presenting ideas and informal discourse for small-group discussion)- (See grade 4 Language standards 1 and 3 for specific expectations.)	Adapt speech to a variety of contexts and tasks, demonstrating command of language in the appropriate register. (See grade 5 Language standards 1 and 3 for specific expectations.)

Grade Span	Early Adolescence
	Grades 6-8
Performance Expectations	Adapt speech to a variety of contexts, demonstrating command of language in the appropriate register (See grades 6-8 Language standards 1 and 3 for specific expectations.)
Grade Span	Adolescence
	Grades 9-Diploma
Performance Expectations	Adapt speech to a variety of contexts, demonstrating a command of language in the appropriate register. (See grades 9-Diploma Language standards 1 and 3 for specific expectations.)

### READING

The goal of all reading instruction is to help students become competent consumers of a wide variety of texts in diverse forms so that they can achieve independence, find meaning, and use literacy for lifelong learning, empowerment, and enjoyment.

A text is anything that can be read, heard or viewed. Texts may include words, images, objects, sounds, and symbols that convey messages from developers to consumers. They broadly encompass multiple purposes, audience appeal, and a wide variety of human experiences that create meaning for the reader. A student's experience with texts may range from cursive, print and digital fonts. When choosing texts, teachers must consider the qualities of complexity and the diversity of texts each student should experience.

The reading standards are designed progressively, using specificity and scaffolding to engage all readers in pursuing skills and experiences that contribute to personal, communal, and global needs and interests. This design promotes essential reading skills, allowing students to understand and enjoy a wide range of texts from a variety of perspectives. Teachers must employ a balance of research-based instructional approaches and strategies designed to provide multiple opportunities for transfer of learning.

Strand	READING: FOUNDATIONAL SKILLS/ PRINT CONCEPTS		
Standard 1	Demonstrate understanding of the organization and basic features of print.		
Grade	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	a. Follow words from left to right, top to bottom, and page by page. b. Recognize that spoken words are represented in written language by specific sequences of letters.	Recognize the distinguishing features of a sentence (e.g., first word, capitalization, ending punctuation).	Recognize the distinguishing features of a paragraph (e.g. indent).

	c. Understand that words are separated by spaces in print. d. Recognize and name all upper- and lowercase letters of the alphabet.		
Grade	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	Some learners may enter your classroom without having mastered the skills identified in previous grade levels or grade spans. In cases when this occurs, teachers should <ul style="list-style-type: none"> <li>• assess where students are,</li> <li>• determine what they need to learn to master the skills appropriate to their grade level or grade span, and</li> <li>• access district resources to help students move toward proficiency.</li> </ul>	Some learners may enter your classroom without having mastered the skills identified in previous grade levels or grade spans. In cases when this occurs, teachers should <ul style="list-style-type: none"> <li>• assess where students are,</li> <li>• determine what they need to learn to master the skills appropriate to their grade level or grade span, and</li> <li>• access district resources to help students move toward proficiency.</li> </ul>	Some learners may enter your classroom without having mastered the skills identified in previous grade levels or grade spans. In cases when this occurs, teachers should <ul style="list-style-type: none"> <li>• assess where students are,</li> <li>• determine what they need to learn to master the skills appropriate to their grade level or grade span, and</li> <li>• access district resources to help students move toward proficiency.</li> </ul>
Grade Span	Early Adolescence		
	Grades 6-8		
Performance Expectations	Some learners may enter your classroom without having mastered the skills identified in previous grade levels or grade spans. In cases when this occurs, teachers should <ul style="list-style-type: none"> <li>• assess where students are,</li> <li>• determine what they need to learn to master the skills appropriate to their grade level or grade span, and</li> <li>• access district resources to move students toward proficiency.</li> </ul>		
Grade Span	Adolescence		
	Grades 9-Diploma		
Performance Expectations	Some learners may enter your classroom without having mastered the skills identified in previous grade levels or grade spans. In cases when this occurs, teachers should <ul style="list-style-type: none"> <li>• assess where students are,</li> <li>• determine what they need to learn to master the skills appropriate to their grade level or grade span, and</li> <li>• access district resources to move students toward proficiency.</li> </ul>		

Strand			
READING: FOUNDATIONAL SKILLS/ PHONOLOGICAL AWARENESS			
Standard 2			
Demonstrate understanding of words, syllables, and sounds (phonemes).			
Grade	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	<p>a. Recognize and produce rhyming words.</p> <p>b. Count, pronounce, blend, and segment syllables in spoken words.</p> <p>c. Blend and segment onsets and rimes of single-syllable spoken words.</p> <p>d. Isolate and pronounce the initial, medial vowel, and final sounds (phonemes) in three-phoneme (consonant-vowel-consonant, or CVC) words. (This does not include CVCs ending with /l/, /r/, or /x/.)</p> <p>e. Add or substitute individual sounds (phonemes) in simple, one-syllable words to make new words.</p>	<p>a. Distinguish long from short vowel sounds in spoken single-syllable words.</p> <p>b. Produce single-syllable words by blending sounds (phonemes), including consonant blends.</p> <p>c. Isolate and pronounce initial, medial vowel, and final sounds (phonemes) in spoken single-syllable words.</p> <p>d. Segment spoken single-syllable words into their complete sequence of individual sounds (phonemes).</p>	<p>Some learners may enter your classroom without having mastered the skills identified in previous grade levels or grade spans. In cases when this occurs, teachers should</p> <ul style="list-style-type: none"> <li>• assess where students are,</li> <li>• determine what they need to learn to master the skills appropriate to their grade level or grade span, and</li> <li>• access district resources to move students toward proficiency.</li> </ul>
Grade	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	<p>Some learners may enter your classroom without having mastered the skills identified in previous grade levels or grade spans. In cases when this occurs, teachers should</p> <ul style="list-style-type: none"> <li>• assess where students are,</li> <li>• determine what they need to learn to master the skills appropriate to their grade level or grade span, and access district resources to help</li> </ul>	<p>Some learners may enter your classroom without having mastered the skills identified in previous grade levels or grade spans. In cases when this occurs, teachers should</p> <ul style="list-style-type: none"> <li>• assess where students are,</li> <li>• determine what they need to learn to master the skills appropriate to their grade level or grade span, and access district resources to help</li> </ul>	<p>Some learners may enter your classroom without having mastered the skills identified in previous grade levels or grade spans. In cases when this occurs, teachers should</p> <ul style="list-style-type: none"> <li>• assess where students are,</li> <li>• determine what they need to learn to master the skills appropriate to their grade level or grade span, and access district resources to help</li> </ul>

	students move toward proficiency.	students move toward proficiency.	students move toward proficiency.
Grade Span	Early Adolescence Grades 6-8		
Performance Expectations	Some learners may enter your classroom without having mastered the skills identified in previous grade levels or grade spans. In cases when this occurs, teachers should <ul style="list-style-type: none"> <li>• assess where students are,</li> <li>• determine what they need to learn to master the skills appropriate to their grade level or grade span, and</li> <li>• access district resources to move students toward proficiency.</li> </ul>		
Grade Span	Adolescence Grades 9-Diploma		
Performance Expectations	Some learners may enter your classroom without having mastered the skills identified in previous grade levels or grade spans. In cases when this occurs, teachers should <ul style="list-style-type: none"> <li>• assess where students are,</li> <li>• determine what they need to learn to master the skills appropriate to their grade level or grade span, and</li> <li>• access district resources to move students toward proficiency.</li> </ul>		

<b>Strand</b>	<b>READING: FOUNDATIONAL SKILLS/ PHONICS AND WORD RECOGNITION</b>		
<b>Standard 3</b>	<b>Know and apply grade-level phonics and word analysis skills in decoding words.</b>		
Grade	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	a. Demonstrate basic knowledge of one-to-one letter-sound correspondences by producing the	a. Know the spelling-sound correspondences for common consonant digraphs.	a. Distinguish long and short vowels when reading regularly spelled one-syllable words.

	<p>primary or many of the most frequent sound for each consonant.</p> <p>b. Associate the long and short sounds with common spellings (graphemes) for the five major vowels.</p> <p>c. Read common high-frequency words by sight (e.g., the, of, to, you, she, my, is, are, do, does).</p> <p>d. Distinguish between similarly spelled words by identifying the sounds of the letters that differ</p>	<p>b. Decode regularly spelled one-syllable words.</p> <p>c. Know final -e and common vowel team conventions for representing long vowel sounds.</p> <p>d. Use knowledge that every syllable must have a vowel sound to determine the number of syllables in a printed word.</p> <p>e. Decode two-syllable words following basic patterns by breaking the words into syllables.</p> <p>f. Read words with inflectional endings.</p> <p>g. Recognize and read grade-appropriate irregularly spelled words.</p>	<p>b. Know spelling-sound correspondences for additional common vowel teams.</p> <p>c. Decode regularly spelled two-syllable words with long vowels.</p> <p>d. Decode words with common prefixes and suffixes.</p> <p>e. Identify words with inconsistent but common spelling-sound correspondences.</p> <p>f. Recognize and read grade-appropriate irregularly spelled words.</p>
Grade	Childhood		
	Grade 3	Grade 4	Grade 5
	<p>a. Identify and know the meaning of the most common prefixes and derivational suffixes.</p> <p>b. Decode words with common Latin suffixes.</p> <p>c. Decode multisyllabic words.</p> <p>d. Read grade-appropriate irregularly spelled words.</p>	<p>Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words in context and out of context.</p>	<p>Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words in context and out of context.</p>
Grade Span	Early Adolescence		
	Grades 6-8		
Performance Expectations	<p>Some learners may enter your classroom without having mastered the skills identified in previous grade levels or grade spans. In cases when this occurs, teachers should</p> <ul style="list-style-type: none"> <li>• assess where students are,</li> <li>• determine what they need to learn to master the skills appropriate to their grade level or grade span, and</li> <li>• access district resources to help students move toward proficiency.</li> </ul>		
Grade Span	Adolescence		

Grades 9-Diploma	
Performance Expectations	<p>Some learners may enter your classroom without having mastered the skills identified in previous grade levels or grade spans. In cases when this occurs, teachers should</p> <ul style="list-style-type: none"> <li>• assess where students are,</li> <li>• determine what they need to learn to master the skills appropriate to their grade level or grade span, and</li> <li>• access district resources to help students move toward proficiency.</li> </ul>

Strand	READING/KEY IDEAS AND DETAILS		
<b>Standard 4</b>	<b>Read various texts closely to determine what each text explicitly says and to make logical inferences; cite specific textual evidence to support conclusions drawn from the texts.</b>		
Grade	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	Ask and answer questions with prompting and support about who, what, when, where, and how.	Ask and answer questions about who, what, when, where, and how.	Ask and answer questions about who, what, when, where, how and why.
Grade	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.	Refer to details and examples in a text when explaining what the text says explicitly and when making inferences.	Accurately quote details and examples from the text when explaining what the text says explicitly and when making inferences.
Grade Span	Early Adolescence		
	Grades 6-8		
Performance Expectations	Cite several pieces of textual evidence that most strongly support an analysis of what the text says explicitly as well as inferences drawn from the text.		
Grade Span	Adolescence		
	Grades 9-Diploma		
Performance Expectations	Cite strong and thorough textual evidence to support analysis of various texts in ways that demonstrate what the text(s) says explicitly and implicitly, including attending to moments of textual inconsistency or ambiguity.		

Strand	READING/KEY IDEAS AND DETAILS		
<b>Standard 5</b>	<b>Provide an accurate summary of various texts; determine the central idea(s) or theme(s) and analyze its development throughout each text.</b>		
Grade	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	a. Retell familiar texts with prompting and support, including details about who, what, when, where, and how. b. Retell key details of texts with prompting and support, including the main topic.	a. Retell texts, including details about who, what, when, where, and how; demonstrate an understanding of the theme. b. Retell key details of texts, including the main topic.	a. Retell texts, including details about who, what, when, where, how, and why; demonstrate understanding of the theme. b. Identify the main topic of a multi-paragraph text and the central ideas of specific paragraphs.
Grade	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	a. Retell texts, including details about who, what, when, where, why and how; explain how the theme is supported. b. Explain how the key details support the central idea of a text.	a. Summarize texts, including details about who, what, when, where, how and why; explain how the theme is supported. b. Summarize texts, including how the key details support the central idea.	a. Summarize texts, including theme and character development. b. Summarize texts, including how the key details support two or more central ideas.
Grade Span	Early Adolescence		
	Grades 6-8		
Performance Expectations	a. Provide an accurate summary of various texts; b. Determine theme(s) or central idea(s) and analyze how its development is conveyed over the course of the texts, including its relationship to specific supporting details.		
Grade Span	Adolescence		
	Grades 9-Diploma		
Performance Expectations	a. Provide accurate summaries of various texts that make clear the relationships among the key details and ideas. b. Determine the theme(s) or central idea(s) of various texts and analyze the development of the theme(s) or central idea(s) over the course of the texts, including how elements interact and build on one another, to provide a complex account or analysis.		

Strand	READING: KEY IDEAS AND DETAILS		
Standard 6	Analyze how and why individuals, events, and ideas develop and interact over the course of a text.		
Grade	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	<ul style="list-style-type: none"> <li>a. With prompting and support, identify characters, settings, and major events in a story.</li> <li>b. With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.</li> </ul>	<ul style="list-style-type: none"> <li>a. Describe characters, settings, and major events in a story, including details about who, what, when, where, and how.</li> <li>b. Describe the connection between two individuals, events, ideas, or pieces of information in a text.</li> </ul>	<ul style="list-style-type: none"> <li>a. Describe how characters in a story respond to major events and challenges.</li> <li>b. Describe the relationship between a series of events, ideas or concepts, using language that pertains to time, sequence, and cause/effect.</li> </ul>
Grade	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	<ul style="list-style-type: none"> <li>a. Describe in depth a character, setting, or event in a story, drawing on specific details in the text (e.g., a character's thoughts, words, or actions).</li> <li>b. Explain the relationship between events, ideas or concepts, using language that pertains to time, sequence, and cause/effect, based on information from the text.</li> </ul>	<ul style="list-style-type: none"> <li>a. Describe characters in a story (e.g., their traits, motivations, or feelings) and explain how their actions contribute to the sequence of events, drawing on specific details in the text.</li> <li>b. Explain the relationships or interactions between two or more individuals, events, ideas, or concepts, explicitly referring to specific information from the text.</li> </ul>	<ul style="list-style-type: none"> <li>a. Analyze how two or more characters, settings, or events in a story are related, drawing on specific details in the text (e.g., how characters interact).</li> <li>b. Analyze relationships or interactions between individuals, events, ideas, or concepts throughout the text.</li> </ul>

Grade Span	Early Adolescence Grades 6-8
Performance Expectations	Analyze in detail how an author develops individuals/characters, events, ideas, elements and/or techniques to create interactions over the course of a text (or a series of texts).
Grade Span	Adolescence Grades 9-Diploma
Performance Expectations	Analyze the impact of an author's choices and determine how specific individuals/characters, elements and/or techniques, events, or ideas interact and develop over the course of the text (or a series of texts).

Strand	READING: CRAFT AND STRUCTURE			
Standard 7	Interpret words and phrases as they are used in various texts, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.			
Grade	Childhood			
	Kindergarten	Grade 1	Grade 2	
Performance Expectations	With prompting and support, ask and answer questions about unknown words in a text.	a. Identify words and phrases in a text that suggest feelings or appeal to the senses. b. Ask and answer questions to help determine or clarify the meaning of words and phrases in a text.	a. Describe how words and phrases supply rhythm and meaning in a text. b. Use provided resources to determine meaning of words and phrases in a text.	
Grade	Childhood			
	Grade 3	Grade 4	Grade 5	
Performance Expectations	a. Determine the meaning of words and phrases as they are used in a text, distinguishing literal from figurative language. b. Use provided resources to determine meaning of domain-specific words and phrases.	a. Determine the meaning of words and phrases including figurative language as they are used in a text. b. Draw on a variety of strategies to determine meaning of domain-specific words and phrases.	a. Determine the meanings of words and phrases including figurative language and connotations as they are used in a text. b. Initiate strategies to determine meaning of domain-specific words and phrases.	
Grade Span	Early Adolescence Grades 6-8			
Performance Expectations	Determine the meaning of figurative, connotative, and technical word meanings and phrases as they are used in various texts; analyze the impact of specific word choices and techniques on meaning and tone.			

Grade Span	Adolescence
	Grades 9-Diploma
Performance Expectations	Determine the meaning of figurative, connotative, and technical word meanings and phrases as they are used in various contexts and texts; analyze the impact of specific word choices on meaning and tone, including words with multiple meanings and/or language that is particularly evocative.

Strand		READING: CRAFT AND STRUCTURE		
Standard 8		Analyze the structure of various texts, including how the features and components relate to each other and the whole.		
Grade	Childhood			
	Kindergarten	Grade 1	Grade 2	
Performance Expectations	<ul style="list-style-type: none"> <li>a. Identify texts that tell stories.</li> <li>b. Identify texts that provide information.</li> </ul>	<ul style="list-style-type: none"> <li>a. Explain major differences between texts that tell stories and texts that give information, drawing on various text types.</li> <li>b. Determine and use text features (e.g., headings, bold print, indexes, graphics, tables of contents, glossaries, links, icons) that help locate key facts or information in a text.</li> </ul>	<ul style="list-style-type: none"> <li>a. Describe the overall structure of a text, including describing how the beginning introduces the story and the ending concludes the action.</li> <li>b. Explain how various text features (e.g., headings, bold print, indexes, graphics, tables of contents, glossaries, links, icons) are used to locate key facts or information in a text efficiently.</li> </ul>	
Grade	Childhood			
	Grade 3	Grade 4	Grade 5	
Performance Expectations	<ul style="list-style-type: none"> <li>a. Refer to parts of a text (e.g. chapters, scenes, or stanzas) and explain how each successive part builds on earlier sections.</li> <li>b. Use various text features (e.g., headings, bold print, indexes, graphics, tables of contents, glossaries, links, icons) to locate key facts or information in a text efficiently.</li> </ul>	<ul style="list-style-type: none"> <li>a. Explain how individual parts of a text (e.g., chapters, scenes, or stanzas) work together to provide meaning to the text as a whole.</li> <li>b. Identify the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of a text and explain how the text features help support the overall structure.</li> </ul>	<ul style="list-style-type: none"> <li>a. Explain how the text's structure supports its meaning and the author's purpose of the text as a whole.</li> <li>b. Compare and contrast the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in</li> </ul>	

			two or more texts on the same topic.
Grade Span	Early Adolescence Grades 6-8		
Performance Expectations	Analyze how the organization and structure of specific features and components in various texts develop ideas and/or meaning, contributing to the author’s purpose for the text as a whole.		
Grade Span	Adolescence Grades 9-Diploma		
Performance Expectations	<ul style="list-style-type: none"> <li>a. Analyze the organization and structure of specific features and components in various texts</li> <li>b. Evaluate the effectiveness of text structures in conveying the overall meaning and/or purpose of the text as a whole.</li> </ul>		

<b>Strand</b>	<b>READING: CRAFT AND STRUCTURE</b>		
<b>Standard 9</b>	<b>Assess how perspective or purpose shapes the content and style of various texts.</b>		
Grade	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	<ul style="list-style-type: none"> <li>a. With prompting and support, name the author and illustrator of a story and define the role of each in telling the texts.</li> <li>b. With prompting and support, name the author and illustrator of a text and define the role of each in presenting the ideas or information in a text.</li> </ul>	<ul style="list-style-type: none"> <li>a. Identify who is telling the story at various points in a text.</li> <li>b. Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.</li> </ul>	<ul style="list-style-type: none"> <li>a. Acknowledge differences in the points of view of characters</li> <li>b. Identify the main purpose of a text, including what the author wants to answer, explain, or describe.</li> </ul>

Grade	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	a. Distinguish the reader’s personal point of view from that of the narrator or those of the characters. b. Distinguish the reader’s personal point of view from that of the author of a text.	a. Compare and contrast the point of view from which different texts are narrated, including the difference between first- and third-person narrations. b. Compare and contrast primary and secondary sources of the same event or topic; describe the differences in perspective based on information in the texts.	a. Describe how a narrator’s or speaker’s point of view influences how events are described in various contexts. b. Analyze multiple accounts and/or contexts of the same event or topic, noting important similarities and differences in the perspectives they represent based on information in the texts.
Grade Span	Early Adolescence		
	Grades 6-8		
	Analyze how and why authors from various contexts (e.g. diverse, intersectional, multicultural, religious) use perspective for intended purposes and/or audiences.		
Grade Span	Adolescence		
	Grades 9-Diploma		
	Analyze and evaluate how authors from various contexts (e.g. diverse, intersectional, multicultural, religious) use perspective and purpose to shape the intended content, style, and effect of various texts.		

Strand	READING: INTEGRATION OF KNOWLEDGE AND IDEAS		
Standard 10	Evaluate the argument and specific claims in various texts.		
Grade	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	With prompting and support, identify the reasons an author or character gives to support points in a text.	Identify the reasons an author or character gives to support points in a text.	Describe how reasons support specific points an author or character makes in a text.

Grade	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	Explain how an author or character uses reasons and evidence to support a claim in a text.	Explain how an author or character uses reasons and evidence to support a claim in a text, identifying which reasons and evidence support the claim(s).	<ul style="list-style-type: none"> <li>a. Trace the organization and development of a claim in a text.</li> <li>b. Determine the effectiveness of an author's or character's claim.</li> </ul>
Grade Span	Early Adolescence Grades 6-8		
Performance Expectations	<ul style="list-style-type: none"> <li>a. Distinguish among fact, opinion, evidence, reasoning, and qualifying statements in a text.</li> <li>b. Evaluate the effectiveness of how an author or character develops the argument.</li> <li>c. Assess the validity and reasoning of the argument, considering if the argument is relevant and sufficient.</li> </ul>		
Grade Span	Adolescence Grades 9-Diploma		
Performance Expectations	<ul style="list-style-type: none"> <li>a. Evaluate the effectiveness of how authors use literary and/or rhetorical strategies to develop arguments in various texts.</li> <li>b. Evaluate the premises, claims, and/or conclusions in various texts, verifying the information when possible and corroborating or challenging conclusions with other sources of information.</li> </ul>		

Strand	READING: INTEGRATION OF KNOWLEDGE AND IDEAS		
Standard 11	Analyze and evaluate content presented in various texts (e.g. literary, historical, visual, artistic, quantitative, and technological).		
Grade	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	<ul style="list-style-type: none"> <li>a. With prompting and support, describe the relationship between illustrations and the text.</li> <li>b. With prompting and support, compare and contrast the experiences of characters in two or more familiar texts.</li> <li>c. With prompting and support, describe the relationship between the text and what person, place,</li> </ul>	<ul style="list-style-type: none"> <li>a. Use illustrations and words in a text to describe its characters, setting, or events.</li> <li>b. Compare and contrast the experiences of characters in various texts.</li> <li>c. Use the illustrations and details in a text to describe its central idea.</li> <li>d. Compare and contrast two texts on the same topic.</li> </ul>	<ul style="list-style-type: none"> <li>a. Use illustrations and words in a print or digital text to demonstrate understanding of its characters, setting, or plot.</li> <li>b. Compare and contrast two or more versions of the same story presented in diverse forms</li> <li>c. Explain how specific visuals contribute to and clarify the meaning of a text.</li> </ul>

	thing, or idea the illustration depicts. d. With prompting and support, compare and contrast two texts on the same topic.		d. Compare and contrast the information presented by two texts on the same topic.
Grade	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	<ul style="list-style-type: none"> <li>a. Explain how specific aspects of a text's illustrations contribute to the meaning of a text (e.g., create mood, emphasize aspects of a character or setting).</li> <li>b. Compare and contrast themes, settings, characters, and plots of stories.</li> <li>c. Use information gained from the text features and the words within to demonstrate an understanding of the whole text.</li> <li>d. Compare and contrast the key details presented in two texts on the same topic</li> </ul>	<ul style="list-style-type: none"> <li>a. Compare and contrast between texts and other multimedia versions and how it influences the meaning and author's intent.</li> <li>b. Compare and contrast similar themes, topics, and patterns of events in texts.</li> <li>c. Interpret information presented in diverse forms and explain how the information contributes to an understanding of an idea or topic.</li> </ul>	<ul style="list-style-type: none"> <li>a. Analyze how diverse forms and their features contribute to the meaning, tone, and author's intent of a text.</li> <li>b. Compare and contrast how two or more authors of the same text type interpret similar themes and topics.</li> <li>c. Draw on information presented in various texts in order to answer a question or to solve a problem.</li> </ul>
Grade Span	Early Adolescence		
	Grades 6-8		
Performance Expectations	<ul style="list-style-type: none"> <li>a. Analyze how two or more authors of various texts present information by emphasizing different interpretations of a theme and/or topic.</li> <li>b. Evaluate the advantages and disadvantages of an author's choice for using a specific form and/or text type.</li> </ul>		
Grade Span	Adolescence		
	Grades 9-Diploma		
Performance Expectations	<ul style="list-style-type: none"> <li>a. Evaluate and synthesize multiple sources of information and various texts (e.g., literary, visual, artistic, and quantitative) in order to achieve a specific purpose or to answer a question.</li> <li>b. Analyze how various authors or texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.</li> </ul>		

	c. Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of an idea or event, noting discrepancies among perspectives.
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Strand	READING: FLUENCY		
Standard 12	Read with sufficient accuracy and fluency to support comprehension		
Grade	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	Read emergent-reader texts with purpose and understanding.	a. Read various on-level text with purpose and understanding. b. Read various on-level text with accuracy, appropriate rate, and expression on successive readings. c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.	a. Read various on-level text with purpose and understanding. b. Read various on-level text orally with accuracy, appropriate rate, and expression on successive readings. c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.
Grade	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	a. Read various on-level text with purpose and understanding. b. Read various on-level text with accuracy, appropriate rate, and expression on successive readings c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.	a. Read with sufficient accuracy and fluency to support comprehension. b. Read various on-level text with purpose and understanding. c. Read various on-level text with accuracy, appropriate rate, and expression on successive readings. d. Use context to confirm or self-correct word recognition and	a. Read with sufficient accuracy and fluency to support comprehension. b. Read various on-level text with purpose and understanding. c. Use context to confirm or self-correct word recognition.

		understanding, rereading as necessary.	
Grade Span	Early Adolescence		
	Grades 6-8		
Performance Expectations	<ul style="list-style-type: none"> <li>a. Read with sufficient accuracy and fluency to support comprehension.</li> <li>b. Read various on-level texts with purpose and understanding.</li> <li>c. Use context to confirm or self-correct word recognition.</li> </ul>		
Grade Span	Adolescence		
	Grades 9-Diploma		
Performance Expectations	<ul style="list-style-type: none"> <li>a. Read with sufficient accuracy and fluency to support comprehension.</li> <li>b. Read various on-level texts with purpose and understanding.</li> <li>c. Use context to confirm or self-correct word recognition.</li> </ul>		

## WRITING

Writing is a lifelong, essential tool for communication. In order to prepare students for varied and evolving writing tasks, students should write routinely, in both long and short time frames, as a means of building writing stamina. Moreover, students should write in a breadth of modes and forms across all disciplines. This includes the foundational instruction of legible handwriting forms and skills such as printing, cursive, typing, as well as the use of technology to compose, where the use of formatting supports the task, audience, and purpose.

In order to manage the increasing complexity of what students read and write, educators provide guidance and support when developmentally appropriate, with the understanding that students need to develop autonomy and independence over time, particularly at the upper grade levels. To that end, the standards include a developmentally appropriate progression of performance expectations that includes all grade levels. The K-5 performance expectations reflect a foundational level of skill acquisition, while the 6-8 and 9-Diploma grade bands expect that writing grows in sophistication and complexity.

The strand of writing includes three standards, which have been arranged to reflect a traditional learning progression in the classroom, incorporating the use of technology when authentic to the task. Students begin with an exploration of a variety of texts/ideas, then use a process to refine, plan, and craft the communication of ideas, and finally compose with a style that reflects awareness of task, audience, and purpose. The standard and performance expectations for composing are consistent regardless of mode; therefore, the performance expectations for common modes (argument/opinion, informational/expository, and narrative) have been outlined in supporting documents.

Strand	<b>WRITING: Inquiry to Build and Present Knowledge</b>		
Standard 1	<b>Use an inquiry process to gather relevant, credible information/evidence from a variety of sources (e.g., print, digital, discussions, etc.) that build understanding of and lead to conclusions about a subject under investigation while avoiding plagiarism.</b>		
Grade	Childhood		
Performance Expectations	Kindergarten	Grade 1	Grade 2
	a. Investigate questions by participating in shared research and writing projects. b. Gather information from provided sources and/or recall information from experiences in order to answer questions with guidance and support from adults.	a. Investigate questions by participating in shared research and writing projects. b. Gather information from provided sources and/or recall information from experiences in order to answer questions with guidance and support from adults.	a. Investigate questions by participating in shared research and writing projects. b. Gather information from provided sources and/or recall information from experiences in order to answer questions.
Grade	Childhood		
Performance Expectations	Grade 3	Grade 4	Grade 5
	a. Investigate questions by participating in research that builds knowledge about a topic. b. Gather information from a variety of sources and/or recall information from experiences in order to answer questions. c. Take brief notes on sources and sort information into provided categories.	a. Investigate questions by participating in research that builds varied knowledge about a topic. b. Gather relevant information from a variety of sources and/or recall information from experiences in order to answer questions. c. Take notes on sources and sort information into provided categories. d. Provide a list of sources.	a. Investigate and generate questions by participating in research that builds varied knowledge about a topic. b. Gather relevant information from a variety of sources and/or recall information from experiences in order to answer questions. c. Summarize or paraphrase notes on sources and sort information into provided categories. d. Provide a list of sources.

Grade Span	Early Adolescence
	Grade 6-8
Performance Expectations	<ul style="list-style-type: none"> <li>a. Investigate self-generated questions by participating in inquiry that builds increasingly complex knowledge, refocusing inquiry as needed.</li> <li>b. Assess the credibility and accuracy of a variety of sources in order to gather relevant information that leads to conclusions.</li> <li>c. Take organized notes that purposefully quote, summarize, and/or paraphrase a variety of sources while avoiding plagiarism.</li> <li>d. Follow a standard format for citation (in-text and a list of sources) that applies to task, audience, and purpose.</li> </ul>
Grade Span	Adolescence
	Grades 9-Diploma
Performance Expectations	<ul style="list-style-type: none"> <li>a. Investigate self-generated questions by participating in sustained inquiry that builds increasingly complex knowledge or that solves a problem, refocusing inquiry and/or incorporating effective advanced searches as needed.</li> <li>b. Assess the credibility, accuracy, and usefulness of a variety of authoritative sources in order to synthesize relevant information that leads to logical, increasingly complex conclusions.</li> <li>c. Take organized notes that purposefully quote, summarize, and/or paraphrase a variety of sources while avoiding plagiarism and overreliance on any one source.</li> <li>d. Follow a standard format for citation (in-text and a list of sources) that applies to task, audience, and purpose.</li> </ul>

Strand	<b>WRITING: Process and Production</b>		
Standard 2	<b>Develop, strengthen, and produce polished writing by using a collaborative process that includes the age-appropriate use of technology.</b>		
Grade	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	<p>a. With guidance and support from adults, respond to questions and suggestions from peers and add details to strengthen writing as needed.</p> <p>b. With guidance and support from adults, explore a variety of digital tools to produce and publish writing, including peer collaboration.</p>	<p>a. With guidance and support from adults, focus on a topic, respond to questions and suggestions from peers, and add details to strengthen writing as needed.</p> <p>b. With guidance and support from adults, use a variety of digital tools to produce and publish writing, including peer collaboration.</p>	<p>a. With guidance and support from adults and peers, focus on a topic and strengthen writing as needed by revising and editing.</p> <p>b. With guidance and support from adults, use a variety of digital tools to produce and publish writing, including peer collaboration.</p>
Grade	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	<p>a. With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.</p> <p>b. With guidance and support from adults, use technology to produce writing, as well as to interact and collaborate with others.</p> <p>c. Develop keyboarding skills.</p>	<p>a. With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.</p> <p>b. With some guidance and support from adults, use technology to produce writing, as well as to interact and collaborate with others.</p> <p>c. Demonstrate sufficient command of keyboarding skills to produce sustained writing of increasing length.</p>	<p>a. With guidance and support from peers and adults, develop and strengthen writing as needed by planning, composing, revising, editing, rewriting, reflecting, and/or trying a new approach.</p> <p>b. With some guidance and support from adults, use technology to produce writing, as well as to interact and collaborate with others.</p> <p>c. Demonstrate sufficient command of keyboarding skills to produce sustained writing of increasing length.</p> <p>d.</p>

Grade Span	Early Adolescence Grade 6-8
Performance Expectations	<ul style="list-style-type: none"> <li>a. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, composing, revising, editing, rewriting, reflecting, and/or trying a new approach, focusing on how well purpose and audience have been addressed.</li> <li>b. Use technology to produce writing, as well as to interact and collaborate with others.</li> <li>c. Demonstrate and maintain command of keyboarding skills to produce sustained writing of increasing length.</li> </ul>
Grade Span	Adolescence Grades 9-Diploma
Performance Expectations	<ul style="list-style-type: none"> <li>a. Develop and strengthen writing as needed by planning, composing, revising, editing, rewriting, reflecting, and/or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.</li> <li>b. Use technology and ongoing feedback, including new arguments and information, to produce increasingly dynamic writing products.</li> <li>c. Demonstrate and maintain command of keyboarding skills to produce sustained writing of increasing length.</li> </ul>

<b>Strand</b>	<b>WRITING: Composing for Audience and Purpose</b>		
<b>Standard 3</b>	<b>Routinely produce a variety of clear and coherent writing in which the development, organization, and style are appropriate to task, audience, and purpose.</b>		
Grade	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	<ul style="list-style-type: none"> <li>a. Print many upper- and lowercase letters.</li> <li>b. Use a combination of drawing and writing to communicate a topic.</li> </ul>	<ul style="list-style-type: none"> <li>a. Print all upper- and lowercase letters.</li> <li>b. Use a combination of drawing and writing to communicate a topic with details.</li> </ul>	<p>Use a combination of drawing, and writing to communicate a topic with a beginning, middle (including details), and an end.</p>

Grade	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	<ul style="list-style-type: none"> <li>a. Use a combination of illustrations and writing to produce pieces with introductions and bodies including details and conclusions.</li> <li>b. Develop the topic with relevant supporting details.</li> <li>c. Use developmentally appropriate linking words and phrases.</li> <li>d. Use precise vocabulary/word choice.</li> <li>e. Provide a sense of closure that is related to the ideas presented.</li> </ul>	<ul style="list-style-type: none"> <li>a. Produce writing to communicate clearly and to organize increasingly complex pieces with introductions and bodies including details and conclusions.</li> <li>b. Develop the topic with relevant supporting details.</li> <li>c. Use developmentally appropriate linking words and phrases with increasing complexity.</li> <li>d. Use precise vocabulary/word choice.</li> <li>e. Provide a sense of closure that is related to the ideas presented.</li> </ul>	<ul style="list-style-type: none"> <li>a. Produce writing to communicate clearly and organize increasingly complex pieces with introductions and bodies including details and conclusions.</li> <li>b. Develop the topic with relevant, logically ordered supporting details.</li> <li>c. Use developmentally appropriate linking words and phrases with increasing complexity.</li> <li>d. Use precise vocabulary/word choice.</li> <li>e. Provide a sense of closure that is related to the ideas presented.</li> </ul>
Grade Span	Early Adolescence		
	Grade 6-8		
Performance Expectations	<ul style="list-style-type: none"> <li>a. Compose clear and increasingly complex pieces with sections that are organized according to task, audience, and purpose.</li> <li>b. Develop and support the topic with relevant techniques and logically ordered details.</li> <li>c. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas.</li> <li>d. Effectively use increasingly complex and precise language to establish an appropriate voice and tone.</li> <li>e. Provide a sense of closure that follows from, supports, and reflects the purpose of the piece.</li> </ul>		

Grade Span	Adolescence
	Grades 9-Diploma
Performance Expectations	<ol style="list-style-type: none"><li>a. Compose clear and increasingly varied and complex pieces with purposefully designed sections that are organized to fully explore the depth and significance of ideas that are appropriate to task, audience, and purpose.</li><li>b. Develop and support the topic with a variety of relevant techniques and by purposefully embedding the most significant details.</li><li>c. Use appropriate and varied transitions, along with purposeful syntax, to create cohesion that clarifies relationships among increasingly complex ideas.</li><li>d. Effectively use increasingly sophisticated, precise language to establish a highly developed voice and tone.</li><li>e. Provide closure that enhances, supports, and reflects the purpose of the piece.</li></ol>

## HEALTH EDUCATION AND PHYSICAL EDUCATION

The Health Education and Physical Education Standards and performance expectations represent the essential knowledge and skills students need to be healthy individuals and lifelong learners. Being a lifelong learner involves the awareness and understanding of health and physical literacy. “Personal health literacy is the degree to which individuals have the ability to find, understand, and use information and services to inform health related decisions and actions for themselves and others.” (US CDC). “Physical literacy is the ability to move with competence and confidence in a wide variety of physical activities in multiple environments that benefit the healthy development of the whole person” (SHAPE America). Social and emotional learning is naturally embedded in both health education and physical education. Students participate in an inclusive learning environment that values the interests of all Maine children through opportunities to learn and practice social and emotional skills and behaviors. Through achievement of the Health Education and Physical Education Standards, students will practice an active and balanced approach to life, take responsibility for their own wellness and contribute to the health and well-being of their own community.

Highly effective **health education** programs provide students with knowledge and the skills to thrive physically, mentally, emotionally, and socially across their lifetime. Health education can assist students to be better consumers of information, manage the complex world around them and be more inclusive of others. Through an effective skills-based health education curriculum, students will practice skills that protect, promote and enhance lifelong health.

Highly effective **physical education** programs provide students with a variety of skills and knowledge that foster the confidence to be active for a lifetime. A physically literate individual is prepared with a foundation of knowledge and skill development, along with the tools to analyze their personal fitness. Students who participate in quality physical education on a regular basis understand the benefits of physical activity and how it contributes to a lifetime commitment to an active lifestyle.

### Statutes

[§4711. Elementary Course of Study, Mental Health and Reducing Stigma](#)

[§4712. Junior High or Middle School Course of Study, Mental Health and Reducing Stigma](#)

[§4723. Health and Physical Education including Affirmative Consent](#)

[§4502. School Approval Requirements 5-b. Suicide Awareness Education And Training](#)

[§4502. School Approval Requirements - Child Sexual Abuse Prevention Education and Response](#)

[§6304. Automated external defibrillators and cardiopulmonary resuscitation](#)

[§6671. Youth Mental Health First Aid Training](#)

[§1902. Definitions, 1-A Maine Comprehensive Family Life Education](#)

[§272. Tobacco Prevention and Control Program](#)

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**Guiding Principles**

The Guiding Principles guide education in Maine and should be reflected throughout the Health Education curriculum. Examples of how students can show evidence of those guiding principles in Health Education may include:

1. Clear and Effective Communicator
  - Health Education students identify and demonstrate effective communication skills within healthy relationships.
  - Physical Education students use appropriate communication skills and strategies when working with others in a variety of physical activity settings.
2. Self-Directed and Lifelong Learner
  - Health Education students practice and apply goal setting skills as they relate to enhancing health.
  - Physical Education students practice and apply goal setting skills as they relate to enhancing physical activity and fitness.
3. Creative and Practical Problem Solver
  - Health Education students utilize decision making strategies and reflect on the outcomes of their choices in relation to health behaviors.
  - Physical Education students practice and apply critical thinking skills to skill improvement and game strategies.
4. Respectful and Involved Citizen
  - Health Education students examine and evaluate community health issues, the influences and using advocacy skills for healthy changes.
  - Physical Education students cooperate and collaborate with others during physical education classes through active, safe and respectful communication and participation.
5. Integrative and Informed Thinker
  - Health Education students apply and analyze the influences of peers, family and the media on personal health.
  - Physical Education students use information from a variety of sources to modify and improve skills and movement/game strategies.

Strand	Health Education
Standard HE.1 - Health Concepts	
Standard HE.2 - Health Information, Products, and Services	
Standard HE.3 - Health Promotion and Risk Reduction	
Standard HE.4 - Influences on Health	
Standard HE.5 - Communication and Advocacy Skills	
Standard HE.6 - Decision-Making and Goal-Setting Skills	

Standard 1	<b>Health Concepts: Health literate students comprehend concepts related to health promotion and disease prevention to enhance health.</b>		
<b>Childhood</b>			
Performance Expectations	Kindergarten	Grade 1	Grade 2
<b>1.1 Health Concepts, Behaviors and Personal Health</b>	Students name basic healthy behaviors, including nutrition; personal health; and safety and injury prevention.	Students name basic health terms and behaviors, including healthy relationships; nutrition; personal health; and safety and injury prevention.	Students recognize healthy behaviors including healthy relationships; nutrition; personal health; and safety and injury prevention.
<b>1.2 Dimensions of Health</b>	Students name the dimensions of health including physical and social health.	Students identify dimensions of health including physical, mental, social, emotional and health.	Students recognize the multiple dimensions of health including physical, mental, social and emotional..
<b>1.3 Health Conditions</b>	Students list prevention strategies for common childhood communicable diseases.	Students identify the transmission and prevention of common childhood communicable diseases.	Students describe the transmission and prevention of common childhood communicable diseases.
<b>1.4 Environment and Personal Health</b>	Students list qualities of a safe and healthy school environment.	Students identify ways a safe and healthy school environment can promote personal health.	Students describe ways a safe and healthy school environment can promote personal health.
<b>1.5 Growth and Development</b>	Students name personal and public body parts.	Students label personal and public body parts.	Students recognize that the body changes throughout the lifespan.
Performance Expectations	Grade 3	Grade 4	Grade 5
<b>1.1 Health Concepts, Behaviors and Personal Health</b>	Students describe how healthy behaviors impact personal health, including healthy relationships; nutrition; safety and injury prevention; and substance use prevention.	Students describe how healthy and unhealthy behaviors impact personal health, including healthy relationships; nutrition; safety and injury prevention; and substance use prevention.	Students predict how healthy and unhealthy behaviors affect personal health, including healthy relationships; nutrition; safety and injury prevention; and substance use prevention.
<b>1.2 Dimensions of Health</b>	Students recall the dimensions of health including physical, mental, social and emotional.	Students define the dimensions of health including physical, mental, social and emotional.	Students explain the dimensions of health including physical, mental, social and emotional.
<b>1.3 Health Conditions</b>	Students identify ways to prevent and detect common childhood health conditions.	Students identify ways to prevent, detect, treat, and/or manage common childhood health conditions.	Students describe ways to prevent, detect, treat, and/or manage common childhood health conditions.

<b>1.4 Environment and Personal Health</b>	Students explain ways a safe and healthy environment can promote personal health.	Students explain ways a safe and healthy environment can positively and negatively impact personal health.	Students identify current health issues that relate to one's environment and the impact on personal health.
<b>1.5 Growth and Development</b>	Students recognize that bodies change at different rates.	Students explore ways their bodies grow, change, and develop through adolescence.	Students describe how their bodies grow, change, and develop physically, mentally, socially, and emotionally through adolescence.
<b>Early Adolescence</b>			
<b>Performance Expectation</b>	<b>Grades 6 - 8</b>		
<b>1.1 Health Concepts, Behaviors and Personal Health</b>	Students explain the importance of assuming responsibility for behaviors and the impact it has on personal health related to healthy sexuality; nutrition; safety and injury prevention; and substance abuse prevention.		
<b>1.2 Dimensions of Health</b>	Students explain the interrelationship of the dimensions of health including physical, mental, social and emotional.		
<b>1.3 Health Conditions</b>	Students investigate causes of health conditions and ways to reduce, prevent, treat, and/or manage them.		
<b>1.4 Environment and Personal Health</b>	Students determine how the environment and other factors impact personal health.		
<b>Adolescence</b>			
<b>Performance Expectation</b>	<b>Grades 9 - Diploma</b>		
<b>1.1 Health Concepts, Behaviors and Personal Health</b>	Students analyze the impact of complex health issues on personal health related to healthy sexuality; nutrition; safety and injury prevention; and substance abuse prevention.		
<b>1.2 Dimensions of Health</b>	Students analyze the impact of current health issues on the dimensions of health including physical, mental, social and emotional.		
<b>1.3 Health Conditions</b>	Students analyze causes of health conditions and ways to reduce, prevent, treat, and/or manage them.		
<b>1.4 Environment and Personal Health</b>	Students analyze how one's environment and other factors impact personal health.		

<b>Standard 2</b>	<b>Health Information, Products, and Services: Health literate students can demonstrate the ability to access valid health information, services, and products to enhance health.</b>		
<b>Childhood</b>			
<b>2.1 Reliability of Resources</b>	Students label trusted adults and professionals who can help promote health.	Students identify trusted adults and professionals who can help promote health.	Students describe the characteristics of trusted adults and professionals who can help promote health.
<b>2.2 Locating Health Resources</b>	Students identify school and community health helpers.	Students identify the locations of school and community health helpers.	Students describe ways to locate school and community health helpers.
<b>Performance Expectations</b>	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>2.1 Reliability of Resources</b>	Students identify characteristics of reliable health information, products, and trusted adults.	Students describe characteristics of reliable health information, products, and trusted adults.	Students compare and contrast characteristics of reliable health information, products, and trusted adults.
<b>2.2 Locating Health Resources</b>	Students identify resources from home, school, and the community that provide reliable health information.	Students explore resources from home, school, and the community that provide reliable health information.	Students locate resources from home, school, and the community that provide reliable health information.
<b>Early Adolescence</b>			
<b>Performance Expectation</b>			
<b>2.1 Reliability of Resources</b>	Students analyze the reliability of health information, products, and services.		
<b>2.2 Accessing Health Resources</b>	Students locate reliable health information, products, and services.		
<b>Adolescence</b>			
<b>Performance Expectation</b>			
<b>2.1 Reliability of Resources</b>	Students evaluate the reliability and accessibility of health information, products, and services.		
<b>2.2 Accessing Health Resources</b>	Students access reliable health information, products, and services.		
<b>2.1 Reliability of Resources</b>	Students label trusted adults and professionals who can help promote health.		

<b>Standard 3</b>	<b>Health Promotion and Risk Reduction: Health literate students demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks for self and others.</b>		
<b>Childhood</b>			
<b>Performance Expectations</b>	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>3.1 Health-Enhancing Behaviors and Self-Management</b>	Students name health-enhancing behaviors to improve personal health including self-management skills.	Students describe health-enhancing behaviors to improve personal health including self-management skills.	Students apply health-enhancing behaviors to improve personal health including self-management skills.
<b>3.2 Avoiding/Reducing Health Risks</b>	Students name behaviors to help avoid or reduce personal health risks.	Students recognize behaviors to help avoid or reduce personal health risks.	Students explain behaviors to help avoid or reduce personal health risks.
<b>Performance Expectations</b>	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>3.1 Health-Enhancing Behaviors and Self-Management</b>	Students examine health-enhancing behaviors to improve or maintain personal health including self-management skills.	Students explain health-enhancing behaviors to improve or maintain personal health including self-management skills.	Students demonstrate health-enhancing behaviors to improve or maintain personal health including self-management skills.
<b>3.2 Avoiding/Reducing Health Risks</b>	Students examine a variety of behaviors to help avoid or reduce personal health risks to self and others.	Students explain a variety of behaviors to help avoid or reduce personal health risks to self and others.	Students demonstrate a variety of behaviors to help avoid or reduce health risks to self and others.
<b>Early Adolescence</b>			
<b>Performance Expectation</b>	<b>Grades 6 - 8</b>		
<b>3.1 Health-Enhancing Behaviors and Self-Management</b>	3.1.6-8a - Students explain the importance of assuming responsibility for personal health behaviors.		
	3.1.6-8b - Students apply health-enhancing behaviors to improve or maintain the health of self and others, including self-management skills.		
<b>3.2 Avoiding/Reducing Health Risks</b>	Students demonstrate health-enhancing behaviors to avoid or reduce health risks to self and others.		
<b>Adolescence</b>			
<b>Performance Expectation</b>	<b>Grades 9 - Diploma</b>		
<b>3.1 Health-Enhancing Behaviors and Self-Management</b>	3.1.9-Da - Students analyze the role of individual responsibility for enhancing health.		
	3.1.9-Db - Students evaluate health-enhancing behaviors to improve or maintain the health of self and others, including self-management skills.		
<b>3.2 Avoiding/Reducing Health Risks</b>	Students assess health-enhancing behaviors to avoid or reduce health risks to self and others.		

<b>Standard 4</b>	<b>Influences on Health: Health literate students analyze the influences of family, peers, culture, media, technology and other factors on health practices and behaviors.</b>		
<b>Childhood</b>			
<b>Performance Expectations</b>	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>4.1 Influences on Health Behaviors</b>	Students recognize people who influence their health behaviors.	Students name people who influence their health behaviors.	Students identify multiple influences on personal health behaviors including peers, family, and media.
<b>4.2 Effects of Health Behaviors</b>	Students recognize factors that influence health behaviors.	Students identify factors that influence health behaviors.	Students describe factors that influence health behaviors.
<b>Performance Expectations</b>	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>4.1 Influences on Health Behaviors</b>	Students identify how a variety of factors influence personal health behaviors including peers, family, school, community, media, and technology.	Students explore how a variety of factors influence personal health behaviors including peers, family, community, culture, media, technology, and social platforms.	Students describe how a variety of factors influence personal health behaviors including peers, family, community, culture, media, technology, and social platforms.
<b>4.2 Effects of Health Behaviors</b>	Students list health behaviors that could influence future behaviors.	Students identify how health behaviors could influence future behaviors.	Students describe how health behaviors could influence future behaviors.
<b>Early Adolescence</b>			
<b>Performance Expectation</b>	<b>Grades 6 - 8</b>		
<b>4.1 Influences on Health Behaviors</b>	Students analyze positive and negative influences on adolescent health practices and behaviors including peers, family, media, culture, community, technology, and social platforms.		
<b>4.2 Compound Effects of Health Behaviors</b>	Students examine how health-enhancing and risky behaviors can influence the likelihood of engaging in more of the same behaviors.		
<b>Adolescence</b>			
<b>Performance Expectation</b>	<b>Grades 9 - Diploma</b>		
<b>4.1 Influences on Health Behaviors</b>	Students evaluate positive and negative influences on health practices and behaviors including peers, family, media, culture, community, perception of norms, government, technology, and social platforms.		
<b>4.2 Compound Effects of Health Behaviors</b>	Students analyze how health-enhancing and risky behaviors can influence the likelihood of engaging in more of the same behaviors.		

<b>Standard 5</b>	<b>Communication and Advocacy Skills: Health literate students demonstrate the ability to use interpersonal communication and advocacy skills to enhance personal, family, and community health.</b>		
<b>Childhood</b>			
<b>Performance Expectations</b>	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>5.1 Interpersonal Communication Skills</b>	Students name healthy and unhealthy ways to communicate.	Students demonstrate healthy ways to communicate.	Students describe verbal and non-verbal ways to communicate.
<b>5.2 Advocacy Skills</b>	Students name healthy ways to express their needs, wants, and feelings.	Students recognize ways to ask for help to promote health for self and others.	Students demonstrate ways to promote health for self and/or others.
<b>Performance Expectations</b>	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>5.1 Interpersonal Communication Skills</b>	Students demonstrate effective communication skills to enhance personal health including written, face-to-face and safe use of technology.	Students demonstrate effective communication skills to enhance personal and family health including written, face-to-face, and safe use of technology.	Students demonstrate effective communication skills to enhance personal, family, and community health including written, face-to-face, and safe use of technology.
<b>5.2 Advocacy Skills</b>	Students explore ways to promote health for self, others, and school.	Students demonstrate ways to promote health for self, others, and school.	Students demonstrate ways to share informed opinions to promote health for self and others.
<b>Early Adolescence</b>			
<b>Performance Expectation</b>	<b>Grades 6 - 8</b>		
<b>5.1 Interpersonal Communication Skills</b>	Students apply effective interpersonal communication skills including affirmative consent, refusal and negotiation skills to enhance health and build relationships including written, face-to-face, and safe use of technology.		
<b>5.2 Advocacy Skills</b>	Students utilize advocacy skills for self and others to make positive health choices.		
<b>Adolescence</b>			
<b>Performance Expectation</b>	<b>Grades 9 - Diploma</b>		
<b>5.1 Interpersonal Communication Skills</b>	Students analyze effective communication skills for self and others to enhance health and build relationships including affirmative consent, refusal and negotiation skills.		
<b>5.2 Advocacy Skills</b>	Students analyze advocacy skills for self and others to make positive health choices.		

<b>Standard 6</b>		<b>Decision-Making and Goal-Setting Skills: Health literate students demonstrate the ability to make decisions and set goals to enhance health.</b>		
<b>Childhood</b>				
<b>Performance Expectations</b>	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>	
<b>6.1 Decision-Making Skills</b>	Students name health situations where a decision is needed.	Students identify health situations where a decision is needed.	Students identify health situations where decisions can appropriately be made by the individual and when assistance is needed.	
<b>6.2 Goal-Setting Skills</b>	Students identify what health goals are.	Students explore when health goals are useful.	Students identify resources to help achieve a personal health goal.	
<b>Performance Expectations</b>	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>	
<b>6.1 Decision-Making Skills</b>	Students identify a decision-making process to enhance health.	Students describe when to use a decision-making process to enhance health.	Students apply a decision making process to enhance health.	
<b>6.2 Goal-Setting Skills</b>	Students identify the goal-setting process to enhance health.	Students describe when to use a goal-setting process to enhance health.	Students practice the goal-setting process to achieve a personal health goal.	
<b>Early Adolescence</b>				
<b>Performance Expectation</b>	<b>Grades 6 - 8</b>			
<b>6.1 Decision-Making Skills</b>	Students apply decision-making skills to enhance health as an individual and through collaboration.			
<b>6.2 Goal-Setting Skills</b>	Students apply goal-setting skills to achieve a personal short-term health goal.			
<b>Adolescence</b>				
<b>Performance Expectation</b>	<b>Grades 9 - Diploma</b>			
<b>6.1 Decision-Making Skills</b>	Students analyze decision making skills to enhance health outcomes.			
<b>6.2 Goal-Setting Skills</b>	Students analyze goal-setting skills to achieve short and/or long-term personal health goals.			

Strand	Physical Education
Standard PE. 1 - Motor Skills and Movement Patterns	
Standard PE. 2 - Concepts and Strategies	
Standard PE. 3 – Fitness Education	
Standard PE. 4 - Responsible Personal and Social Behavior	
Standard PE. 5 - Recognition of the Value of Physical Activity	

Standard 1	<b>Motor Skills and Movement Patterns: Physically literate students demonstrate competency in a variety of motor skills and movement patterns.</b>			
Childhood				
Performance Expectations	Kindergarten	Grade 1	Grade 2	
<b>1.1 Locomotor Skills</b>	Practices critical elements of locomotor skills.	Uses recognizable forms of basic locomotor skills in different pathways, levels or directions.	Executes a combination of locomotor skills in different pathways, levels or directions.	
<b>1.2 Non-locomotor Skills</b>	Practices critical elements of non-locomotor skills.	Uses recognizable forms of non-locomotor skills to move and control the body.	Executes more complex non-locomotor skills to move and control the body.	
<b>1.3 Locomotor and Non-locomotor Combination Skills</b>	Replicates locomotor skills in response to teacher led creative movement sequence.	Combines locomotor and non-locomotor skills in a teacher designed movement sequence.	Performs a rhythmic activity with correct response to simple rhythms.	
<b>1.4 Manipulative Skills</b>	Practices critical elements of basic manipulative skills.	Uses critical elements of basic manipulative skills.	Executes a variety of manipulative skills while maintaining control of body and objects/ equipment.	
Performance Expectations	Grade 3	Grade 4	Grade 5	
<b>1.1 Locomotor Skills</b>	Demonstrates mature patterns of locomotor skills	Demonstrates combinations of complex locomotor skills in various physical activity settings.	Applies combinations of complex locomotor skills specific to individual, dual, and team activities.	
<b>1.2 Non-locomotor Skills:</b>	Demonstrates mature use of non-locomotor skills.	Demonstrates complex non-locomotor skills in various activities.	Applies combinations of complex non-locomotor skills specific to individual, dual and team activities.	
<b>1.3 Locomotor Non-locomotor Combination Skills</b>	Performs teacher-selected and developmentally appropriate dance steps and /or movement patterns.	Combines locomotor movement patterns and dance steps to create and perform an original movement sequence.	Combines locomotor skills and movement concepts with rhythm and patterns.	
<b>1.4 Manipulative Skills</b>	Demonstrates critical elements of basic manipulative skills.	Demonstrates maturing manipulative skills in a non-dynamic environment.	Applies maturing manipulative skills in individual, dual, and team activities.	

Early Adolescence			
Grades 6 - 8			
Performance Expectation	Emerging	Maturing	Applying
<b>1.1 Movement and Rhythm</b>	Demonstrates rhythmic movement and patterns with emphasis in keeping the beat.	Demonstrates rhythmic movement and patterns for different dances and activities.	Exhibits command of rhythm and timing by creating a movement sequence as an individual or in a group.
<b>1.2 Game and Sport Skills</b>	Uses specialized skills that are refined and appropriate for modified game play.	Demonstrates complex combinations of movements specific to at least two game, sport, or physical activities.	Executes complex combinations of movements specific to at least two game, sport, or physical activities.
<b>1.3 Offensive and Defensive Skills</b>	Demonstrates basic offensive and defensive movement skills for games, sports or physical activities.	Performs basic offensive and defensive movement skills for games, sports or physical activities.	Applies offensive and defensive movement skills for at least two games, sports or physical activities that contribute to successful participation.
<b>1.4. Lifetime Activities</b>	Demonstrates basic skills in individual performance or outdoor lifetime activities.	Performs basic skills in individual performance or outdoor lifetime activities.	Applies skills in at least two individual performance or outdoor lifetime activities that contribute to successful participation.

Adolescence		
Grades 9-Diploma		
Performance Expectations	Level 1	Level 2
<b>1.1 Movement and Rhythm</b>	Creates movement combinations in rhythmic activities with an emphasis on keeping to the beat.	Performs movement combinations in rhythmic activities with an emphasis on keeping to the beat.
<b>1.2 Game and Sport Skills</b>	Applies basic and/or advanced skills to participate proficiently in at least three individual, dual, or team games, sports or physical activities.	Refines basic and/or advanced skills to participate proficiently in at least three individual, dual, or team games, sports or physical activities.
<b>1.3 Lifetime Activities</b>	Demonstrates competency and/or refines activity-specific movement skills in a variety of lifetime activities.	Refines activity-specific movement skills in a variety of lifetime activities.

<b>Standard 2</b>	<b>Concepts and Strategies: Physically literate students apply knowledge of concepts, principles, strategies and tactics related to movement and performance.</b>		
<b>Childhood</b>			
<b>Performance Expectations</b>	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>2.1 Movement Concepts</b>	Demonstrates a variety of movements associated with basic motor performance.	Utilizes basic motor movements in activity and game play.	Demonstrates basic motor performance in conjunction with manipulative skills.
<b>2.2 Strategies and Tactics</b>	Uses teacher feedback to improve basic form and function.	Uses teacher feedback to improve basic motor performance in conjunction with manipulative skills.	Understands/explains the importance of feedback as it relates to improved motor performance.
<b>Performance Expectations</b>	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>2.1 Movement Concepts</b>	Utilizes basic motor movements and manipulative skills during activity and games.	Applies basic concepts of movement to improve individual (personal) performance.	Assesses movement and game skills to provide feedback for improvement.
<b>2.2 Strategies and Tactics</b>	Demonstrates basic strategies and tactics for modified activities and games.	Utilizes basic strategies and tactics for a variety of activities and games.	Demonstrates basic offense and defense strategies in modified games and activities.

<b>Early Adolescence</b>			
<b>Grades 6 - 8</b>			
<b>Performance Expectations</b>	<b>Emerging</b>	<b>Maturing</b>	<b>Applying</b>
<b>2.1 Movement Concepts</b>	Applies advanced movement concepts to enhance game play/activities.	Applies concepts from other content areas (i.e. physics, geometry) to movement skills.	Utilizes complex movement principles to evaluate and improve performance.
<b>2.2 Strategies and Tactics</b>	Explains when and why strategies and tactics are utilized in game play and activities.	Demonstrates game strategies and tactics at appropriate times and using appropriate methods.	Applies appropriate game strategies and tactics during game play and activities.

<b>Adolescence</b>		
<b>Grades 9- Diploma</b>		
<b>Performance Expectations</b>	<b>Level 1</b>	<b>Level 2</b>
<b>2.1 Movement Concepts</b>	Applies complex movement concepts to refine learned skills and acquire new, advanced skills	Integrates increasing complex, content-specific knowledge (biomechanics) with movement skills.
<b>2.2 Strategies and Tactics</b>	Applies/integrates appropriate game strategies and tactics during game play and activities.	Creates and applies multiple offensive and defensive strategies for game play and activity.

<b>Standard 3</b>		<b>Fitness Education: Physically literate students demonstrate the knowledge and skills to plan, execute, self-monitor, achieve, and maintain a health-enhancing level of physical activity and/or fitness.</b>			
<b>Childhood</b>					
<b>Performance Expectations</b>	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>		
<b>3.1 Health-Related Fitness and Exercise.</b>	Identifies the physiological signs of moderate to vigorous physical activity,	Identifies the physiological responses of moderate to vigorous physical activity.	Identifies the physiological signs of moderate to vigorous physical activity and uses teachers' suggestions to modify intensity of the activity when needed.		
<b>3.2 Skill-Related Fitness and Training</b>	Demonstrates control of body and space when performing skill-related fitness components.	Demonstrates control of body, movement, and space when performing skill-related fitness components.	Demonstrates control of body in space when performing skill-related fitness components during game play and challenge activities.		
<b>3.3 Training Principles for Fitness and Sport</b>	Participates in a teacher-directed workout that includes moderate to vigorous physical activities.	Demonstrates proper technique when using one's own body as resistance.	Classifies activities as light, medium, and/or difficult based on the response of the physiological responses of the body.		
<b>3.4 Health-related and/or sport training and/or fitness plan</b>	Participates in a teacher-directed workout that includes moderate to vigorous physical activities.	Participates in a teacher-directed workout that includes moderate to vigorous physical activities.	Creates a simple workout plan using motor skill, movement concepts, health-related and/or skill-related fitness components.		
<b>3.5 Fitness, Sport, and Technology</b>	Participates in a teacher-directed skill-related fitness, and/or dance/movement video resource at school.	Participates in a teacher-directed skill-related fitness, and/or dance/movement video resource at school.	Participates in a teacher-directed skill-related fitness, and/or dance/movement video resource at school and/or at home.		
<b>3.6 Physical Activity, Community,</b>	Participates with family in activities that are enjoyable, challenging, fun and/or that allow for self-expression.	Participates with family or friends in activities that are enjoyable, challenging, fun and/or that allow for self-expression.	Identifies ways to be responsible for one's own fitness by choosing to be active at home or at school.		
<b>Performance Expectations</b>	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>		
<b>3.1 Health-Related Fitness and Exercise.</b>	Participates in exercises and/or activities and identifies muscle groups or body systems targeted.	Participates in targeted activities to improve specific health-related fitness components demonstrating appropriate form, technique, and principles of exercise.	Demonstrates appropriate form, technique, and principles and adjusts intensity to sustain activity		
<b>3.2 Skill-Related Fitness and Training</b>	Participates in exercises and/or activities and identifies the skill-related fitness component(s) targeted.	Participates in exercises, movement patterns, and/or sport skill activities and identifies the skill-related component(s) targeted.	Uses one or more skill-related fitness components used during exercise, movement patterns, or sport skill activities and identifies the skill-related component targeted.		

<b>3.3 Training Principles for Fitness and Sport</b>	Participates in workouts and identifies exercise and/or activities in each part of the workout.	Participates in workouts and describes and/or explains body responses to physical activities	Participates in workouts and describes and/or explains, measures and/or records body responses to physical activities.
<b>3.4 Health-related and/or sport training and/or fitness plan</b>	Uses movement or sport skills to create a simple workout that includes a warm-up, workout, and cool-down.	Creates and implements a workout plan using exercises and/or activities in one or more health-related components.	Creates and implements a workout plan using exercises and/or activities utilizing skill-related and/or health-related fitness components
<b>3.5 Fitness, Sport, and Technology</b>	Uses teacher-directed video-resources or apps to engage in fitness activities and/or skill-practice.	Uses teacher-directed technology tools to engage in fitness or skill-practice activities at home or at school.	Uses teacher-directed technology tools to measure or practice targeted lesson objectives.
<b>3.6 Physical Activity, Community,</b>	Participates actively in physical activities at recess.	Participates in activities at school and/or outside of school,	Identifies opportunities and participates in activities at school, outside of school, and in the community with family and friends.

### Early Adolescence

#### Grades 6 - 8

Performance Expectations	Emerging	Maturing	Applying
<b>3.1 Health-Related Fitness and Exercise.</b>	Demonstrates body positioning and/or technique when performing muscle strength, muscle endurance, and flexibility exercises.  Identifies and/or classifies exercises and physical activities for each health-related fitness components	Demonstrates proper body positioning and/or technique when executing muscle strength, muscle endurance, and flexibility exercises while engaged in health-related fitness activities (ex. Tabata, exercise circuit, etc.).  Maintains a pace while walking, jogging, or running.	Creates simple exercise routines and records workout data in a simple log.
<b>3.2 Skill-Related Fitness and Training</b>	Lists, defines, and explains skill-related fitness components and uses components in exercises and/or games.	Demonstrates improvements in skill-related fitness exercises	Creates a skill-related fitness exercise circuit and records data in a personal log
<b>3.3 Training Principles for Fitness and Sport</b>	Uses training principles to improve fitness or sport performance.	Uses measurement tools to identify intensity of exercise or activity	Examines fitness data to improve fitness or sport performance
<b>3.4 Health-related and/or sport training and/or fitness plan</b>	Engages/follows a teacher created exercise plan demonstrating proper posture and technique when performing exercises.	Designs and implements a personal fitness plan based on fitness or sport goals for physical education.	Designs and implements a personal fitness plan for home based on fitness or sport goals.

<b>3.5 Fitness, Sport, and Technology</b>	Uses teacher-directed technology tools to engage in health-related fitness activities for skill practice or for enjoyment.	Uses teacher-directed fitness-related technology tools to measure physical activity and/or practice lesson objectives.	Selects and uses technology tools to monitor exercise programs or uses video resources to gain ideas to create a new exercise plan.
<b>3.6 Physical Activity, Community,</b>	Identifies and/or participates in physical activities at school, home, and/or in the community	Participates in physical activities at school, home, and/or in the community	Creates a plan to be active at home or in community activities.

### Adolescence

#### Grades 9- Diploma

Performance Expectations	Level 1	Level 2
<b>3.1 Health-Related Fitness and Exercise.</b>	Executes with proper form and technique a wide variety of exercises in each of the health-related fitness components addressing all major muscle groups.  Engages in cardiorespiratory activities.	Analyzes one's personal preferences and/or choices of exercise and exercise tools for the benefits, risk, safety, accessibility, adherence, and enjoyment.  Develops and maintains a fitness portfolio that includes assessments, goals, activities, and a tracking system for personal improvement.
<b>3.2 Skill-Related Fitness and Training</b>	Participates and examines exercise programs that train each of the skill-related fitness components.	Designs or implements a training plan that incorporates one or more training principles.
<b>3.3 Training Principles for Fitness and Sport</b>	Applies training principles to health-related fitness exercise plans or a sport skill or sport fitness improvement plan.	Evaluates performance data and applies training principles to revise health-related fitness or sport skill/fitness plan to improve performance.
<b>3.4 Health-related and/or sport fitness or training plan</b>	Creates, implements, monitors (log), reassess, and revises a personal health-related and/or sport fitness plan for home, community, and school.	Creates, monitors (log), and revises one or more personal health-related and/or sport fitness plans implemented by one or more peers.
<b>3.5 Fitness, Sport, and Technology</b>	Investigates and uses available technology tools, applications, and connections on social media as tools for supporting a healthy, active lifestyle and/or to self-monitor exercise and/or physical activity.	Investigates and uses available technology tools, applications, and connections on social media as tools for supporting a healthy, active lifestyle and/or to self-monitor exercise and/or physical activity.
<b>3.6 Physical Activity, Community</b>	Evaluates one or more recreation or sport activities that can be pursued in the local community and evaluates the activity and/or activities based on benefits, social support networks, and participation requirements.	Evaluates one or more recreation or sport activities that can be pursued in the local community and evaluates the activity and/or activities based on benefits, social support networks, and participation requirements

<b>Standard 4</b>		<b>Responsible Personal and Social Behavior: Physically literate students exhibit responsible personal and social behavior that respects self and others.</b>		
<b>Childhood</b>				
<b>Performance Expectation</b>	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>	
<b>4.1 Personal Responsibility</b>	Uses basic strategies, concepts, and communication skills for working cooperatively in group settings.  Acknowledges responsibility for behavior when prompted.	Uses basic strategies, concepts, and communication skills for working cooperatively in group settings.  Accepts personal responsibility for behavior.	Explains the value of working cooperatively in group settings.  Accepts personal responsibility for behavior.	
<b>4.2 Working with Others</b>	Demonstrates cooperative skills.  Understands how social interaction can make activities more enjoyable.	Demonstrates cooperative skills.  Understands how social interaction can make activities more enjoyable.	Demonstrates cooperative skills.  Summarizes the benefits of positive social interaction to make activities more enjoyable.	
<b>4.3 Rules, Etiquette, and Safety</b>	Uses safe practices when engaging in physical education activities.	Uses safe practices when engaging in physical education activities.	Uses safe practices when engaging in physical education activities with little or no prompting.	
<b>Childhood</b>				
<b>Performance Expectation</b>	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>	
<b>4.1 Personal Responsibility</b>	Uses self-control to demonstrate personal responsibility and respect for self and others.	Uses self-control through structure, expectations, and engagement to demonstrate personal responsibility and respect for self and others.	Uses self-control to work independently in developing responsibility and respect for self and others.	
<b>4.2 Working with others</b>	Demonstrates cooperation and communication skills to achieve common goals. Explains the importance of working productively with others.	Demonstrates cooperation and communication skills to achieve common goals. Understands the importance of culture and ethnicity in developing self-awareness and working productively with others.	Demonstrates cooperation and communication skills to achieve common goals. Understands the importance of culture and ethnicity in developing self-awareness and working productively with others.	
<b>4.3 Rules, Etiquette, and Safety</b>	Uses safe practices when engaging in physical education activities with little or no prompting.	Uses safe practices when engaging in physical education activities without prompting.	Uses safe practices when engaging in physical education activities without prompting.	

<b>Early Adolescence</b>			
<b>Grades 6 - 8</b>			
<b>Performance Expectation</b>	<b>Emerging</b>	<b>Maturing</b>	<b>Applying</b>
<b>4.1 Personal Responsibility</b>	Exhibits personal responsibility by using appropriate strategies to seek greater independence from adults, and reinforce positive behaviors, when completing assigned tasks.	Demonstrates personal responsibility by using a variety of appropriate strategies to seek greater independence from adults, and reinforce positive behaviors, when completing assigned tasks.	Demonstrates personal responsibility by working independently from adults.  Consistently applies strategies to reinforce positive behaviors when completing assigned tasks.
<b>4.2 Cooperative Skills</b>	Uses well-developed cooperation skills to accomplish group goals in both cooperative and competitive situations.  Analyzes conflicts that arise in competitive activities to determine the most appropriate ways of resolving the conflicts.	Contrasts between appropriate and inappropriate strategies for communicating ideas and feelings.  Understands the role of diversity in physical activity, respecting limitations and strengths of members of a variety of groups.	Exemplifies well-developed cooperation skills to accomplish group goals in both cooperative and competitive situations.  Compares factors in different cultures and/or social settings that influence the choice of physical activity.
<b>4.3 Rules, Etiquette, and Safety</b>	Uses safe practices when engaging in physical education activities without prompting.	Uses safe practices when engaging in physical education activities without prompting.	Uses safe practices when engaging in physical education activities without prompting.
<b>Adolescence</b>			
<b>Grades 9 - Diploma</b>			
<b>Performance Expectations</b>	<b>Level 1</b>	<b>Level 2</b>	
<b>4.1 Personal Responsibility</b>	Demonstrates personal responsibility in all physical education activities.	Implements leadership skills to promote responsibility in self and others.	
<b>4.2 Cooperative Skills</b>	Apply appropriate communication and cooperative skills including problem solving and resolving conflict in a variety of physical activities and team or group situations.  Compares factors in different cultures and/or social settings that influence the choice of physical activity.	Selects the most appropriate ways of responding and mediation to settle conflicts.  Explains the influence of physical activity on cultural competence and the development of self-awareness	
<b>4.3 Rules, Etiquette, and Safety</b>	Uses safe practices when engaging in physical education activities.	Uses safe practices when engaging in physical education activities.	

<b>Standard 5</b>		<b>Recognition of the Value of Physical Activity: Physically literate students recognize the value of physical activity for health, enjoyment, challenge, self-expression, and /or social interaction.</b>		
<b>Childhood</b>				
<b>Performance Expectations</b>	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>	
<b>5.1 Health</b>	Recognizes that physical activity is important to good health.	Identifies that physical activity is a component of good health.	Recognizes the value of physical activity for good health.	
<b>5.2 Challenge</b>	Understands that some physical activities are challenging.	Recognizes challenges when learning a new physical activity.	Recognizes that perseverance in physical activities can lead to improvement	
<b>5.3 Self-expression and Enjoyment</b>	Identifies positive feelings that result from participating in physical activity.	Describes physical activities that are enjoyable.	Describes reasons for enjoying physical activity.	
<b>5.4 Social Interaction</b>	Recognizes that physical activity can help develop friendships.	Identifies that physical activity promotes opportunity for social interaction	Understands that physical activities can foster cooperation	
<b>Childhood</b>				
<b>Performance Expectations</b>	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>	
<b>5.1 Health</b>	Discusses the relationship between physical activity and health.	Examines the health benefits of participating in physical activity.	Compares the health benefits of participating in selected physical activities.	
<b>5.2 Challenge</b>	Describes how practice develops confidence in challenging physical activities	Understands that improving performance in challenging physical activities requires consistent practice	Explains how to overcome challenges essential for improvement	
<b>5.3 Self-expression and Enjoyment</b>	Identifies physical activities that provide opportunities for self-expression.	Identifies physical activities for the purpose of self-expression and enjoyment.	Analyzes how various physical activities promote self-expression and enjoyment.	
<b>5.4 Social Interaction</b>	Describes how physical activities can promote positive social interactions	Describes social benefits gained from participating in physical activity. Describe physical activities that promote camaraderie.	Describes social benefits of engaging in partner, small group, and large group physical activities.	
<b>Early Adolescence</b>				
<b>Grades 6 - 8</b>				
<b>Performance Expectations</b>	<b>Emerging</b>	<b>Maturing</b>	<b>Applying</b>	
<b>5.1 Health</b>	Identifies and compare health benefits and physical activities	Describes how different types of physical activity exert a positive impact on health and improve the quality of life.	Explains the connections between health-related fitness and overall physical and mental health, and the positive impacts on the quality of life.	

<b>5.2 Challenge</b>	Applies strategies for overcoming individual challenges in a physical activity setting.	Uses positive strategies when faced with a group challenge.	Applies strategies to overcome challenges in a physical activity.
<b>5.3 Self-expression and Enjoyment</b>	Describes how moving competently in a physical activity setting creates enjoyment. Identify how self-expression and physical activity are related.	Identifies why self-selected physical activities create enjoyment Explain the relationship between self-expression and lifelong enjoyment through physical activity.	Discusses how enjoyment can be increased in self-selected physical activities. Identify and participate in an enjoyable activity that prompts individual self-expressions.
<b>5.4 Social Interaction</b>	Demonstrates the importance of social interaction by following rules and encouraging others in various physical activities and games.	Demonstrates the importance of social interaction by avoiding trash talk and playing in the spirit of activities and games.	Demonstrates importance of social interaction by asking for help and helping others in various physical activities and games

**Adolescence**

**Grade 9 - Diploma**

<b>Performance Expectations</b>	<b>Level 1</b>	<b>Level 2</b>
<b>5.1 Health</b>	Analyzes the health benefits of physical activity.	Analyzes the health benefits of a self-selected physical activity.
<b>5.2 Challenge</b>	Chooses an appropriate level of challenge to experience success in a physical activity	Chooses an appropriate level of challenge to experience success in a self-selected physical activity
<b>5.3 Self-expression and Enjoyment</b>	Participates in a self-selected physical activity for self-expression and enjoyment	Participates in a self-selected physical activity for self-expression and enjoyment
<b>5.4 Social Interaction</b>	Identifies opportunities for social interaction in a self-selected physical activity	Evaluates opportunities for social interaction and social support in a self-selected physical activity.

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## Mathematics

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A strong mathematics education depends upon a clear understanding of its interrelated concepts, skills and practices to ensure students are on the pathway to success in their academic careers. The knowledge and skills students need to be prepared for mathematics in college, career, and life are woven throughout the K-12 mathematics performance expectations.

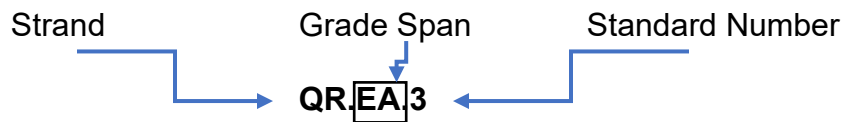
### Outline of Mathematics Strands and Standards

These mathematical performance expectations are building blocks to standards. The standards are grouped into four strands:

- **Quantitative Reasoning** (Blue): Counting and Cardinality, Number and Operations in Base Ten, Number and Operations Fractions, Ratio and Proportional Relations, The Number System, and Number and Quantity.
- **Algebraic Reasoning** (Green): Operations and Algebraic Thinking, Expressions and Equations, Functions, and Algebra
- **Geometric Reasoning** (Red): Geometry
- **Statistical Reasoning** (Purple): Measurement and Data, Statistics and Probability

These mathematical performance expectations are broken into three grade spans: **Childhood** (K-5), **Early Adolescence** (6-8), and **Adolescence** (9-Diploma). The strands are color-coded, as indicated above, for continuity throughout the grade spans. Standards do not work in isolation, they are connected through and across strands.

### How to Read the Standards



Within the high school performance expectations, modeling is woven throughout the four strands and is denoted with a star (★). The high school standards also contain some performance expectations which are denoted by a plus (+). These performance expectations are intended to be extensions of learning. All students should be given opportunities to explore this content, but mastery is not expected.

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### **The Guiding Principles & Standards for Mathematical Practice**

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The Guiding Principles influence education in Maine and should be reflected throughout Mathematics curriculum. The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. Full descriptions of the Guiding Principles and Standards for Mathematical Practice can be found in the Supplemental Material. Examples of how students can show evidence of those **Guiding Principles** and **Standards for Mathematical Practice** may include:

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#### **Guiding Principles**

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- A. **A clear and effective communicator:** Students will use written, oral, symbolic, and visual forms of expression to communicate mathematically.
- B. **A self-directed and lifelong learner:** Students generate and persevere in solving questions while demonstrating a growth mindset.
- C. **A creative and practical problem solver:** Students will pose and solve mathematical problems by using a variety of strategies that connect to real-world examples.
- D. **A responsible and involved citizen:** Students make sense of the world around them through mathematics including economic literacy.
- E. **An integrative and informed thinker:** Students connect mathematics to other learning by understanding the interrelationships of mathematical ideas and the role math plays in other disciplines and life.

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#### **Standards for Mathematical Practice**

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- 1. **Make sense of problems and persevere in solving them:** Students will plan strategies to use and persevere in solving math problems.
  - 2. **Reason abstractly and quantitatively:** Students will think about numbers in many ways and make sense of numerical relationships as they solve problems.
  - 3. **Construct viable arguments and critique the reasoning of others:** Students will explain their thinking and make sense of the thinking of others.
  - 4. **Model with mathematics:** Students will use representations to show their thinking in a variety of ways.
  - 5. **Use appropriate tools strategically:** Students will use math tools such as tables, diagrams, and technology to explore and deepen their understanding of concepts.
  - 6. **Attend to precision:** Students will use precise mathematical language and check their work for accuracy.
  - 7. **Look for and make use of structure:** Students will use their current mathematical understandings to identify patterns and structure to make sense of new learning.
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8. **Look for and express regularity in repeated reasoning:** Students will look for patterns and rules to help create general methods and shortcuts that can be applied to similar mathematical problems.

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### Quantitative Reasoning

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Quantitative reasoning is the application of basic mathematics skills to analyze and process real-world information. In the K-5 grades, students use numbers, including written numerals, to represent quantities and to solve quantitative problems. Students will work on counting and cardinality, number and operations in Base Ten and fractions. Students will develop strategies to extend their understanding of the base ten system and apply those strategies to solve real-world problems using all four operations. Students progress from working with whole numbers to fractions and decimals.

In grades 6-8 students use reasoning about multiplication and division to solve ratio and rate problems about quantities. They develop an understanding of proportionality to solve problems and graph relationships. Overall, students extend and develop their understanding of rational numbers and can compute in all operations. Students use these operations to solve real-world problems. Students use this understanding of rational numbers as they formulate expressions and equations in one variable and use these equations to solve problems. They reason about the order and absolute value of rational numbers and about the location of points in all four quadrants of the coordinate plane.

In the high school grades, the foundational concepts of operations with rational numbers and numerical properties built in the K-5 and 6-8 grade spans are applied to irrational numbers. Using a wider variety of units in modeling, (e.g. acceleration, currency conversions, and derived quantities such as person-hours and heating degree days), as well as the properties of rational and irrational numbers students are guided to the solution(s) to multi-step problems. Extending the properties of integer exponents to rational exponents deepens student understanding of how various but equivalent notations can facilitate their algebraic reasoning and problem-solving processes. Students are encouraged to expand these operations and properties into complex numbers, vectors, and matrices to further deepen their understanding of quantitative reasoning.

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Strand	Quantitative Reasoning- Counting and Cardinality		
Standard	<b>QR.C.1</b> Know the number names and the count sequence.		
	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	<p><b>K.CC.A.1:</b> Count to 100 by ones and by tens</p> <p><b>K.CC.A.2:</b> Count forward beginning from a given number within the known sequence (instead of having to begin at 1)</p> <p><b>K.CC.A.3:</b> Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects)</p>		
Strand	Quantitative Reasoning- Counting and Cardinality		
Standard	<b>QR.C.2</b> Count to tell the number of objects.		
	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	<p><b>K.CC.B.4:</b> Understand the relationship between numbers and quantities; connect counting to cardinality.</p> <p><b>K.CC.B.4a:</b> When counting objects, say the number names in the standard order, pairing each object with one</p>		

	<p>and only one number name and each number name with one and only one object.  <b>K.CC.B.4b:</b> Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.  <b>K.CC.B.4c:</b> Understand that each successive number name refers to a quantity that is one larger. Recognize the one more pattern of counting using objects.  <b>K.CC.B.5:</b> Count to answer “how many?” questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.</p>		
Strand	<b>Quantitative Reasoning- Counting and Cardinality</b>		
Standard	<b>QR.C.3</b> Compare numbers.		
	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	<b>K.CC.C.6:</b> Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another		

	group, e.g., by using matching and counting strategies. Include groups with up to ten objects.  <b>K.CC.C.7:</b> Compare two numbers between 1 and 10 presented as written numerals.		
Strand	<b>Quantitative Reasoning - Numbers and Operations in Base Ten</b>		
Standard	<b>QR.C.4</b> Extend the counting sequence.		
	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations		<b>1.NBT.A.1:</b> Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.	
Strand	<b>Quantitative Reasoning - Numbers and Operations in Base Ten</b>		
Standard	<b>QR.C.5</b> Understand place value.		
	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	<b>K.NBT.A.1:</b> Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (e.g., $18 = 10 + 8$ and $10+8=18$ ); understand that these numbers are composed of	<b>1.NBT.B.2:</b> Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:  <b>1.NBT.B.2a:</b> 10 can be thought of as a bundle of ten ones - called a "ten."	<b>2.NBT.A.1:</b> Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:  <b>2.NBT.A.1a:</b> 100 can be thought of as a bundle of ten tens - called a "hundred."

	<p>ten ones and one, two, three, four, five, six, seven, eight, or nine ones.</p>	<p><b>1.NBT.B.2b:</b> The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.  <b>1.NBT.B.2c:</b> The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).</p> <p><b>1.NBT.B.3:</b> Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols <math>&gt;</math>, <math>=</math>, and <math>&lt;</math>.</p>	<p><b>2.NBT.A.1b:</b> The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).</p> <p><b>2.NBT.A.2:</b> Count within 1000; skip-count by 5s, 10s, and 100s. Identify patterns in skip counting at any number. (For example, 37, 47, 57 or 328, 428, 528, etc.)</p> <p><b>2.NBT.A.3:</b> Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.</p> <p><b>2.NBT.A.4:</b> Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using <math>&gt;</math>, <math>=</math>, and <math>&lt;</math> symbols to record the results of comparisons.</p>
Strand	<b>Quantitative Reasoning - Numbers and Operations in Base Ten</b>		
Standard	<b>QR.C.6</b> Use place value understanding and properties of operations to add and subtract.		
	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations			<b>2.NBT.B.5:</b> Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

		<p><b>1.NBT.C.4:</b> Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.</p> <p><b>1.NBT.C.5:</b> Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.</p> <p><b>1.NBT.C.6:</b> Subtract multiples of 10 in the range 10-90 from multiples of</p>	<p><b>2.NBT.B.7:</b> Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.</p> <p><b>2.NBT.B.8:</b> Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.</p> <p><b>2.NBT.B.6:</b> Add up to four two-digit numbers using strategies based on place value and properties of operations.</p> <p><b>2.NBT.B.9:</b> Explain why addition and subtraction strategies work, using place value and the properties of operations. Explanations may be supported by drawings or objects.</p>
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		10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	
Strand	<b>Quantitative Reasoning - Numbers and Operations in Base Ten</b>		
Standard	<b>QR.C.7</b> Use place value understanding and properties of operations to perform multi-digit arithmetic with whole numbers and decimals to hundredths.		
	Childhood		
	Grade 3 A range of algorithms may be used.	Grade 4 Grade 4 expectations in this <i>strand</i> are limited to whole numbers less than or equal to 1,000,000	Grade 5
Performance Expectations	<p><b>3.NBT.A.2:</b> Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.</p> <p><b>3.NBT.A.3:</b> Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g., <math>9 \times 80</math>, <math>5 \times 60</math>) using strategies based on place value and properties of operations.</p>	<p><b>4.NBT.B.4:</b> Fluently add and subtract multi-digit whole numbers using the standard algorithm.</p> <p><b>4.NBT.B.5:</b> Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.</p>	<b>5.NBT.B.5:</b> Fluently multiply multi-digit whole numbers using the standard algorithm.

		<p><b>4.NBT.B.6:</b> Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.</p>	<p><b>5.NBT.B.6:</b> Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.</p> <p><b>5.NBT.B.7:</b> Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, money and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.</p>
<b>Strand</b>	<b>Quantitative Reasoning - Numbers and Operations in Base Ten</b>		
<b>Standard</b>	<b>QR.C.8</b> Understand the place value system.		
	Childhood		
	Grade 3 A range of algorithms may be used.	Grade 4 Grade 4 expectations in this <i>strand</i> are limited to whole numbers less than or equal to 1,000,000	Grade 5
<b>Performance Expectations</b>	<p><b>3.NBT.A.1:</b> Use place value understanding to round whole numbers to the nearest 10 or 100.</p>	<p><b>4.NBT.A.3:</b> Use place value understanding to round multi-digit whole numbers to any place.</p> <p><b>4.NBT.A.2:</b> Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings</p>	<p><b>5.NBT.A.4:</b> Use place value understanding to round decimals to any place.</p> <p><b>5.NBT.A.3:</b> Read, write, and compare decimals to thousandths. <b>5.NBT.A.3a:</b> Read and write decimals to thousandths using base-ten numerals, number names,</p>

		<p>of the digits in each place, using <math>&gt;</math>, <math>=</math>, and <math>&lt;</math> symbols to record the results of comparisons.</p> <p><b>4.NBT.A.1:</b> Recognize that in a multi-digit whole number, a digit in any place represents ten times what it represents in the place to its right. <i>For example, recognize that <math>700 \div 70 = 10</math> by applying concepts of place value and division.</i></p>	<p>and expanded form, e.g., <math>347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)</math>.</p> <p><b>5.NBT.A.3b:</b> Compare two decimals to thousandths based on meanings of the digits in each place, using <math>&gt;</math>, <math>=</math>, and <math>&lt;</math> symbols to record the results of comparisons.</p> <p><b>5.NBT.A.1:</b> Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and <math>1/10</math> of what it represents in the place to its left.</p> <p><b>5.NBT.A.2:</b> Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.</p>
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Strand	<b>Quantitative Reasoning - Numbers and Operations: Fractions</b>		
Standard	QR.C.9 Develop and extend the understanding of fractions as numbers, including equivalence and ordering.		
	Childhood		
	Grade 3 Grade 3 expectations in this <i>strand</i> are limited to fractions with denominators 2, 3, 4, 6, and 8.	Grade 4 Grade 4 expectations in this <i>strand</i> are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.	Grade 5
Performance Expectations	<p><b>3.NF.A.1:</b> Understand a unit fraction <math>1/b</math> as the quantity formed by 1 part when a whole is partitioned into <math>b</math> equal parts; understand a fraction <math>a/b</math> as the quantity formed by <math>a</math> parts of size <math>1/b</math>.</p> <p><b>3.NF.A.2:</b> Understand a fraction as a number on the number line; represent fractions on a number line diagram.</p> <p><b>3.NF.A.2a:</b> Represent a fraction <math>1/b</math> on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into <math>b</math> equal parts. Recognize that each part has size <math>1/b</math> and that the endpoint of the part based at 0 locates the number <math>1/b</math> on the number line.</p> <p><b>3.NF.A.2b:</b> Represent a fraction <math>a/b</math> on a number line</p>		

	<p>diagram by marking off a lengths <math>1/b</math> from 0. Recognize that the resulting interval has size <math>a/b</math> and that its endpoint locates the number <math>a/b</math> on the number line.</p> <p><b>3.NF.A.3:</b> Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.</p> <p><b>3.NF.A.3a:</b> Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.</p> <p><b>3.NF.A.3b:</b> Recognize and generate simple equivalent fractions, e.g., <math>1/2 = 2/4</math>, <math>4/6 = 2/3</math>. Explain why the fractions are equivalent, e.g., by using a visual fraction model.</p> <p><b>3.NF.A.3c:</b> Express whole numbers as fractions and recognize fractions that are equivalent to whole numbers. <i>Examples: Express 3 in the form <math>3 = 3/1</math>; recognize that <math>6/1 = 6</math>; locate <math>4/4</math> and 1 at the same point of a number line diagram.</i></p> <p><b>3.NF.A.3d:</b> Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize</p>	<p><b>4.NF.A.1:</b> Explain why a fraction <math>a/b</math> is equivalent to a fraction <math>(n \times a)/(n \times b)</math> by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions, including fractions greater than 1.</p>	
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	that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>$ , $=$ , or $<$ , and justify the conclusions, e.g., by using a visual fraction model.	<b>4.NF.A.2:</b> Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $\frac{1}{2}$ . Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$ , $=$ , or $<$ , and justify the conclusions, e.g., by using a visual fraction model.	
<b>Strand</b>	<b>Quantitative Reasoning - Numbers and Operations: Fractions</b>		
<b>Standard</b>	<b>QR.C.10</b> Understand decimal notation for fractions, and compare decimal fractions.		
	Childhood		
	Grade 3	Grade 4	Grade 5
		Grade 4 expectations in this <i>strand</i> are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.  Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade.	
<b>Performance Expectations</b>		<b>4.NF.C.5:</b> Express a fraction with denominator 10 as an equivalent fraction with denominator 100 and use this technique to add two fractions with respective	

		<p>denominators 10 and 100.<sup>2</sup> For example, express <math>\frac{3}{10}</math> as <math>\frac{30}{100}</math>, and add <math>\frac{3}{10} + \frac{4}{100} = \frac{34}{100}</math>.</p> <p><b>4.NF.C.6:</b> Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as <math>\frac{62}{100}</math>; describe a length as 0.62 meters; locate 0.62 on a number line diagram.</p> <p><b>4.NF.C.7:</b> Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols <math>&gt;</math>, <math>=</math>, or <math>&lt;</math>, and justify the conclusions, e.g., by using a visual model.</p>	
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Strand	Quantitative Reasoning - Numbers and Operations: Fractions		
Standard	QR.C.11 Use equivalent fractions as a strategy to add and subtract fractions.		
	Childhood		
	Grade 3	Grade 4	Grade 5
		<p>Grade 4 expectations in this <i>strand</i> are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.</p> <p>Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade.</p>	
Performance Expectations		<p><b>4.NF.B.3:</b> Understand a fraction <math>a/b</math> with <math>a &gt; 1</math> as a sum of fractions <math>1/b</math>.</p> <p><b>4.NF.B.3a:</b> Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.</p> <p><b>4.NF.B.3b:</b> Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model to build fractions from unit fractions. <i>Examples:</i> <math>3/8 = 1/8 + 1/8 + 1/8</math>; <math>3/8 = 1/8 + 2/8</math>; <math>2</math></p>	

$$1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8.$$

**4.NF.B.3c:** Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.

**4.NF.B.3d:** Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

**5.NF.A.1:** Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example,  $2/3 + 5/4 = 8/12 + 15/12 = 23/12$ . (In general,  $a/b + c/d = (ad + bc)/bd$ .)*

**5.NF.A.2:** Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. *For example, recognize an incorrect result  $2/5 + 1/2 = 3/7$ , by observing that  $3/7 < 1/2$ .*

Strand	<b>Quantitative Reasoning - Numbers and Operations: Fractions</b>		
Standard	<b>QR.C.12</b> Apply and extend previous understandings of multiplication and division to multiply and divide fractions.		
	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations		<p><b>4.NF.B.4:</b> Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.</p> <p><b>4.NF.B.4a:</b> Understand a fraction <math>a/b</math> as a multiple of <math>1/b</math>. For example, use a visual fraction model to represent <math>5/4</math> as the product <math>5 \times (1/4)</math>, recording the conclusion by the equation <math>5/4 = 5 \times (1/4)</math>.</p> <p><b>4.NF.B.4b:</b> Understand a multiple of <math>a/b</math> as a multiple of <math>1/b</math> and use this understanding to multiply a fraction by a whole number. For example, use a visual fraction model to express <math>3 \times (2/5)</math> as <math>6 \times (1/5)</math>, recognizing this product as <math>6/5</math>. (In general, <math>n \times (a/b) = (n \times a)/b</math>.)</p> <p><b>4.NF.B.4c:</b> Solve word problems involving multiplication of a fraction by a</p>	<p><b>5.NF.B.4:</b> Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.</p> <p><b>5.NF.B.4a:</b> Interpret the product <math>(a/b) \times q</math> as a parts of a partition of <math>q</math> into <math>b</math> equal parts; equivalently, as the result of a sequence of operations <math>a \times q \div b</math>. For example, use a visual fraction model to show <math>(2/3) \times 4 = 8/3</math>, and create a story context for this equation. Do the same with <math>(2/3) \times (4/5) = 8/15</math>. (In general, <math>(a/b) \times (c/d) = (ac)/(bd)</math>.)</p> <p><b>5.NF.B.4b:</b> Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles and represent fraction products as rectangular areas.</p>

whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat  $\frac{3}{8}$  of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*

**5.NF.B.3:** Interpret a fraction as division of the numerator by the denominator ( $a/b = a \div b$ ). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret  $\frac{3}{4}$  as the result of dividing 3 by 4, noting that  $\frac{3}{4}$  multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size  $\frac{3}{4}$ . If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*

**5.NF.B.5:** Interpret multiplication scaling (resizing), by:

**5.NF.B.5a:** Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.

**5.NF.B.5b:** Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the

			<p>principle of fraction equivalence <math>a/b = (n \times a)/(n \times b)</math> to the effect of multiplying <math>a/b</math> by 1.</p> <p><b>5.NF.B.6:</b> Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.</p> <p><b>5.NF.B.7:</b> Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.<sup>1</sup></p> <p><b>5.NF.B.7a:</b> Interpret division of a unit fraction by a non-zero whole number and compute such quotients. <i>For example, create a story context for <math>(1/3) \div 4</math>, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that <math>(1/3) \div 4 = 1/12</math> because <math>(1/12) \times 4 = 1/3</math>.</i></p> <p><b>5.NF.B.7b:</b> Interpret division of a whole number by a unit fraction and compute such quotients. <i>For example, create a story context for <math>4 \div (1/5)</math>, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that <math>4 \div (1/5) = 20</math> because <math>20 \times (1/5) = 4</math>.</i></p> <p><b>5.NF.B.7c:</b> Solve real world problems involving division of unit fractions by non-zero whole numbers and division</p>
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			of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. <i>For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?</i>
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Strand	Quantitative Reasoning- Ratio and Proportional Relationships
Standard	<b>QR.EA.1</b> Understand ratio and rate concepts and use ratio and rate reasoning to solve problems.
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b>6.RP.A.1:</b> Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. <i>For example, "The ratio of wings to beaks of the chickadees in the pine tree was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."</i></p> <p><b>6.RP.A.2:</b> Understand the concept of a unit rate <math>a/b</math> associated with a ratio <math>a:b</math> with <math>b \neq 0</math> and use rate language in the context of a ratio relationship. <i>For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is <math>3/4</math> cup of flour for each cup of sugar." "We paid \$75 for 5 lobsters, which is a rate of \$15 per lobster." Expectations for unit rates in this grade are limited to non-complex fractions.</i></p> <p><b>6.RP.A.3:</b> Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.</p> <p><b>6.RP.A.3a:</b> Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.</p> <p><b>6.RP.A.3b:</b> Solve unit rate problems including those involving unit pricing and constant speed. <i>For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?</i></p> <p><b>6.RP.A.3c:</b> Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means <math>30/100</math> times the quantity); solve problems involving finding the whole, given a part and the percent.</p> <p><b>6.RP.A.3d:</b> Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.</p>

Strand	<b>Quantitative Reasoning- Ratio and Proportional Relationships</b>
Standard	<b>QR.EA.2</b> Analyze proportional relationships and use them to solve real-world and mathematical problems.
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b>7.RP.A.1:</b> Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. <i>For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction <math>\frac{\frac{1}{2}}{\frac{1}{4}}</math> miles per hour, equivalently 2 miles per hour.</i></p> <p><b>7.RP.A.2:</b> Recognize and represent proportional relationships between quantities.</p> <p><b>7.RP.A.2a:</b> Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.</p> <p><b>7.RP.A.2b:</b> Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.</p> <p><b>7.RP.A.2c:</b> Represent proportional relationships by equations. <i>For example, if the total cost <math>t</math> is proportional to the number <math>n</math> of items purchased at a constant price <math>p</math>, the relationship between the total cost and the number of items can be expressed as <math>t = pn</math>.</i></p> <p><b>7.RP.A.2d:</b> Explain what a point <math>(x, y)</math> on the graph of a proportional relationship means in terms of the situation, with special attention to the points <math>(0, 0)</math> and <math>(1, r)</math> where <math>r</math> is the unit rate.</p> <p><b>7.RP.A.3:</b> Use proportional relationships to solve multistep ratio, rate, and percent problems. <i>Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.</i></p>

Strand	<b>Quantitative Reasoning- The Number System</b>
Standard	<b>QR.EA.3</b> Apply and extend previous understandings of operations with whole numbers to rational numbers.
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b>6.NS.A.1:</b> Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and/or equations to represent the problem. <i>For example, create a story context for <math>(2/3) \div (3/4)</math> and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that <math>(2/3) \div (3/4) = 8/9</math> because <math>3/4</math> of <math>8/9</math> is <math>2/3</math>. (In general, <math>(a/b) \div (c/d) = ad/bc</math>.)</i></p> <p><b>6.NS.B.3:</b> Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.</p> <p><b>7.NS.A.1:</b> Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.</p> <p><b>7.NS.A.1a:</b> Describe situations in which opposite quantities combine to make 0. <i>For example, a hydrogen atom has a zero charge because its two constituents are oppositely charged.</i></p> <p><b>7.NS.A.1b:</b> Understand <math>p + q</math> as the number located a distance <math> q </math> from <math>p</math>, in the positive or negative direction depending on whether <math>q</math> is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.</p> <p><b>7.NS.A.1c:</b> Understand subtraction of rational numbers as adding the additive inverse, <math>p - q = p + (-q)</math>. Show that the distance between two rational numbers on the number line is the absolute value of their difference and apply this principle in real-world contexts.</p> <p><b>7.NS.A.1d:</b> Apply properties of operations as strategies to add and subtract rational numbers.</p> <p><b>7.NS.A.2:</b> Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.</p> <p><b>7.NS.A.2a:</b> Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as <math>(-1)(-1) = 1</math> and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.</p>

	<p><b>7.NS.A.2b:</b> Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If <math>p</math> and <math>q</math> are integers, then <math>-(p/q) = (-p)/q = p/(-q)</math>. Interpret quotients of rational numbers by describing real-world contexts.</p> <p><b>7.NS.A.2c:</b> Apply properties of operations as strategies to multiply and divide rational numbers.</p> <p><b>7.NS.A.2d:</b> Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.</p> <p><b>7.NS.A.3:</b> Solve real-world and mathematical problems involving the four operations with rational numbers. <i>Computations with rational numbers extend the rules for manipulating fractions to complex fractions.</i></p>
Strand	<b>Quantitative Reasoning- The Number System</b>
Standard	<b>QR.EA.4</b> Compute fluently with multi-digit whole numbers and find common factors and multiples.
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b>6.NS.B.2:</b> Fluently divide multi-digit numbers using the standard algorithm.</p> <p><b>6.NS.B.4:</b> Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. (<i>For example: Use prime factorization to find the greatest common factor</i>); Use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two relatively prime numbers. <i>For example, express <math>36 + 8</math> as <math>4(9 + 2)</math>.</i></p>
Strand	<b>Quantitative Reasoning - The Number System</b>
Standard	<b>QR.EA.5</b> Apply and extend previous understandings of numbers to the system of rational numbers.
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b>6.NS.C.5:</b> Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative rational numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.</p> <p><b>6.NS.C.6:</b> Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.</p>

	<p><b>6.NS.C.6a:</b> Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., <math>-(-3) = 3</math>, and that 0 is its own opposite.</p> <p><b>6.NS.C.6b:</b> Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.</p> <p><b>6.NS.C.6c:</b> Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.</p> <p><b>6.NS.C.7:</b> Understand ordering and absolute value of rational numbers.</p> <p><b>6.NS.C.7a:</b> Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. <i>For example, interpret <math>-3 &gt; -7</math> as a statement that <math>-3</math> is located to the right of <math>-7</math> on a number line oriented from left to right.</i></p> <p><b>6.NS.C.7b:</b> Write, interpret, and explain statements of order for rational numbers in real-world contexts. <i>For example, write <math>-3^{\circ}C &gt; -7^{\circ}C</math> to express the fact that <math>-3^{\circ}C</math> is warmer than <math>-7^{\circ}C</math>.</i></p> <p><b>6.NS.C.7c:</b> Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. <i>For example, for an account balance of <math>-30</math> dollars, write <math> -30  = 30</math> to describe the size of the debt in dollars.</i></p> <p><b>6.NS.C.7d:</b> Distinguish comparisons of absolute value from statements about order. <i>For example, recognize that an account balance less than <math>-30</math> dollars represents a debt greater than 30 dollars.</i></p> <p><b>6.NS.C.8:</b> Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.</p>
Strand	<b>Quantitative Reasoning- The Number System</b>
Standard	<b>QR.EA.6</b> Know that there are numbers that are not rational, and approximate them by rational numbers.
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b>8.NS.A.1:</b> Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansions terminate in 0s or eventually repeats and convert a decimal expansion into a rational number.</p> <p><b>8.NS.A.2:</b> Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., <math>\pi^2</math>). <i>For example, by</i></p>

	<i>truncating the decimal expansion of <math>\sqrt{2}</math>, show that <math>\sqrt{2}</math> is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.</i>
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Strand	<b>Quantitative Reasoning - Number and Quantity: The Real Number System</b>
Standard	<b>QR.A.1</b> Extend the properties of exponents to rational exponents.
	Adolescence
	Grades 9-Diploma
Performance Expectations	<b>HSN.RN.A.1:</b> Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. <i>For example, we define <math>5^{1/3}</math> to be the cube root of 5 because we want <math>(5^{1/3})^3 = 5^{(1/3)3}</math> to hold, so <math>(5^{1/3})^3</math> must equal 5.</i> <b>HSN.RN.A.2:</b> Rewrite expressions involving radicals and rational exponents using the properties of exponents.
Strand	<b>Quantitative Reasoning- Number and Quantity: The Real Number System</b>
Standard	<b>QR.A.2</b> Use properties of rational and irrational numbers.
	Adolescence
	Grades 9-Diploma
Performance Expectations	<b>HSN.RN.B.3:</b> Explain when and why the sum or product of two rational and/or irrational numbers is rational or irrational.
Strand	<b>Quantitative Reasoning - Number and Quantity: Quantities</b> <b>Modeling Standards: Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appears throughout the high school standards indicated by a star symbol (★).</b>
Standard	<b>QR.A.3</b> Reason quantitatively and use units to solve problems. ★
	Adolescence

Grades 9-Diploma	
Performance Expectations	<p><b>HSN.Q.A.1:</b> Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. Example: Marlena made a scale drawing of the sand volleyball court at her summer camp. The drawing of the volleyball court is 6 cm long by 3 cm wide. The actual volleyball court is 18 meters long. What scale did Marlena use for the drawing? ★</p> <p><b>HSN.Q.A.2:</b> Define appropriate quantities for the purpose of descriptive modeling. Example: If a town in Aroostook county with a population of 1254 people is projected to double in size every 105 years, what will the population be 315 years from now? ★</p> <p><b>HSN.Q.A.3:</b> Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. Example: The label on a <math>\frac{1}{2}</math> - liter bottle of flavored water bottled in Maine indicates that one serving of 8 ounce contains 60 calories. The label also says that the full bottle contains 130 calories. Is this the actual amount or the estimated amount of calories in this bottle? How would you explain any discrepancy? ★</p>
Strand	<p><b>Quantitative Reasoning - Number and Quantity: Complex Number System</b></p> <p><b>The high school standards also contain some performance expectations which are denoted by a plus (+). These performance expectations are intended to be extensions of learning. All students should be given opportunities to explore this content, but mastery is not expected.</b></p>
Standard	<b>QR.A.4 (+)</b> Perform arithmetic operations with complex numbers.
Adolescence	
Grades 9-Diploma	
Performance Expectations	<p><b>(+) HSN.CN.A.1:</b> Know there is a complex number <math>i</math> (which is a non-real number) such that <math>i^2 = -1</math>, and every complex number has the form <math>a + bi</math> with <math>a</math> and <math>b</math> real.</p> <p><b>(+) HSN.CN.A.2:</b> Use the relation <math>i^2 = -1</math> and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.</p> <p><b>(+) HSN.CN.A.3:</b> Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.</p>

Strand	<p align="center"><b>Quantitative Reasoning - Number and Quantity: Complex Number System</b></p> <p>The high school standards also contain some performance expectations which are denoted by a plus (+). These performance expectations are intended to be extensions of learning. All students should be given opportunities to explore this content, but mastery is not expected.</p>
Standard	<b>QR.A.5 (+)</b> Represent complex numbers and their operations on the complex plane.
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>(+) HSN.CN.B.4:</b> Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number.</p> <p><b>(+) HSN.CN.B.5:</b> Represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane; use properties of this representation for computation. <i>For example, <math>(-1 + \sqrt{3}i)^3 = 8</math> because <math>(-1 + \sqrt{3}i)</math> has modulus 2 and argument <math>120^\circ</math>.</i></p> <p><b>(+) HSN.CN.B.6:</b> Calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints.</p>
Strand	<p align="center"><b>Quantitative Reasoning - Number and Quantity: Complex Number System</b></p> <p>The high school standards also contain some performance expectations which are denoted by a plus (+). These performance expectations are intended to be extensions of learning. All students should be given opportunities to explore this content, but mastery is not expected.</p>
Standard	<b>QR.A.6 (+)</b> Use complex numbers in polynomial identities and equations.
	Adolescence
	Grades 9-Diploma
Performance Expectations	<b>(+) HSN.CN.C.7:</b> Solve quadratic equations with real coefficients that have complex solutions.

	<p><b>(+) HSN.CN.C.8:</b> Extend polynomial identities to the complex numbers. <i>For example, rewrite <math>x^2 + 4</math> as <math>(x + 2i)(x - 2i)</math>.</i></p> <p><b>(+) HSN.CN.C.9:</b> Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.</p>
Strand	<p><b>Quantitative Reasoning - Number and Quantity: Vector and Matrix Quantities</b></p> <p>The high school standards also contain some performance expectations which are denoted by a plus (+). These performance expectations are intended to be extensions of learning. All students should be given opportunities to explore this content, but mastery is not expected.</p>
Standard	<b>QR.A.7 (+)</b> Represent and model with vector quantities.
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>(+) HSN.VM.A.1:</b> Recognize vector quantities as having both magnitude and direction. Represent vector quantities by directed line segments and use appropriate symbols for vectors and their magnitudes (e.g., <math>\mathbf{v}</math>, <math> \mathbf{v} </math>, <math>\ \mathbf{v}\ </math>, <math>v</math>).</p> <p><b>(+) HSN.VM.A.2:</b> Find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point.</p> <p><b>(+) HSN.VM.A.3:</b> Solve problems involving velocity and other quantities that can be represented by vectors.</p>
Strand	<p><b>Quantitative Reasoning - Number and Quantity: Vector and Matrix Quantities</b></p> <p>The high school standards also contain some performance expectations which are denoted by a plus (+). These performance expectations are intended to be extensions of learning. All students should be given opportunities to explore this content, but mastery is not expected.</p>
Standard	<b>QR.A.8 (+)</b> Perform operations on vectors.
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>(+) HSN.VM.B.4:</b> Add and subtract vectors.</p> <p><b>(+) HSN.VM.B.4a:</b> Add vectors end-to-end, component-wise, and by the parallelogram rule. Understand that the magnitude of a sum of two vectors is typically not the sum of the magnitudes.</p>

	<p>(+) <b>HSN.VM.B4b</b>: Given two vectors in magnitude and direction form, determine the magnitude and direction of their sum.</p> <p>(+) <b>HSN.VM.B4c</b>: Understand vector subtraction <math>\mathbf{v} - \mathbf{w}</math> as <math>\mathbf{v} + (-\mathbf{w})</math>, where <math>-\mathbf{w}</math> is the additive inverse of <math>\mathbf{w}</math>, with the same magnitude as <math>\mathbf{w}</math> and pointing in the opposite direction. Represent vector subtraction graphically by connecting the tips in the appropriate order, and perform vector subtraction component-wise.</p> <p>(+) <b>HSN.VM.B.5</b>: Multiply a vector by a scalar.</p> <p>(+) <b>HSN.VM.B5a</b>: Represent scalar multiplication graphically by scaling vectors and possibly reversing their direction; perform scalar multiplication component-wise, e.g., as <math>c(v_x, v_y) = (cv_x, cv_y)</math>.</p> <p>(+) <b>HSN.VM.B5b</b>: Compute the magnitude of a scalar multiple <math>c\mathbf{v}</math> using <math>\ c\mathbf{v}\  =  c \mathbf{v}</math>. Compute the direction of <math>c\mathbf{v}</math> knowing that when <math> c \mathbf{v} \neq 0</math>, the direction of <math>c\mathbf{v}</math> is either along <math>\mathbf{v}</math> (for <math>c &gt; 0</math>) or against <math>\mathbf{v}</math> (for <math>c &lt; 0</math>).</p>
Strand	<p style="text-align: center;"><b>Quantitative Reasoning - Number and Quantity: Vector and Matrix Quantities</b></p> <p><b>The high school standards also contain some performance expectations which are denoted by a plus (+). These performance expectations are intended to be extensions of learning. All students should be given opportunities to explore this content, but mastery is not expected.</b></p>
Standard	<p><b>QR.A.9 (+)</b> Perform operations on matrices and use matrices in applications.</p>
	<p style="text-align: center;">Adolescence</p>
	<p style="text-align: center;">Grades 9-Diploma</p>
Performance Expectations	<p>(+) <b>HSN.VM.C.6</b>: Use matrices to represent and manipulate data, e.g., to represent payoffs or incidence relationships in a network.</p> <p>(+) <b>HSN.VM.C.7</b>: Multiply matrices by scalars to produce new matrices, e.g., as when all of the payoffs in a game are doubled.</p> <p>(+) <b>HSN.VM.C.8</b>: Add, subtract, and multiply matrices of appropriate dimensions.</p> <p>(+) <b>HSN.VM.C.9</b>: Understand that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties.</p> <p>(+) <b>HSN.VM.C.10</b>: Understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. The determinant of a square matrix is nonzero if and only if the matrix has a multiplicative inverse.</p>

**(+) HSN.VM.C.11:** Multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector. Work with matrices as transformations of vectors.

**(+) HSN.VM.C.12:** Work with  $2 \times 2$  matrices as a transformations of the plane, and interpret the absolute value of the determinant in terms of area.

### Algebraic Reasoning

Algebraic thinking is about generalizing arithmetic operations and determining unknown quantities by recognizing and analyzing patterns along with developing generalizations about these patterns. In this K-5 strand, students explore, analyze, represent, and generalize mathematical ideas and relationships. Students will develop an understanding of the fundamental properties of number and operations, understand the use of the equal sign to represent equivalence, and use quantitative reasoning to understand mathematical relationships.

Students in grades 6-8 progress in their understanding of variables in mathematical expressions and equations. They understand that expressions in different forms can be equivalent, use the properties of operations to rewrite expressions in equivalent forms, and describe relationships between quantities. Students begin to analyze and solve real-world and mathematical problems using equations and inequalities. They construct and interpret tables and graphs. Understanding builds from writing and solving simple equations to solving proportional situations. These skills lead to exploring slope and y-intercept and relationships between variables, and eventually include multiple equations to solve systems of linear equations. Students grow to understand that the concept of a function is a rule that assigns one output to each input, and they learn to translate among different representations of functions.

In grades 9-12, students will continue to develop their understanding of expressions, equations, functions and function notation. They will interpret the structure of algebraic expressions and be able to write expressions in equivalent forms to reveal information and to solve problems. Students will perform arithmetic operations on polynomials and rewrite rational functions. An understanding of the relationship between zeros and factors of polynomials will transition into using polynomial identities to solve problems. Students will create equations that describe relationships and solve equations as a process of reasoning (with appropriate justification). They will represent and solve equations, inequalities, and systems of equations using a variety of mathematically sound techniques.

Students will interpret functions that arise in applications in terms of context and analyze functions using different representations. They will build functions that model relationships between two quantities, and build new functions from existing functions through transformations, combinations, compositions, and examining the inverse. Students will construct and compare linear, quadratic, and exponential models and use those models to solve problems. They will interpret expressions for functions in terms of the situation they model. Students will be encouraged to extend their understanding of algebra and functions and apply similar processes of reasoning to polynomial, logarithmic and trigonometric functions and their graphs.

Strand	Algebraic Reasoning - Operations and Algebraic Thinking		
Standard	<b>AR.C.1 Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.</b>		
	Childhood		
	Kindergarten (Drawings need not show detail but should show the mathematics in the problem. This applies wherever drawings are mentioned in the Standards.)	Grade 1	Grade 2
Performance Expectations	<p><b>K.OA.A.1:</b> Represent addition and subtraction with objects, fingers, mental images, drawings sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.</p> <p><b>K.OA.A.2:</b> Solve addition and subtraction word problems, and add and subtract within 10, (e.g., by using objects or drawings to represent the problem).</p>	<p><b>1.OA.A.1:</b> Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, (e.g.,</p>	<p><b>2.OA.A.1:</b> Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and</p>

	<p><b>K.OA.A.3:</b> Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., <math>5 = 2 + 3</math> and <math>5 = 4 + 1</math>).</p> <p><b>K.OA.A.4:</b> For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.</p> <p><b>K.OA.A.5:</b> Fluently add and subtract within 5 including zero.</p>	<p>by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.</p> <p><b>1.OA.A.2:</b> Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, (e.g., by using objects, drawings, and</p>	<p>equations with a symbol for the unknown number to represent the problem.</p>
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		equations with a symbol for the unknown number to represent the problem.)	
Strand	<b>Algebraic Reasoning - Operations and Algebraic Thinking</b>		
Standard	<b>AR.C.2 Understand and apply properties of operation and the relationship between addition and subtraction within 20.</b>		
	Childhood		
	Kindergarten	Grade 1	Grade 2
		Students need not use formal terms for these properties.	
Performance Expectations		<p><b>1.OA.B.3:</b> Apply properties of operations as strategies to add. <i>Examples: If <math>8 + 3 = 11</math> is known, then <math>3 + 8 = 11</math> is also known. (Commutative property of addition.) To add <math>2 + 6 + 4</math>, the second two numbers can be added to make a ten, so <math>2 + 6 + 4 = 2 + 10 = 12</math>. (Associative property of addition.) <math>a + 0 = a</math> (Additive identity property of 0)</i></p> <p><b>1.OA.B.4:</b> Understand subtraction as an unknown-addend problem. <i>For example, subtract <math>10 - 8</math> by finding the number that makes 10 when added to 8.</i></p>	

**1.OA.C.5:** Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).

**1.OA.C.6:** Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g.,  $8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$ ); decomposing a number leading to a ten (e.g.,  $13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$ ); using the relationship between addition and subtraction (e.g., knowing that  $8 + 4 = 12$ , one knows  $12 - 8 = 4$ ); and creating equivalent but easier or known sums (e.g., adding  $6 + 7$  by creating the known equivalent  $6 + 6 + 1 = 12 + 1 = 13$ ).

**1.OA.D.7:** Understand the meaning of the equal sign and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false?  $6 = 6$ ,  $7 = 8 - 1$ ,  $5 + 2 = 2 + 5$ ,  $4 + 1 = 5 + 2$ .

**1.OA.D.8:** Determine the unknown whole number in an

**2.OA.B.2:** Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

		addition or subtraction equation relating three whole numbers. <i>For example, determine the unknown number that makes the equation true in each of the equations <math>8 + ? = 11</math>, <math>5 = \_ - 3</math>, <math>6 + 6 = \_</math>.</i>	
Strand	<b>Algebraic Reasoning - Operations and Algebraic Thinking</b>		
Standard	<b>AR.C.3 Work with equal groups of objects to gain foundations for multiplication.</b>		
	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations			<p><b>2.OA.C.3:</b> Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.</p> <p><b>2.OA.C.4:</b> Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.</p>
Strand	<b>Algebraic Reasoning - Operations and Algebraic Thinking</b>		
Standard	<b>AR.C.4 Understand properties of multiplication and the relationship between multiplication and division to represent and solve problems within 100.</b>		
	Childhood		
	Grade 3 Students need not use formal terms for these properties.	Grade 4	Grade 5
Performance Expectations	<b>3.OA.A.1:</b> Interpret products of whole		

	<p>numbers, e.g., interpret <math>5 \times 7</math> as the total number of objects in 5 groups of 7 objects each. <i>For example, describe a context in which a total number of objects can be expressed as <math>5 \times 7</math>.</i></p> <p><b>3.OA.A.2:</b> Interpret whole-number quotients of whole numbers, e.g., interpret <math>56 \div 8</math> as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. <i>For example, describe a context in which a number of shares or a number of groups can be expressed as <math>56 \div 8</math>.</i></p> <p><b>3.OA.A.3:</b> Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the</p>		
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unknown number to represent the problem.  
**3.OA.A.4:** Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations  $8 \times ? = 48$ ,  $5 = \_ \div 3$ ,  $6 \times 6 = ?$*

**3.OA.B.5:** Apply properties of operations as strategies to multiply. *Examples: If  $6 \times 4 = 24$  is known, then  $4 \times 6 = 24$  is also known. (Commutative property of multiplication.)  $3 \times 5 \times 2$  can be found by  $3 \times 5 = 15$ , then  $15 \times 2 = 30$ , or by  $5 \times 2 = 10$ , then  $3 \times 10 = 30$ . (Associative property of multiplication.) Knowing that  $8 \times 5 = 40$  and  $8 \times 2 = 16$ , one can find  $8 \times 7$  as  $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$ . (Distributive property.)*

**3.OA.B.6:** Understand division as an unknown-factor problem. *For example, find  $32 \div 8$  by*

	<p><i>finding the number that makes 32 when multiplied by 8.</i></p> <p><b>3.OA.C.7:</b> Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that <math>8 \times 5 = 40</math>, one knows <math>40 \div 5 = 8</math>) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.</p>		
Strand	<b>Algebraic Reasoning - Operations and Algebraic Thinking</b>		
Standard	<b>AR.C.5 Solve problems involving the four operations.</b>		
	Childhood		
	<p>Grade 3</p> <p>This standard is limited to problems posed with whole numbers and having whole-number answers; students should know how to perform operations in conventional order when there are no parentheses to specify a particular order (Order of Operations).</p>	<p>Grade 4</p>	<p>Grade 5</p>
Performance Expectations		<p><b>4.OA.A.1:</b> Interpret a multiplication equation as a comparison, e.g., interpret <math>35 = 5 \times 7</math> as a statement that 35 is</p>	

	<p><b>3.OA.D.8:</b> Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.</p>	<p>5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.  <b>4.OA.A.2:</b> Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.</p> <p><b>4.OA.A.3:</b> Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.</p>	
Strand	<b>Algebraic Reasoning - Operations and Algebraic Thinking</b>		
Standard	<b>AR.C.6 Gain familiarity with factors and multiples.</b>		
	Childhood		
	Grade 3	Grade 4	Grade 5

Performance Expectations	<p><b>4.OA.B.4:</b> Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite.</p>			
Strand	<b>Algebraic Reasoning - Operations and Algebraic Thinking</b>			
Standard	<b>AR.C.7</b> Write and interpret numerical expressions.			
	<b>Childhood</b>			
	Grade 3	Grade 4	Grade 5	
Performance Expectations			<p><b>5.OA.A.1:</b> Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.</p> <p><b>5.OA.A.2:</b> Write simple expressions that record calculations with numbers and interpret numerical expressions without evaluating them. <i>For example, express the calculation “add 8 and 7, then multiply by 2” as <math>2 \times (8 + 7)</math>. Recognize that <math>3 \times (18932 + 921)</math> is three times as large as <math>18932 + 921</math>, without having to calculate the indicated sum or product.</i></p>	
Strand	<b>Algebraic Reasoning - Operations and Algebraic Thinking</b>			
Standard	<b>AR.C.8</b> Identify, explain, generate and analyze patterns.			
	Childhood			
	Grade 3	Grade 4	Grade 5	

Performance Expectations	<p><b>3.OA.D.9:</b> Identify arithmetic patterns (including patterns in the addition table or multiplication table) and explain them using properties of operations. <i>For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.</i></p>	<p><b>4.OA.C.5:</b> Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. <i>For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.</i></p>	<p><b>5.OA.B.3:</b> Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns and graph the ordered pairs on a coordinate plane. <i>For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.</i></p>
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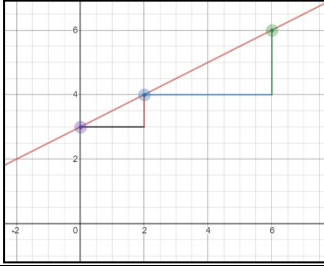
Strand	Algebraic Reasoning - Expressions and Equations
Standard	<b>AR.EA.1</b> Apply and extend previous understandings of arithmetic to algebraic expressions.
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b>6.EE.A.1:</b> Write and evaluate numerical expressions involving whole-number exponents.</p> <p><b>6.EE.A.2:</b> Write, read, and evaluate expressions in which letters represent numbers.</p> <p><b>6.EE.A.2a:</b> Write expressions that record operations with numbers and with letters representing numbers. <i>For example, express the calculation "Subtract y from 5" as <math>5 - y</math>.</i></p> <p><b>6.EE.A.2b:</b> Identify parts of an expression using mathematical terms (including but not limited to: sum, term, product, factor, quotient, coefficient, variable, constant); view one or more parts of an expression as a single entity. <i>For example, describe the expression <math>2(x + 7)</math> as a product of two factors; view <math>(x + 7)</math> as both a single entity and a sum of two terms.</i></p> <p><b>6.EE.A.2c:</b> Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, using the order of operations. <i>For example, use the formulas <math>V = s^3</math> and <math>A = 6s^2</math> to find the volume and surface area of a cube with sides of length <math>s = 1/2</math>.</i></p>

	<p><b>6.EE.A.3:</b> Apply the properties of operations to generate equivalent expressions. <i>For example, apply the distributive property to the expression <math>3(2 + x)</math> to produce the equivalent expression <math>6 + 3x</math>; apply the distributive property to factor the expression <math>24x + 18y</math> to produce the equivalent expression <math>6(4x + 3y)</math>; apply properties of operations to <math>y + y + y</math> to produce the equivalent expression <math>3y</math>.</i></p> <p><b>6.EE.A.4:</b> Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). <i>For example, the expressions <math>y + y + y</math> and <math>3y</math> are equivalent because they name the same number regardless of which number <math>y</math> stands for.</i></p>
Strand	<b>Algebraic Reasoning - Expressions and Equations</b>
Standard	<b>AR.EA.2</b> Reason about and solve one-variable equations and inequalities.
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b>6.EE.B.5:</b> Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.</p> <p><b>6.EE.B.6:</b> Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.</p> <p><b>6.EE.B.7:</b> Solve real-world and mathematical problems by writing and solving equations of the form <math>x + p = q</math> and <math>px = q</math> for cases in which <math>p</math>, <math>q</math> and <math>x</math> are all nonnegative rational numbers. <i>For example, Sal is paid \$0.50 per pound of blueberries that she rakes. If she rakes <math>x</math> pounds, and earns \$17.25, write and solve an equation that determines how many pounds she raked.</i></p> <p><b>6.EE.B.8:</b> Write an inequality of the form <math>x &gt; c</math> or <math>x &lt; c</math> to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form <math>x &gt; c</math> or <math>x &lt; c</math> have infinitely many solutions; represent solutions of such inequalities on number line diagrams.</p>
Strand	<b>Algebraic Reasoning - Expressions and Equations</b>
Standard	<b>AR.EA.3</b> Represent and analyze quantitative relationships between dependent and independent variables.
	Early Adolescence
	Grades 6-8
Performance Expectations	<b>6.EE.C.9:</b> Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other

	quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables and relate these to the equation. <i>For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation <math>d = 65t</math> to represent the relationship between distance and time.</i>
Strand	<b>Algebraic Reasoning - Expressions and Equations</b>
Standard	<b>AR.EA.4</b> Use properties of operations to generate equivalent expressions.
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b>7.EE.A.1:</b> Apply properties of operations to add, subtract, factor, and expand linear expressions with rational coefficients. <i>For example, <math>4x + 2 = 2(2x+1)</math> and <math>-3(x-5/3) = -3x + 5</math></i></p> <p><b>7.EE.A.2:</b> Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. <i>For example, A shirt is on sale for 20% off the regular price, <math>p</math>. The discount can be expressed as <math>0.2p</math>. The new price for the shirt can be expressed as <math>p - 0.2p</math> or <math>0.8p</math>.</i></p>
Strand	<b>Algebraic Reasoning - Expressions and Equations</b>
Standard	<b>AR.EA.5</b> Solve real-life and mathematical problems using numerical and algebraic expressions and equations.
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b>7.EE.B.3:</b> Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. <i>For example: If a woman making \$25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or \$2.50, for a new salary of \$27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.</i></p> <p><b>7.EE.B.4:</b> Use variables to represent quantities in a real-world or mathematical problem and construct simple equations and inequalities to solve problems by reasoning about the quantities.</p> <p><b>7.EE.B.4a:</b> Solve word problems leading to equations of the form <math>px + q = r</math> and <math>p(x + q) = r</math>, where <math>p</math>, <math>q</math>, and <math>r</math> are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an</p>

	<p>arithmetic solution, identifying the sequence of the operations used in each approach. <i>For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?</i></p> <p><b>7.EE.B.4b:</b> Solve word problems leading to inequalities of the form <math>px + q &gt; r</math> or <math>px + q &lt; r</math>, where <math>p</math>, <math>q</math>, and <math>r</math> are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. <i>For example: As a salesperson, you are paid \$50 per week plus \$3 per sale. This week you want your pay to be at least \$100. Write an inequality for the number of sales you need to make and describe the solutions.</i></p>
Strand	<b>Algebraic Reasoning - Expressions and Equations</b>
Standard	<b>AR.EA.6</b> Work with radicals and integer exponents.
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b>8.EE.A.1:</b> Know and apply the properties of integer exponents to generate equivalent numerical expressions. <i>For example, <math>3^2 \times 3^{-5} = 3^{-3} = (1/3)^3 = 1/27</math>.</i></p> <p><b>8.EE.A.2:</b> Use square root and cube root symbols to represent solutions to equations of the form <math>x^2 = p</math> and <math>x^3 = p</math>, where <math>p</math> is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that <math>\sqrt{2}</math> is irrational.</p> <p><b>8.EE.A.3:</b> Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. <i>For example, estimate the population of the United States as 3 times <math>10^8</math> and the population of the world as 7 times <math>10^9</math>, and determine that the world population is more than 20 times larger.</i></p> <p><b>8.EE.A.4:</b> Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.</p>
Strand	<b>Algebraic Reasoning - Expressions and Equations</b>
Standard	<b>AR.EA.7</b> Understand the connections between proportional relationships, lines, and linear equations.
	Early Adolescence
	Grades 6-8
Performance Expectations	<b>8.EE.B.5:</b> Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. <i>For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.</i>

**8.EE.B.6:** Use similar triangles to explain why the slope  $m$  is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation  $y = mx$  for a line through the origin and the equation  $y = mx + b$  for a line intercepting the vertical axis at  $b$ . *For example, given the line  $y = 0.5x + 3$  explain why the similar triangles have the same slope.*



Strand	<b>Algebraic Reasoning - Expressions and Equations</b>
Standard	<b>AR.EA.8</b> Analyze and solve linear equations and pairs of simultaneous linear equations.
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b>8.EE.C.7:</b> Solve linear equations in one variable.</p> <p><b>8.EE.C.7a:</b> Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form <math>x = a</math>, <math>a = a</math>, or <math>a = b</math> results (where <math>a</math> and <math>b</math> are different numbers).</p> <p><b>8.EE.C.7b:</b> Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.</p> <p><b>8.EE.C.8:</b> Analyze and solve pairs of simultaneous linear equations.</p> <p><b>8.EE.C.8a:</b> Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.</p> <p><b>8.EE.C.8b:</b> Solve systems of two linear equations in two variables algebraically (i.e. by substitution or elimination) and estimate solutions by graphing the equations. Solve simple cases by inspection. <i>For example, <math>3x + 2y = 5</math> and <math>3x + 2y = 6</math> have no solution because <math>3x + 2y</math> cannot simultaneously be 5 and 6.</i></p> <p><b>8.EE.C.8c:</b> Solve real-world and mathematical problems leading to two linear equations in two variables. <i>For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.</i></p>

Strand	<b>Algebraic Reasoning - Functions</b>
Standard	<b>AR.EA.9</b> Define, evaluate, and compare functions in order to model relationships between quantities.
	Early Adolescence
	Grades 6-8 Function notation is not required for Grade 8.
Performance Expectations	<p><b>8.F.A.1:</b> Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.</p> <p><b>8.F.A.2:</b> Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). <i>For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.</i></p> <p><b>8.F.A.3:</b> Interpret the equation <math>y = mx + b</math> as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. <i>For example, the function <math>A = s^2</math> giving the area of a square as a function of its side length is not linear because its graph contains the points <math>(1, 1)</math>, <math>(2, 4)</math> and <math>(3, 9)</math>, which are not on a straight line.</i></p> <p><b>8.F.B.4:</b> Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two <math>(x, y)</math> values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.</p> <p><b>8.F.B.5:</b> Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.</p>

Strand	<p align="center"><b>Algebraic Reasoning - Algebra: Seeing Structure in Expressions</b></p> <p><b>Modeling Standards: Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appears throughout the high school standards indicated by a star symbol (★).</b></p>
Standard	<b>AR.A.1</b> Interpret the structure of expressions.
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HSA.SSE.A.1:</b> Interpret expressions that represent a quantity in terms of its context. ★</p> <p><b>SSE.A.1a:</b> Interpret parts of an expression, such as terms, factors, and coefficients. ★</p> <p><b>SSE.A.1b:</b> Interpret multi-part expressions by viewing one or more of their parts as a single entity. <i>For example, view <math>P(1+r)^n</math> as the product of <math>P</math> and a factor not depending on <math>P</math> and interpret the parts.</i> ★</p> <p><b>HSA.SSE.A.2:</b> Use the structure of an expression to identify ways to rewrite it. <i>For example, see <math>x^4 - y^4</math> as <math>(x^2)^2 - (y^2)^2</math>, allowing for it to be recognized as a difference of squares that can be factored as <math>(x^2 - y^2)(x^2 + y^2)</math>.</i></p>
Strand	<p align="center"><b>Algebraic Reasoning - Algebra: Seeing Structure in Expressions</b></p> <p><b>Modeling Standards: Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appears throughout the high school standards indicated by a star symbol (★).</b></p>
Standard	<b>AR.A.2</b> Write expressions in equivalent forms to reveal information and to solve problems. ★
	Adolescence
	Grades 9-Diploma
Performance Expectations	<b>HSA.SSE.B.3:</b> Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. ★

	<p><b>HSA.SSE.B.3a:</b> Rewrite a quadratic expression (such as by factoring) to reveal the zeros of the function it defines. ★</p> <p><b>HSA.SSE.B.3b:</b> Rewrite a quadratic expression (such as by completing the square) to reveal the maximum or minimum value of the function it defines. ★</p> <p><b>HSA.SSE.B.3c:</b> Use the properties of exponents to transform expressions for exponential functions. <i>For example, the expression <math>1.15^t</math> can be rewritten as <math>(1.15^{1/12})^{12t} \approx 1.012^{12t}</math> to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.</i> ★</p> <p><b>HSA.SSE.B.4:</b> Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. <i>For example, Watermilfoil in one Maine lake triples in the number of plants each week during the summer when boat propellers are not cleared when exiting the lake. If the lake has 20 plants at the beginning of the season, how many plants will exist at the end of the 12-week summer season? What is the general formula for Watermilfoil growth for this lake?</i> ★</p>
Strand	<b>Algebraic Reasoning - Algebra: Arithmetic with Polynomials &amp; Rational Expressions</b>
Standard	<b>AR.A.3</b> Perform arithmetic operations on polynomials.
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HSA.APR.A.1:</b> Understand that polynomials form a system analogous to the integers, namely, they are closed under certain operations.</p> <p><b>HSA.APR.A.1a:</b> Perform operations on polynomial expressions (addition, subtraction, multiplication, and division), and compare the system of polynomials to the system of integers.</p> <p><b>HSA.APR.A.1b:</b> Factor and/or expand polynomial expressions, identify and combine like terms, and apply the Distributive Property.</p>
Strand	<b>Algebraic Reasoning - Algebra: Arithmetic with Polynomials &amp; Rational Expressions</b>
	<b>The high school standards also contain some performance expectations which are denoted by a plus (+). These performance expectations are intended to be extensions of learning. All students should be given opportunities to explore this content, but mastery is not expected.</b>
Standard	<b>AR.A.4</b> Understand the relationship between zeros and factors of polynomials.
	Adolescence
	Grades 9-Diploma
Performance Expectations	<b>HSA.APR.B.2:</b> Know and apply the Remainder Theorem: For a polynomial $p(x)$ and a number $a$ , the remainder on division by $x - a$ is $p(a)$ , so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$ . For example, consider the polynomial

	<p>function <math>P(x) = x^4 - 2x^3 + ax^2 + 8x + 12</math>, where <math>a</math> is an unknown real number. If <math>(x-3)</math> is a factor of this polynomial, what is the value of <math>a</math>?</p> <p><b>(+) HSA.APR.B.3:</b> Identify zeros of polynomials of degree three or higher when suitable factorizations (in factored form or easily factorable) are available, and use the zeros to construct a rough graph of the function defined by the polynomial.</p>
Strand	<p><b>Algebraic Reasoning - Algebra: Arithmetic with Polynomials &amp; Rational Expressions</b></p> <p>The high school standards also contain some performance expectations which are denoted by a plus (+). These performance expectations are intended to be extensions of learning. All students should be given opportunities to explore this content, but mastery is not expected.</p>
Standard	<p><b>AR.A.5 (+)</b> Use polynomial identities to solve problems.</p>
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>(+) HSA.APR.C.4:</b> Prove polynomial identities and use them to describe numerical relationships. <i>For example, the polynomial identity <math>(x^2 + y^2)^2 = (x^2 - y^2)^2 + (2xy)^2</math> can be used to generate Pythagorean triples.</i></p> <p><b>(+) HSA.APR.C.5:</b> Know and apply the Binomial Theorem for the expansion of <math>(x + y)^n</math> in powers of <math>x</math> and <math>y</math> for a positive integer <math>n</math>, where <math>x</math> and <math>y</math> are any numbers, with coefficients determined for example by Pascal's Triangle. The Binomial Theorem can be proved by mathematical induction or by a combinatorial argument.</p>
Strand	<p><b>Algebraic Reasoning - Algebra: Arithmetic with Polynomials &amp; Rational Expressions</b></p> <p>The high school standards also contain some performance expectations which are denoted by a plus (+). These performance expectations are intended to be extensions of learning. All students should be given opportunities to explore this content, but mastery is not expected.</p>
Standard	<p><b>AR.A.6</b> Rewrite rational expressions.</p>
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HSA.APR.D.6:</b> Rewrite simple rational expressions in different forms; write <math>a(x)/b(x)</math> in the form <math>q(x) + r(x)/b(x)</math>, where <math>a(x)</math>, <math>b(x)</math>, <math>q(x)</math>, and <math>r(x)</math> are polynomials with the degree of <math>r(x)</math> less than the degree of <math>b(x)</math>, using inspection, long division, or, for the more complicated examples, a computer algebra system.</p>

	<b>(+) HSA.APR.D.7:</b> Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.
Strand	<b>Algebraic Reasoning -Algebra: Creating Equations and/or Inequalities</b> <b>Modeling Standards: Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appears throughout the high school standards indicated by a star symbol (★).</b>
Standard	<b>AR.A.7</b> Create equations and/or inequalities that describe numbers or relationships. ★
	Adolescence
	Grades 9-Diploma
Performance Expectations	<b>HSA.CED.A.1:</b> Create equations and inequalities in one variable and use them to solve problems. <i>Include equations arising from linear and quadratic functions, and simple rational and exponential functions.</i> ★  <b>HSA.CED.A.2:</b> Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. ★  <b>HSA.CED.A.3:</b> Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. <i>For example, represent inequalities describing nutritional and cost constraints on combinations of different foods such as lobsters, blueberries, and potatoes.</i> ★  <b>HSA.CED.A.4:</b> Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. <i>For example, rearrange Ohm's law <math>V = IR</math> to highlight resistance <math>R</math>.</i> ★
Strand	<b>Algebraic Reasoning - Algebra: Reasoning with Equations &amp; Inequalities</b>
Standard	<b>AR.A.8</b> Understand solving equations as a process of reasoning and explain the reasoning.
	Adolescence
	Grades 9-Diploma

Performance Expectations	<p><b>HSA.REI.A.1:</b> Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify or refute a solution method.</p> <p><b>HSA.REI.A.2:</b> Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.</p>
Strand	<p style="text-align: center;"><b>Algebraic Reasoning - Algebra: Reasoning with Equations &amp; Inequalities</b></p> <p>The high school standards also contain some performance expectations which are denoted by a plus (+). These performance expectations are intended to be extensions of learning. All students should be given opportunities to explore this content, but mastery is not expected.</p>
Standard	<b>AR.A.9</b> Solve equations and inequalities in one variable.
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HSA.REI.B.3:</b> Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.</p> <p><b>HSA.REI.B.4:</b> Solve quadratic equations in one variable.</p> <p><b>HSA.REI.B.4a:</b> Use the method of completing the square to transform any quadratic equation in <math>x</math> into an equation of the form <math>(x - p)^2 = q</math> that has the same solutions. Derive the quadratic formula from this form.</p> <p><b>HSA.REI.B.4b: i)</b> Solve quadratic equations by inspection (e.g., for <math>x^2 = 49</math>), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation.</p> <p><b>(+) HSA.REI.B.4b: ii)</b> Recognize when the quadratic formula gives complex solutions and write them as <math>a \pm bi</math> for real numbers <math>a</math> and <math>b</math>.</p>
Strand	<p style="text-align: center;"><b>Algebraic Reasoning - Algebra: Reasoning with Equations &amp; Inequalities</b></p> <p>The high school standards also contain some performance expectations which are denoted by a plus (+). These performance expectations are intended to be extensions of learning. All students should be given opportunities to explore this content, but mastery is not expected.</p>
Standard	<b>AR.A.10</b> Solve systems of equations.
	Adolescence

Grades 9-Diploma	
Performance Expectations	<p><b>HSA.REI.C.5:</b> Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.</p> <p><b>HSA.REI.C.6:</b> Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.</p> <p><b>HSA.REI.C.7:</b> Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. <i>For example, find the point(s) of intersection between the line <math>y = -3x</math> and the circle <math>x^2 + y^2 = 3</math>.</i></p> <p><b>(+) HSA.REI.C.8:</b> Represent a system of linear equations as a single matrix equation in a vector variable.</p> <p><b>(+) HSA.REI.C.9:</b> Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension <math>3 \times 3</math> or greater).</p>
Strand	<p style="text-align: center;"><b>Algebraic Reasoning - Algebra: Reasoning with Equations &amp; Inequalities</b></p> <p><b>Modeling Standards: Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appears throughout the high school standards indicated by a star symbol (★).</b></p>
Standard	<b>AR.A.11</b> Represent and solve equations and inequalities graphically.
Adolescence	
Grades 9-Diploma	
Performance Expectations	<p><b>HSA.REI.D.10:</b> Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line). Show that any point on the graph of an equation in two variables is a solution to the equation.</p> <p><b>HSA.REI.D.11:</b> Explain why the x-coordinates of the points where the graphs of the equations <math>y = f(x)</math> and <math>y = g(x)</math> intersect are the solutions of the equation <math>f(x) = g(x)</math>; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where <math>f(x)</math> and/or <math>g(x)</math> are linear, polynomial, rational, absolute value, exponential, and logarithmic functions. ★</p>

	<b>HSA.REI.D.12:</b> Graph the solutions of a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set of a system of linear inequalities in two variables as the intersection of the corresponding half-planes.
Strand	<b>Algebraic Reasoning - Functions: Interpreting Functions</b>
Standard	<b>AR.A.12</b> Understand the concept of a function and use function notation.
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HSF.IF.A.1:</b> Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If <math>f</math> is a function and <math>x</math> is an element of its domain, then <math>f(x)</math> denotes the output of <math>f</math> corresponding to the input <math>x</math>. The graph of <math>f</math> is the graph of the equation <math>y = f(x)</math>.</p> <p><b>HSF.IF.A.2:</b> Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.</p> <p><b>HSF.IF.A.3:</b> Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. <i>For example, the Fibonacci sequence is defined recursively by <math>f(0) = f(1) = 1</math>, <math>f(n+1) = f(n) + f(n-1)</math> for <math>n \geq 1</math>.</i></p>
Strand	<b>Algebraic Reasoning - Functions: Interpreting Functions</b>
	<b>Modeling Standards: Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appears throughout the high school standards indicated by a star symbol (★).</b>
Standard	<b>AR.A.13</b> Interpret functions that arise in applications in terms of the context. ★
	Adolescence
	Grades 9-Diploma
Performance Expectations	<b>HSF.IF.B.4:</b> For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. <i>Key features may include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative and absolute maximums and minimums; symmetries; end behavior; and periodicity.</i> ★

	<p><b>HSF.IF.B.5:</b> Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. <i>For example, if the function <math>h(n)</math> gives the number of person-hours it takes to assemble <math>n</math> engines in a factory, then the positive integers would be an appropriate domain for the function.</i> ★</p> <p><b>HSF.IF.B.6:</b> Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph. ★</p>
Strand	<p style="text-align: center;"><b>Algebraic Reasoning - Functions: Interpreting Functions</b></p> <p><b>Modeling Standards:</b> Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appears throughout the high school standards indicated by a star symbol (★).</p> <p>The high school standards also contain some performance expectations which are denoted by a plus (+). These performance expectations are intended to be extensions of learning. All students should be given opportunities to explore this content, but mastery is not expected.</p>
Standard	<b>AR.A.14</b> Analyze functions using different representations.
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HSF.IF.C.7:</b> Graph functions expressed symbolically and as well as show and describe key features of the graph, by hand in simple cases and using technology for more complicated cases. ★</p> <p><b>HSF.IF.C.7a:</b> Graph linear and quadratic functions and show intercepts, maxima, and minima.</p> <p><b>HSF.IF.C.7b: i)</b> Graph square root and piecewise-defined functions, (including step functions and absolute value functions), as well as show and describe key features of the graph.</p>

	<p>(+) <b>HSF.IF.C.7b: ii)</b> Graph cube root functions, as well as show and describe key features of the graph.</p> <p>(+) <b>HSF.IF.C.7c:</b> Graph polynomial functions of degree three or higher, identifying zeros when suitable factorizations (in factored form or easily factorable) are available, and showing end behavior.</p> <p>(+) <b>HSF.IF.C.7d:</b> Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.</p> <p><b>HSF.IF.C.7e: i)</b> Graph exponential functions, showing intercepts and end behavior, and</p> <p>(+) <b>HSF.IF.C.7e: ii)</b> Graph logarithmic functions, showing intercepts and end behavior and trigonometric functions, showing period, midline, and amplitude.</p> <p><b>HSF.IF.C.8:</b> Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.</p> <p><b>HSF.IF.C.8a:</b> Use the process of factoring and completing the square in a quadratic function to show zeros, maximum and minimum values, and symmetry of the graph, and interpret these in terms of a context.</p> <p><b>HSF.IF.C.8b:</b> Use the properties of exponents to interpret expressions for exponential functions. For example, apply the properties to financial situations such as identifying appreciation and depreciation rate for the value of a house or car sometime after its initial purchase: <math>V_n = P(1 + r)^n</math>.</p> <p><b>HSF.IF.C.9:</b> Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). <i>For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.</i></p>
Strand	<p style="text-align: center;"><b>Algebraic Reasoning - Functions: Building Functions</b></p> <p><b>Modeling Standards: Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appears throughout the high school standards indicated by a star symbol (★).</b></p> <p><b>The high school standards also contain some performance expectations which are denoted by a plus (+). These performance expectations are intended to be extensions of learning. All students should be given opportunities to explore this content, but mastery is not expected.</b></p>
Standard	<p><b>AR.A.15</b> Build a function that models a relationship between two quantities. ★</p>
	Adolescence
	Grades 9-Diploma

<p>Performance Expectations</p>	<p><b>HSF.BF.A.1:</b> Write a function that describes a relationship between two quantities. ★  <b>HSF.BF.A.1a:</b> Determine an explicit expression, a recursive process, or steps for calculation from a context.  <b>HSF.BF.A.1b:</b> Combine standard function types using arithmetic operations. <i>For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.</i>  <b>(+) HSF.BF.A.1c:</b> Compose functions. <i>For example, if <math>T(y)</math> is the temperature in the atmosphere as a function of height, and <math>h(t)</math> is the height of a weather balloon as a function of time, then <math>T(h(t))</math> is the temperature at the location of the weather balloon as a function of time.</i></p> <p><b>HSF.BF.A.2:</b> Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms. ★</p>
<p>Strand</p>	<p style="text-align: center;"><b>Algebraic Reasoning - Functions: Building Functions</b></p> <p>The high school standards also contain some performance expectations which are denoted by a plus (+). These performance expectations are intended to be extensions of learning. All students should be given opportunities to explore this content, but mastery is not expected.</p>
<p>Standard</p>	<p><b>AR.A.16</b> Build new functions from existing functions.</p>
	<p style="text-align: center;">Adolescence</p>
	<p style="text-align: center;">Grades 9-Diploma</p>
<p>Performance Expectations</p>	<p><b>HSF.BF.B.3:</b> Identify the effect on the graph of replacing <math>f(x)</math> by <math>f(x) + k</math>, <math>k f(x)</math>, <math>f(kx)</math>, and <math>f(x + k)</math> for specific values of <math>k</math> (both positive and negative); find the value of <math>k</math> given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them. Okay as written.</p> <p><b>HSF.BF.B.4:</b> Find inverse functions.  <b>HSF.BF.B.4a:</b> Solve an equation of the form <math>f(x) = c</math> (where <math>c</math> represents the output value of the function) for a simple function <math>f</math> that has an inverse and write an expression for the inverse. <i>For example, if <math>f(x) = 2x^3</math>,</i></p>

	<p>then solving <math>f(x) = c</math> leads to <math>x = (c/2)^{1/3}</math>, which is the general formula for finding an input from a specific output, <math>c</math>, for this function.</p> <p>(+) <b>HSF.BF.B.4b:</b> Verify by composition that one function is the inverse of another.</p> <p>(+) <b>HSF.BF.B.4c:</b> Read values of an inverse function from a graph or a table, given that the function has an inverse.</p> <p>(+) <b>HSF.BF.B.4d:</b> Produce an invertible function from a non-invertible function by restricting the domain.</p> <p>(+) <b>HSF.BF.B.5:</b> Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.</p>
Strand	<p style="text-align: center;"><b>Algebraic Reasoning - Functions: Linear, Quadratic, &amp; Exponential Models</b></p> <p><b>Modeling Standards:</b> Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appears throughout the high school standards indicated by a star symbol (★).</p> <p>The high school standards also contain some performance expectations which are denoted by a plus (+). These performance expectations are intended to be extensions of learning. All students should be given opportunities to explore this content, but mastery is not expected.</p>
Standard	<b>AR.A.17</b> Construct and compare linear, quadratic, and exponential models and solve problems. ★
	Adolescence
	Grades 9-Diploma
Performance Expectations	<b>HSF.LE.A.1:</b> Distinguish between situations that can be modeled with linear functions and with exponential functions. ★

	<p><b>HSF.LE.A.1a:</b> Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.</p> <p><b>HSF.LE.A.1b:</b> Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.</p> <p><b>HSF.LE.A.1c:</b> Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.</p> <p><b>HSF.LE.A.2:</b> Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table). ★</p> <p><b>HSF.LE.A.3:</b> Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function. ★</p> <p><b>(+) HSF.LE.A.4:</b> For exponential models, express as a logarithm the solution to <math>ab^{ct} = d</math> where <math>a</math>, <math>c</math>, and <math>d</math> are numbers and the base <math>b</math> is 2, 10, or <math>e</math>; evaluate the logarithm using technology. ★</p>
Strand	<p style="text-align: center;"><b>Algebraic Reasoning - Functions: Linear, Quadratic, &amp; Exponential Models</b></p> <p><b>Modeling Standards: Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appears throughout the high school standards indicated by a star symbol (★).</b></p>
Standard	<b>AR.A.18</b> Interpret expressions for function in terms of the situation they model. ★
	Adolescence
	Grades 9-Diploma
Performance Expectations	<b>HSF.LE.B.5:</b> Interpret the parameters in a linear or exponential function in terms of a context. ★
Strand	<b>Algebraic Reasoning - Functions: Trigonometric Functions</b>

	<b>The high school standards also contain some performance expectations which are denoted by a plus (+). These performance expectations are intended to be extensions of learning. All students should be given opportunities to explore this content, but mastery is not expected.</b>
Standard	<b>AR.A.19</b> Extend the domain of trigonometric functions using the unit circle.
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HSF.TF.A.1:</b> Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.</p> <p><b>HSF.TF.A.2:</b> Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.</p> <p><b>(+) HSF.TF.A.3:</b> Use special triangles to determine geometrically the values of sine, cosine, tangent for <math>\pi/3</math>, <math>\pi/4</math> and <math>\pi/6</math>, and use the unit circle to express the values of sine, cosine, and tangent for <math>x</math>, <math>\pi + x</math>, and <math>2\pi - x</math> in terms of their values for <math>x</math>, where <math>x</math> is any real number.</p> <p><b>(+) HSF.TF.A.4:</b> Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.</p>
Strand	<p style="text-align: center;"><b>Algebraic Reasoning - Functions: Trigonometric Functions</b></p> <p><b>Modeling Standards: Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appears throughout the high school standards indicated by a star symbol (★).</b></p> <p><b>The high school standards also contain some performance expectations which are denoted by a plus (+). These performance expectations are intended to be extensions of learning. All students should be given opportunities to explore this content, but mastery is not expected.</b></p>
Standard	<b>AR.A.20 (+)</b> Model periodic phenomena with trigonometric functions.
	Adolescence

Grades 9-Diploma	
Performance Expectations	<p><b>(+) HSF.TF.B.5:</b> Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline. ★</p> <p><b>(+) HSF.TF.B.6:</b> Understand that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed.</p> <p><b>(+) HSF.TF.B.7:</b> Use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context. ★</p>
Strand	<p style="text-align: center;"><b>Algebraic Reasoning - Functions: Trigonometric Functions</b></p> <p><b>The high school standards also contain some performance expectations which are denoted by a plus (+). These performance expectations are intended to be extensions of learning. All students should be given opportunities to explore this content, but mastery is not expected.</b></p>
Standard	<b>AR.A.21 (+)</b> Prove and apply trigonometric identities.
Adolescence	
Grades 9-Diploma	
Performance Expectations	<p><b>(+) HSF.TF.C.8:</b> Prove the Pythagorean identity <math>\sin^2(\theta) + \cos^2(\theta) = 1</math> and use it to find <math>\sin(\theta)</math>, <math>\cos(\theta)</math>, or <math>\tan(\theta)</math> given <math>\sin(\theta)</math>, <math>\cos(\theta)</math>, or <math>\tan(\theta)</math> and the quadrant of the angle.</p> <p><b>(+) HSF.TF.C.9:</b> Prove the addition and subtraction formulas for sine, cosine, and tangent and use them to solve problems.</p>

**Geometric Reasoning**

Geometric reasoning is the use of critical thinking, logical argument and spatial reasoning to solve problems and find new relationships. Students must first have a critical understanding of any underlying assumptions and relationships. This allows them to develop coherent knowledge and apply their reasoning skills. In this K-5 strand, students will develop an understanding of the attributes of two- and three-dimensional shapes and apply this knowledge to real-world problems. Students will also be introduced to the coordinate system.

Students in grades 6-8 work with two- and three-dimensional objects to reason about relationships among shapes. They learn to calculate area, surface area, volume, and circumference using multiple methods including decomposing shapes so that they can develop, justify, and use formulas including the Pythagorean Theorem and its converse. They use scale drawings and informal constructions to gain familiarity with the relationships between angles formed by intersecting lines and transformations.

During high school, students begin to formalize their geometry experiences from elementary and middle school, using more complex definitions and reasoning of proofs. Students make geometric constructions using a variety of technological tools and connect these explorations to reasoning and proofs. Attributes of parallel lines intersected by a transversal are further developed and extended into properties of triangles, quadrilaterals, and regular polygons as well as circles using informal and formal reasoning. Fundamental to the concepts of congruence, similarity, and symmetry are transformations which can preserve distance and angles.

The definitions of sine, cosine, and tangent for acute angles are founded on right triangles and similarity. The Pythagorean Theorem along with these ratios are fundamental in many real-world and theoretical situations. Correspondence between numerical coordinates and geometric points allows methods from algebra to be applied to geometry and vice versa. Concepts of two- and three-dimensional shapes are explored using algebraic formulas and modeling. Students are encouraged to extend their geometric reasoning through the exploration of trigonometric identities and properties of conic sections.

Strand	<b>Geometric Reasoning - Geometry</b>		
Standard	<b>GR.C.1</b> Identify, describe, analyze, compare, create, and compose shapes based on their attributes.		
	Childhood		
	Kindergarten	Grade 1	Grade 2
		Students should apply the principle of transitivity of measurement to make indirect comparisons, but they need not use this technical term.	Sizes are compared directly or visually, not compared by measuring.
Performance Expectations	<b>K.G.A.1:</b> Describe objects in the environment using names of shapes and describe the	<b>1.G.A.1:</b> Distinguish between defining attributes (e.g., triangles are closed and three-sided)	<b>2.G.A.1:</b> Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.

	<p>relative positions of these objects using terms such as <i>above, below, beside, in front of, behind, and next to.</i></p> <p><b>K.G.A.2:</b> Correctly name shapes regardless of their orientations or overall size.</p> <p><b>K.G.A.3:</b> Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").</p> <p><b>K.G.B.4:</b> Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).</p> <p><b>K.G.B.5:</b> Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.</p>	<p>versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.</p>	<p>Identify triangles, quadrilaterals (including squares, rectangles, rhombuses, and trapezoids) pentagons, hexagons, and cubes. Sizes are compared directly or visually, not compared by measuring.</p>
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	<p><b>K.G.B.6:</b> Compose simple shapes to form larger shapes. <i>For example, "Can you join these two triangles with full sides touching to make a rectangle?"</i></p>	<p><b>1.G.A.2:</b> Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.</p> <p><b>1.G.A.3:</b> Partition circles and rectangles into two and four equal shares, describe the shares using the words <i>halves</i>, <i>fourths</i>, and <i>quarters</i>, and use the phrases <i>half of</i>, <i>fourth of</i>, and <i>quarter of</i>. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.</p>	<p><b>2.G.A.2:</b> Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.</p> <p><b>2.G.A.3:</b> Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.</p>
Strand	<b>Geometric Reasoning - Geometry</b>		
Standard	<b>GR.C.2</b> Analyze, compare, create, and compose shapes based on their attributes.		
	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	<b>3.G.A.1:</b> Understand that shapes in different categories (e.g., rhombuses, rectangles,		<b>5.G.B.3:</b> Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.

	<p>and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.</p> <p><b>3.G.A.2:</b> Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. <i>For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.</i></p>		<p>For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.</p> <p><b>5.G.B.4:</b> Classify two-dimensional figures in a hierarchy based on properties. (e.g., all rectangles are parallelograms, because they are all quadrilaterals with two pairs of opposite sides parallel.)</p>
Strand	<b>Geometric Reasoning - Geometry</b>		
Standard	<b>GR.C.3</b> Draw and identify lines and angles and classify shapes by properties of their lines and angles.		
	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations		<p><b>4.G.A.1:</b> Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.</p>	

		<p><b>4.G.A.2:</b> Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category and identify right triangles.</p> <p><b>4.G.A.3:</b> Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.</p>	
Strand	<b>Geometric Reasoning - Geometry</b>		
Standard	<b>GR.C.4</b> Graph points on the coordinate plane to solve real-world and mathematical problems.		
	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations			<p><b>5.G.A.1:</b> Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).</p>

			<b>5.G.A.2:</b> Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane and interpret coordinate values of points in the context of the situation.
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Strand	Geometric Reasoning - Geometry
Standard	<b>GR.EA.1</b> Solve real-world and mathematical problems involving angle measure, area, surface area, and volume.
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b>6.G.A.1:</b> Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.</p> <p><b>6.G.A.2:</b> Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas <math>V = l w h</math> and <math>V = B h</math> (where B stands for the area of the base) to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.</p> <p><b>6.G.A.3:</b> Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.</p> <p><b>6.G.A.4:</b> Represent three-dimensional figures using nets made up of rectangles and triangles and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.</p> <p><b>7.G.B.4:</b> Know that a circle is a two-dimensional shape created by connecting all the points equidistant from a fixed point called the center of the circle. Understand and describe the relationships among the radius, diameter, circumference and area of a circle. Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.</p>

	<p><b>7.G.B.5:</b> Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.</p> <p><b>7.G.B.6:</b> Solve real-world and mathematical problems involving area, volume and surface area of two- and/or three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.</p> <p><b>8.G.C.9:</b> Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.</p>
Strand	<b>Geometric Reasoning - Geometry</b>
Standard	<b>GR.EA.2</b> Draw, construct, and describe geometrical figures and describe the relationships between them.
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b>7.G.A.1:</b> Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.</p> <p><b>7.G.A.2:</b> Draw (freehand, with ruler and protractor, and with technology) two-dimensional geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.</p> <p><b>7.G.A.3:</b> Describe the shape of the cross-section two-dimensional face of the figures that results from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.</p>
Strand	<b>Geometric Reasoning - Geometry</b>
Standard	<b>GR.EA.3</b> Understand congruence and similarity using physical models, transparencies, or geometry software,
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b>8.G.A.1:</b> Verify experimentally the properties of rotations, reflections, and translations:</p> <p><b>8.G.A.1a:</b> Lines are taken to lines, and line segments to line segments of the same length.</p> <p><b>8.G.A.1b:</b> Angles are taken to angles of the same measure.</p> <p><b>8.G.A.1c:</b> Parallel lines are taken to parallel lines.</p>

	<p><b>8.G.A.2:</b> Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.</p> <p><b>8.G.A.3:</b> Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.</p> <p><b>8.G.A.4:</b> Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.</p> <p><b>8.G.A.5:</b> Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. <i>For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.</i></p>
Strand	<b>Geometric Reasoning - Geometry</b>
Standard	<b>GR.EA.4</b> Understand and apply the Pythagorean Theorem.
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b>8.G.B.6:</b> Explain a proof of the Pythagorean Theorem and its converse using pictures, diagrams, narratives or models.</p> <p><b>8.G.B.7:</b> Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.</p> <p><b>8.G.B.8:</b> Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.</p>

Strand	<b>Geometric Reasoning - Geometry: Congruence</b>
Standard	<b>GR.A.1</b> Experiment with transformations in the plane.
	Adolescence
	Grades 9-Diploma
Performance Expectations	<b>HSG.CO.A.1:</b> Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.

	<p><b>HSG.CO.A.2:</b> Represent transformations in the plane using, e.g., transparencies and/or geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).</p> <p><b>HSG.CO.A.3:</b> Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.</p> <p><b>HSG.CO.A.4:</b> Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.</p> <p><b>HSG.CO.A.5:</b> Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.</p>
Strand	<b>Geometric Reasoning - Geometry: Congruence</b>
Standard	<b>GR.A.2</b> Understand congruence in terms of rigid motions.
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HSG.CO.B.6:</b> Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.</p> <p><b>HSG.CO.B.7:</b> Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.</p> <p><b>HSG.CO.B.8:</b> Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.</p>
Strand	<b>Geometric Reasoning - Geometry: Congruence</b>
Standard	<b>GR.A.3</b> Prove geometric theorems and when appropriate, the converse of theorems.
	Adolescence
	Grades 9-Diploma
Performance Expectations	<b>HSG.CO.C.9:</b> Prove theorems about lines and angles. <i>Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are</i>

	<p><i>congruent, and conversely prove lines are parallel; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.</i></p> <p><b>HSG.CO.C.10:</b> Prove theorems about triangles. <i>Theorems include: measures of interior angles of a triangle sum to 180°; base angles of isosceles triangles are congruent, and conversely prove a triangle is isosceles; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.</i></p> <p><b>HSG.CO.C.11:</b> Prove theorems about parallelograms. <i>Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.</i></p>
Strand	<b>Geometric Reasoning - Geometry: Congruence</b>
Standard	<b>GR.A.4</b> Make geometric constructions.
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HSG.CO.D.12:</b> Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). <i>Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.</i></p> <p><b>HSG.CO.D.13:</b> Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.</p>
Strand	<b>Geometric Reasoning - Geometry: Similarity, Right Triangles, &amp; Trigonometry</b>
Standard	<b>GR.A.5</b> Understand similarity in terms of similarity transformations.
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HSG.SRT.A.1:</b> Verify experimentally the properties of dilations given by a center and a scale factor:</p> <p><b>HSG.SRT.A.1a:</b> A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.</p> <p><b>HSG.SRT.A.1b:</b> The dilation of a line segment is longer or shorter in the ratio given by the scale factor.</p>

	<p><b>HSG.SRT.A.2:</b> Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.</p> <p><b>HSG.SRT.A.3:</b> Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.</p>
Strand	<b>Geometric Reasoning - Geometry: Similarity, Right Triangles, &amp; Trigonometry</b>
Standard	<b>GR.A.6</b> Prove theorems involving similarity using a variety of ways of writing proofs, showing validity of underlying reasoning.
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HSG.SRT.B.4:</b> Prove theorems about triangles. <i>Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.</i></p> <p><b>HSG.SRT.B.5:</b> Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.</p>
Strand	<b>Geometric Reasoning - Geometry: Similarity, Right Triangles, &amp; Trigonometry</b>
	<b>Modeling Standards: Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appears throughout the high school standards indicated by a star symbol (★).</b>
Standard	<b>GR.A.7</b> Define trigonometric ratios and solve problems involving right triangles.
	Adolescence

Grades 9-Diploma	
Performance Expectations	<p><b>HSG.SRT.C.6:</b> Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.</p> <p><b>HSG.SRT.C.7:</b> Explain and use the relationship between the sine and cosine of complementary angles.</p> <p><b>HSG.SRT.C.8:</b> Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems. For example, find the current height of the tallest pine tree in Maine using the angle of elevation and the distance from the tree. ★</p>
Strand	<p><b>Geometric Reasoning - Geometry: Similarity, Right Triangles, &amp; Trigonometry</b></p> <p>The high school standards also contain some performance expectations which are denoted by a plus (+). These performance expectations are intended to be extensions of learning. All students should be given opportunities to explore this content, but mastery is not expected.</p>
Standard	<b>GR.A.8 (+)</b> Apply trigonometry to general triangles.
Adolescence	
Grades 9-Diploma	
Performance Expectations	<p><b>(+) HSG.SRT.D.9:</b> Derive the formula <math>A = \frac{1}{2} ab \sin(C)</math> for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.</p> <p><b>(+) HSG.SRT.D.10:</b> Prove the Laws of Sines and Cosines and use them to solve problems.</p> <p><b>(+) HSG.SRT.D.11:</b> Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).</p>
Strand	<p><b>Geometric Reasoning - Geometry: Circle</b></p> <p>The high school standards also contain some performance expectations which are denoted by a plus (+). These performance expectations are intended to be extensions of learning. All students should be given opportunities to explore this content, but mastery is not expected.</p>
Standard	<b>GR.A.9</b> Understand and apply theorems about circles.
Adolescence	

Grades 9-Diploma	
Performance Expectations	<p><b>HSG.C.A.1:</b> Prove that all circles are similar.</p> <p><b>HSG.C.A.2:</b> Identify and describe relationships among inscribed angles, radii, and chords. <i>Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.</i></p> <p><b>HSG.C.A.3:</b> Construct the inscribed and circumscribed circles of a triangle and prove properties of angles for a quadrilateral inscribed in a circle.</p> <p><b>(+) HSG.C.A.4:</b> Construct a tangent line from a point outside a given circle to the circle.</p>
Strand	<b>Geometric Reasoning - Geometry: Circle</b>
Standard	<b>GR.A.10</b> Find arc lengths and areas of sectors of circles.
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HSG.C.B.5:</b> Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.</p>
Strand	<p style="text-align: center;"><b>Geometric Reasoning - Geometry: Expressing Geometric Properties with Equations</b></p> <p>The high school standards also contain some performance expectations which are denoted by a plus (+). These performance expectations are intended to be extensions of learning. All students should be given opportunities to explore this content, but mastery is not expected.</p>
Standard	<b>GR.A.11</b> Translate between the geometric description and the equation for a conic section.

Adolescence	
Grades 9-Diploma	
Performance Expectations	<p><b>HSG.GPE.A.1:</b> Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.</p> <p><b>HSG.GPE.A.2:</b> Derive the equation of a parabola given a focus and directrix.</p> <p><b>(+) HSG.GPE.A.3:</b> Derive the equations of ellipses and hyperbolas given the foci and directrix, using the fact that the sum or difference of distances from the foci is constant.</p>
Strand	<p><b>Geometric Reasoning - Geometry: Expressing Geometric Properties with Equations</b></p> <p><b>Modeling Standards: Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appears throughout the high school standards indicated by a star symbol (★).</b></p>
Standard	<b>GR.A.12</b> Use coordinates to prove simple geometric theorems algebraically.
Adolescence	
Grades 9-Diploma	
Performance Expectations	<p><b>HSG.GPE.B.4:</b> Use coordinates to prove simple geometric theorems algebraically including the distance formula and its relationship to the Pythagorean Theorem. <i>For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point <math>(1, \sqrt{3})</math> lies on the circle centered at the origin and containing the point <math>(0, 2)</math>.</i></p> <p><b>HSG.GPE.B.5:</b> Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).</p> <p><b>HSG.GPE.B.6:</b> Find the point on a directed line segment between two given points that partitions the segment in a given ratio.</p> <p><b>HSG.GPE.B.7:</b> Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula. ★</p>
Strand	<b>Geometric Reasoning - Geometry: Geometric Measurements &amp; Dimension</b>

	<p><b>Modeling Standards: Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appears throughout the high school standards indicated by a star symbol (★).</b></p> <p><b>The high school standards also contain some performance expectations which are denoted by a plus (+). These performance expectations are intended to be extensions of learning. All students should be given opportunities to explore this content, but mastery is not expected.</b></p>
Standard	<b>GR.A.13</b> Explain volume formulas and use them to solve problems.
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HSG.GMD.A.1:</b> Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. <i>Use dissection arguments, Cavalieri's principle, and/or informal limit arguments.</i></p> <p><b>(+) HSG.GMD.A.2:</b> Give an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures.</p> <p><b>HSG.GMD.A.3:</b> Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems. ★</p>
Strand	<b>Geometric Reasoning - Geometry: Geometric Measurements &amp; Dimension</b>
Standard	<b>GR.A.14</b> Visualize relationships between two-dimensional and three-dimensional objects.
	Adolescence
	Grades 9-Diploma
Performance Expectations	<b>HSG.GMD.B.4:</b> Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.
Strand	<b>Geometric Reasoning - Geometry: Modeling with Geometry</b>
	<p><b>Modeling Standards: Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and</b></p>

	<b>specific modeling standards appears throughout the high school standards indicated by a star symbol (★).</b>
Standard	<b>GR.A.15</b> Apply geometric concepts in modeling situations. ★
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HSG.MG.A.1:</b> Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder). ★</p> <p><b>HSG.MG.A.2:</b> Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot). ★</p> <p><b>HSG.MG.A.3:</b> Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios). ★</p>

### Statistical Reasoning

Statistical reasoning is the way people analyze data and make sense of information. It involves generalizations that connect one concept to another. In this K-5 strand, students will develop strategies to represent and interpret data, describe and compare measurable attributes, and understand concepts of measurement including perimeter, area, volume, time, and money.

Students in grades 6-8 continue to develop their ability to think statistically. Measures of central tendency (mean, median, and mode) as well as measures of variability (range, interquartile range, mean absolute deviation) are used to describe data. Previous work with single data distributions is expanded to compare two data distributions and address questions about differences between populations. Informal work with random sampling and learning about the importance of representative samples for drawing inferences is introduced. Students then expand their statistical understanding to include connections involving modeling with linear equations, as well as non-linear expressions. Looking for patterns in a bivariate data system is emphasized.

In grades 9-12 students extend their statistical understanding of univariate and bi-variate data in a real-world context. This understanding is used to make decisions or predictions based on the data. Since data can be variable, statistics provide the tools for taking this variability into account. Data can be categorical or quantitative in nature. Appropriate methods for collecting, displaying, summarizing, and analyzing data are learned and employed. Algebraic and geometric reasoning are utilized to create linear regression models in order to interpret the relationship between two quantitative variables when appropriate.

The conditions under which data are collected and the use of randomization in the design of a study are necessary for drawing valid conclusions about the population under study. Since random processes can be described mathematically by using a probability model, the role of probability in making predictions or in making decisions becomes evident. Technology makes it possible to generate plots, find regression functions, compute correlation coefficients, and run simulations to better understand data. Statistical reasoning is a deeply rich and complex process which is essential to comprehend in order to stay informed in civic matters and personal decision-making.

Strand	Statistical Reasoning - Measurement & Data		
Standard	<b>SR.C.1</b> Describe and compare measurable attributes.		
	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	<b>K.MD.A.1:</b> Describe measurable attributes of objects, such as length		

	<p>or weight. Describe several measurable attributes of a single object.</p> <p><b>K.MD.A.2:</b> Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute and describe the difference. <i>For example, directly compare the heights of two children and describe one child as taller/shorter.</i></p>	<p><b>1.MD.A.1:</b> Order three objects by length; compare the lengths of two objects indirectly by using a third object.</p> <p><b>1.MD.A.2:</b> Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. <i>Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.</i></p>	<p><b>2.MD.A.4:</b> Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.</p> <p><b>2.MD.A.1:</b> Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.</p> <p><b>2.MD.A.2:</b> Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.</p> <p><b>2.MD.A.3:</b> Estimate lengths using units of inches, feet, centimeters, and meters.</p>
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	<b>K.MD.B.3:</b> Classify objects into given categories; count the numbers of objects in each category and sort the categories by count. (Limit category counts to be less than or equal to 10.)		
<b>Strand</b>	<b>Statistical Reasoning - Measurement &amp; Data</b>		
<b>Standard</b>	<b>SR.C.2</b> Represent and interpret data.		
	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations		<b>1.MD.C.4:</b> Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.	<b>2.MD.D.9:</b> Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Organize and record data on a line plot, where the horizontal scale is marked off in whole-number units.  <b>2.MD.D.10:</b> Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

Strand	Statistical Reasoning - Measurement & Data		
Standard	SR.C.3 Relate addition and subtraction to length.		
	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations			<p><b>2.MD.B.5:</b> Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.</p> <p><b>2.MD.B.6:</b> Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.</p>
Strand	Statistical Reasoning - Measurement & Data		
Standard	SR.C.4 Work with time and money.		
	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations		<p><b>1.MD.B.3:</b> Tell and write time in hours and half-hours using analog and digital clocks.</p>	<p><b>2.MD.C.7:</b> Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.</p>

		<b>1.MD.D.5:</b> Identify the coins and each corresponding value. (e.g. penny, nickel, dime, and quarter)	<b>2.MD.C.8:</b> Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?
<b>Strand</b>	<b>Statistical Reasoning - Measurement &amp; Data</b>		
<b>Standard</b>	<b>SR.C.5</b> Solve problems involving measurement, conversion of measurement and estimation of intervals of time, liquid volumes, and masses of objects.		
	Childhood		
	Grade 3	Grade 4	Grade 5
	<p>Excludes compound units such as cm<sup>3</sup> and finding the geometric volume of a container</p> <p>Excludes multiplicative comparison problems (problems involving notions of “times as much”)</p>		
<b>Performance Expectations</b>	<p><b>3.MD.A.1:</b> Tell and write time to the nearest minute and measure time intervals in minutes using analog and digital clocks. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.</p> <p><b>3.MD.A.2:</b> Measure and estimate liquid volumes and masses of objects using standard metric units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word</p>		

problems involving masses or volumes that are given in the same metric units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.

**4.MD.A.1:** Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...*

**4.MD.A.2:** Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger

**5.MD.A.1:** Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

		unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.	
Strand	<b>Statistical Reasoning - Measurement &amp; Data</b>		
Standard	<b>SR.C.6</b> Represent and interpret data.		
	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	<p><b>3.MD.B.3:</b> Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. <i>For example, draw a bar graph in which each square in the bar graph might represent 5 pets.</i></p> <p><b>3.MD.B.4:</b> Generate measurement data by measuring lengths of objects using rulers marked with halves and fourths of an inch. Record and show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or fourths.</p>	<p><b>4.MD.B.4:</b> Make a line plot to display a data set of measurements in fractions of a unit (<math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{8}</math>). Solve problems involving addition and subtraction of fractions by using information presented in line plots. <i>For example, from a line plot find and interpret the difference in length between the</i></p>	<p><b>5.MD.B.2:</b> Make a line plot to display a data set of measurements in fractions of a unit (<math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{8}</math>). Use operations on fractions for this grade to solve problems involving information presented in line plots. <i>For example, given different measurements of liquid in identical beakers, find the amount of liquid each</i></p>

		<i>longest and shortest specimens in an insect collection.</i>	<i>beaker would contain if the total amount in all the beakers were redistributed equally.</i>
<b>Strand</b>	<b>Statistical Reasoning - Measurement &amp; Data</b>		
<b>Standard</b>	<b>SR.C.7</b> Understand concepts of Geometric measurement: involving perimeter, area, and volume.		
	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	<p><b>3.MD.C.5:</b> Recognize area as an attribute of plane figures and understand concepts of area measurement.</p> <p><b>3.MD.C.5a:</b> A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.</p> <p><b>3.MD.C.5b:</b> A plane figure which can be covered without gaps or overlaps by <math>n</math> unit squares is said to have an area of <math>n</math> square units.</p> <p><b>3.MD.C.6:</b> Measure areas by counting unit squares (square cm, square m, square in, square ft, and non- standard units)</p>		<p><b>5.MD.C.3:</b> Recognize volume as an attribute of solid figures and understand concepts of volume measurement.</p> <p><b>5.MD.C.3a:</b> A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.</p> <p><b>5.MD.C.3b:</b> A solid figure which can be packed without gaps or overlaps using <math>n</math> unit cubes is said to have a volume of <math>n</math> cubic units.</p> <p><b>5.MD.C.4:</b> Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and non-standard units.</p>

	<p><b>3.MD.C.7:</b> Relate area to the operations of multiplication and addition.</p> <p><b>3.MD.C.7a:</b> Find the area of a rectangle with whole-number side lengths by tiling it and show that the area is the same as would be found by multiplying the side lengths.</p> <p><b>3.MD.C.7b:</b> Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems and represent whole-number products as rectangular areas in mathematical reasoning.</p> <p><b>3.MD.C.7c:</b> Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths <math>a</math> and <math>b + c</math> is the sum of <math>a \times b</math> and <math>a \times c</math>. Use area models to represent the distributive property in mathematical reasoning.</p>	<p><b>4.MD.A.3:</b> Apply the area and perimeter formulas for rectangles in real world and mathematical problems. <i>For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area</i></p>	<p><b>5.MD.C.5:</b> Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. When finding volumes of objects answers will be in cubic units.</p> <p><b>5.MD.C.5a:</b> Find the volume of a right rectangular prism with whole-number edge lengths by packing it with unit cubes and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.</p> <p><b>5.MD.C.5b:</b> Apply the formulas <math>V = l \times w \times h</math> and <math>V = B \times h</math> (where <math>B</math> stands for the area of the base) for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of</p>
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	<p><b>3.MD.C.7d:</b> Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.</p> <p><b>3.MD.D.8:</b> Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.</p>	<p><i>formula as a multiplication equation with an unknown factor.</i></p>	<p>solving real world and mathematical problems.</p> <p><b>5.MD.C.5c:</b> Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.</p>
Strand	<b>Statistical Reasoning - Measurement &amp; Data</b>		
Standard	<b>SR.C.8</b> Geometric measurement: understand concept of angle and measure angles.		
	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations		<p><b>4.MD.C.5:</b> Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:</p> <p><b>4.Md.C.5a:</b> An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc</p>	

		<p>between the points where the two rays intersect the circle. An angle that turns through <math>\frac{1}{360}</math> of a circle is called a "one-degree angle," and can be used to measure angles.</p> <p><b>4.MD.C.5b:</b> An angle that turns through <math>n</math> one-degree angles is said to have an angle measure of <math>n</math> degrees.</p> <p><b>4.MD.C.6:</b> Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.</p> <p><b>4.MD.C.7:</b> Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.</p>	
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Strand	<b>Statistical Reasoning - Statistics &amp; Probability</b>
Standard	<b>SR.EA.1</b> Summarize distribution using measures of center, variability, and graphical displays.
	Early Adolescence

Grades 6-8	
Performance Expectations	<p><b>6.SP.A.1:</b> Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. <i>For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.</i></p> <p><b>6.SP.A.2:</b> Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center (mean, median and/or mode), spread (range and/or interquartile range), and overall shape.</p> <p><b>6.SP.A.3:</b> Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.</p> <p><b>6.SP.B.4:</b> Display numerical data in plots on a number line, including dot plots, histograms, and box plots.</p> <p><b>6.SP.B.5:</b> Summarize numerical data sets in relation to their context, such as by:</p> <p style="padding-left: 20px;"><b>6.SP.B.5a:</b> Reporting the number of observations.</p> <p style="padding-left: 20px;"><b>6.SP.B.5b:</b> Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.</p> <p style="padding-left: 20px;"><b>6.SP.B.5c:</b> Calculating quantitative measures of center (median and/or mean) and variability (range and/or interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.</p> <p style="padding-left: 20px;"><b>6.SP.B.5d:</b> Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.</p>
Strand	<b>Statistical Reasoning - Statistics &amp; Probability</b>
Standard	<b>SR.EA.2</b> Use random sampling, visual representations, and measures of center and variability to draw inferences about one or more populations.
	Early Adolescence
	Grades 6-8
Performance Expectations	<b>7.SP.A.1:</b> Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of

	<p>that population. Understand that random sampling tends to produce representative samples and support valid inferences.</p> <p><b>7.SP.A.2:</b> Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. <i>For example, estimate the mean length of a largemouth bass in a lake by randomly sampling largemouth bass from the lake; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.</i></p> <p><b>7.SP.B.3:</b> Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. <i>For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team and both distributions have similar variability (mean absolute deviation) of about 5 cm. The difference between the mean heights of the two teams (10 cm) is about twice the variability (5 cm mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.</i></p> <p><b>7.SP.B.4:</b> Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. <i>For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.</i></p>
Strand	<b>Statistical Reasoning - Statistics &amp; Probability</b>
Standard	<b>SR.EA.3</b> Investigate chance processes and develop, use, and evaluate probability models.
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b>7.SP.C.5:</b> Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.</p> <p><b>7.SP.C.6:</b> Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. <i>For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.</i></p> <p><b>7.SP.C.7:</b> Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.</p>

	<p><b>7.SP.C.7a:</b> Develop a uniform probability model by assigning equal probability to all outcomes and use the model to determine probabilities of events. <i>For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.</i></p> <p><b>7.SP.C.7b:</b> Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. <i>For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?</i></p> <p><b>7.SP.C.8:</b> Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.</p> <p><b>7.SP.C.8a:</b> Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.</p> <p><b>7.SP.C.8b:</b> Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event.</p> <p><b>7.SP.C.8c:</b> Design and use a simulation to generate frequencies for compound events. <i>For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?</i></p>
Strand	<b>Statistical Reasoning - Statistics &amp; Probability</b>
Standard	<b>SR.EA.4</b> Investigate patterns of association in bivariate data.
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b>8.SP.A.1:</b> Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.</p> <p><b>8.SP.A.2:</b> Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.</p> <p><b>8.SP.A.3:</b> Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. <i>For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.</i></p>

	<p><b>8.SP.A.4:</b> Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. <i>For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?</i></p>
Strand	<p><b>Statistical Reasoning - Statistics &amp; Probability: Interpreting Categorical &amp; Quantitative Data</b></p> <p><b>Modeling Standards: Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appears throughout the high school standards indicated by a star symbol (★).</b></p>
Standard	<p><b>SR.A.1</b> Summarize, represent, and interpret data on a single count or measurement variable. ★</p>
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HHS.ID.A.1:</b> Represent data with plots on the real number line (dot plots, histograms, and box plots). ★</p> <p><b>HSS.ID.A.2:</b> Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. ★</p> <p><b>HSS.ID.A.3:</b> Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers). ★</p> <p><b>HSS.ID.A.4:</b> Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve. ★</p>
Strand	<p><b>Statistical Reasoning - Statistics &amp; Probability: Interpreting Categorical &amp; Quantitative Data</b></p> <p><b>Modeling Standards: Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and</b></p>

	<b>specific modeling standards appears throughout the high school standards indicated by a star symbol (★).</b>
Standard	<b>SR.A.2</b> Summarize, represent, and interpret data on two categorical variables and two quantitative variables. ★
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HSS.ID.B.5:</b> Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data. ★</p> <p><b>HSS.ID.B.6:</b> Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. ★</p> <p><b>HSS.ID.B.6a:</b> Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models. ★</p> <p><b>HSS.ID.B.6b:</b> Informally assess the fit of a function by plotting and analyzing residuals. ★</p> <p><b>HSS.ID.B.6c:</b> Fit a linear function for a scatter plot that suggests a linear association. ★</p>
Strand	<p><b>Statistical Reasoning - Statistics &amp; Probability: Interpreting Categorical &amp; Quantitative Data</b></p> <p><b>Modeling Standards: Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appears throughout the high school standards indicated by a star symbol (★).</b></p>
Standard	<b>SR.A.3</b> Interpret linear models. ★
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HSS.ID.C.7:</b> Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data. ★</p> <p><b>HSS.ID.C.8:</b> Compute (using technology) and interpret the correlation coefficient of a linear fit. ★</p> <p><b>HSS.ID.C.9:</b> Distinguish between correlation and causation. ★</p>
Strand	<b>Statistical Reasoning - Statistics &amp; Probability: Making Inferences &amp; Justifying Conclusions</b>

	<b>Modeling Standards: Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appears throughout the high school standards indicated by a star symbol (★).</b>
Standard	<b>SR.A.4</b> Understand and evaluate random processes underlying statistical experiments. ★
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HSS.IC.A.1:</b> Understand statistics as a process for making inferences about population parameters based on a random sample from that population. ★</p> <p><b>HSS.IC.A.2:</b> Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. <i>For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?</i> ★</p>
Strand	<p><b>Statistical Reasoning - Statistics &amp; Probability: Making Inferences &amp; Justifying Conclusions</b></p> <p><b>Modeling Standards: Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appears throughout the high school standards indicated by a star symbol (★).</b></p>
Standard	<b>SR.A.5</b> Make inferences and justify conclusions from sample surveys, experiments, and observational studies. ★
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HSS.IC.B.3:</b> Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each. ★</p> <p><b>HSS.IC.B.4:</b> Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling. ★</p> <p><b>HSS.IC.B.5:</b> Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant. ★</p>

	<b>HSS.IC.B.6:</b> Evaluate reports based on data. <i>For example, use an article in the local news and interpret the validity of the information presented. Consider animal wildlife reports, medical studies, and/or manufacturer claims.</i> ★
Strand	<b>Statistical Reasoning - Statistics &amp; Probability: Conditional Probability &amp; the Rules of Probability</b>  <b>Modeling Standards:</b> Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appears throughout the high school standards indicated by a star symbol (★).
Standard	<b>SR.A.6</b> Understand independence and conditional probability and use them to interpret data. ★
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HSS.CP.A.1:</b> Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not"). ★</p> <p><b>HSS.CP.A.2:</b> Understand that two events <math>A</math> and <math>B</math> are independent if the probability of <math>A</math> and <math>B</math> occurring together is the product of their probabilities, and use this characterization to determine if they are independent. ★</p> <p><b>HSS.CP.A.3:</b> Understand the conditional probability of <math>A</math> given <math>B</math> as <math>P(A \text{ and } B)/P(B)</math>, and interpret independence of <math>A</math> and <math>B</math> as saying that the conditional probability of <math>A</math> given <math>B</math> is the same as the probability of <math>A</math>, and the conditional probability of <math>B</math> given <math>A</math> is the same as the probability of <math>B</math>. ★</p> <p><b>HSS.CP.A.4:</b> Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. <i>For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.</i> ★</p> <p><b>HSS.CP.A.5:</b> Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. <i>For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.</i> ★</p>

Strand	<p align="center"><b>Statistical Reasoning - Statistics &amp; Probability: Conditional Probability &amp; the Rules of Probability</b></p> <p><b>Modeling Standards: Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appears throughout the high school standards indicated by a star symbol (★).</b></p> <p><b>The high school standards also contain some performance expectations which are denoted by a plus (+). These performance expectations are intended to be extensions of learning. All students should be given opportunities to explore this content, but mastery is not expected.</b></p>
Standard	<b>SR.A.7</b> Use the rules of probability to compute probabilities of compound events in a uniform probability model. ★
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HSS.CP.B.6:</b> Find the conditional probability of <math>A</math> given <math>B</math> as the fraction of <math>B</math>'s outcomes that also belong to <math>A</math>, and interpret the answer in terms of the model. ★</p> <p><b>HSS.CP.B.7:</b> Apply the Addition Rule, <math>P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)</math>, and interpret the answer in terms of the model. ★</p> <p><b>(+) HSS.CP.B.8:</b> Apply the general Multiplication Rule in a uniform probability model, <math>P(A \text{ and } B) = P(A)P(B A) = P(B)P(A B)</math>, and interpret the answer in terms of the model. ★</p> <p><b>(+) HSS.CP.B.9:</b> Use permutations and combinations to compute probabilities of compound events and solve problems. ★</p>

Strand	<p align="center"><b>Statistical Reasoning - Statistics &amp; Probability: Using Probability to Make Decisions</b></p> <p><b>Modeling Standards: Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appears throughout the high school standards indicated by a star symbol (★).</b></p> <p><b>The high school standards also contain some performance expectations which are denoted by a plus (+). These performance expectations are intended to be extensions of learning. All students should be given opportunities to explore this content, but mastery is not expected.</b></p>
Standard	<b>SR.A.8 (+)</b> Calculate expected values and use them to solve problems. ★
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>(+) HSS.MD.A.1:</b> Define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions. ★</p> <p><b>(+) HSS.MD.A.2:</b> Calculate the expected value of a random variable; interpret it as the mean of the probability distribution. ★</p> <p><b>(+) HSS.MD.A.3:</b> Develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value. <i>For example, find the theoretical probability distribution for the number of correct answers obtained by guessing on all five questions of a multiple-choice test where each question has four choices, and find the expected grade under various grading schemes.</i> ★</p> <p><b>(+) HSS.MD.A.4:</b> Develop a probability distribution for a random variable defined for a sample space in which probabilities are assigned empirically; find the expected value. <i>For example, find a current data distribution on the</i></p>

	<p><i>number of TV sets per household in the United States, and calculate the expected number of sets per household. How many TV sets would you expect to find in 100 randomly selected households? ★</i></p>
Strand	<p align="center"><b>Statistical Reasoning - Statistics &amp; Probability: Using Probability to Make Decisions</b></p> <p><b>Modeling Standards: Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appears throughout the high school standards indicated by a star symbol (★).</b></p> <p><b>The high school standards also contain some performance expectations which are denoted by a plus (+). These performance expectations are intended to be extensions of learning. All students should be given opportunities to explore this content, but mastery is not expected.</b></p>
Standard	<p><b>SR.A.9 (+)</b> Use probability to evaluate outcomes of decisions. ★</p>
	<p align="center">Adolescence</p>
	<p align="center">Grades 9-Diploma</p>
Performance Expectations	<p><b>(+) HSS.MD.B.5:</b> Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values. ★</p> <p><b>(+) HSS.MD.B.5a:</b> Find the expected payoff for a game of chance. <i>For example, find the expected winnings from a state lottery ticket or a game at a fast-food restaurant.</i> ★</p> <p><b>(+) HSS.MD.B.5b:</b> Evaluate and compare strategies on the basis of expected values. <i>For example, compare a high-deductible versus a low-deductible automobile insurance policy using various, but reasonable, chances of having a minor or a major accident.</i> ★</p> <p><b>(+) HSS.MD.B.6:</b> Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator). ★</p>

	<b>(+) HSS.MD.B.7:</b> Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game and replacing the goalie with an extra skater). ★
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**Definitions:**

Strand: A body of knowledge in a content area identified by a simple title.

Standard: Enduring understandings and skills that students can apply and transfer to contexts that are new to the student.

Performance Expectation: Building blocks to the standard and measurable articulations of what the student understands and can do.

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## Science, Technology, and Engineering Standards

Science and engineering provide people with knowledge and tools to understand and address many of the challenges of a rapidly changing world, thus enabling them to be **creative and practical problem solvers** (Maine Guiding Principle C). Science is a way of knowing about the world that enables people to both engage in the construction of new knowledge and to use information to achieve desired ends ([NIH](#)). Engineering enables people to systematically solve problems using scientific knowledge, to design and test solutions and evaluate them using agreed-upon and measurable criteria.

### **Science and Engineering Literacy**

In the last few decades, much has been written about the critical role of science literacy in an equitable and just society. For example, the [Board on Science Education within the National Academies of Science](#) argue that

“Science literacy is desirable not only for individuals, but also for the health and well-being of communities and society. More than just basic knowledge of science facts, contemporary definitions of science literacy have expanded to include understandings of scientific processes and practices, familiarity with how science and scientists work, a capacity to weigh and evaluate the products of science, and an ability to engage in civic decisions about the value of science.”

Here we recognize that, in addition to understanding and evaluating science knowledge and critiquing the development of that knowledge, learners must also develop literacy related to science and engineering practices and design. In other words, they should know about and be able to critique the processes by which engineers develop and test products in response to consumer, industrial, and/or civic needs. The Maine Science and Engineering Standards provide a framework for supporting K-12 students’ development as **self-directed lifelong learners** (Maine Guiding Principle B) who are able to apply knowledge from the domains of science and engineering to set goals and make decisions.

### **Understanding Controversy in Science**

Individuals have ready access to abundant information in our modern global society. Consequently, they will encounter myriad arguments related to various scientific topics. Moreover, arguments will change over time, as new evidence becomes available and as people draw on scientific evidence to formulate arguments in shifting social contexts. It is therefore imperative that individuals understand that controversy within the scientific community is normal and has been historically productive. “True scientific controversy involves competing scientific ideas that are evaluated according to the standards of science — i.e., fitting the evidence, generating accurate expectations, offering satisfying explanations, inspiring research, etc...few theories fit our observations of the world perfectly. There is usually some anomalous observation that doesn’t seem to fit with our current understanding. Scientists assume that by working at such anomalies, they’ll either disentangle them to see how they fit with the current theory or contribute to a new theory” (“Even Theories Change.” Understanding Science. University of California Museum of Paleontology. 23 July 2018 <[http://www.understandingscience.org/article/alvarez\\_01](http://www.understandingscience.org/article/alvarez_01)>). One well documented example of productive controversy is the development of modern theories that explain and predict phenomena in the physical world. Newton originally posited a theory of mechanics that adequately explained phenomena as varied as projectile motion and planetary orbit. Centuries later, Einstein developed

the theory of special relativity to account for additional phenomena related to electricity and magnetism. The need to account for and predict the effects of gravity spurred scientists to offer the theory of general relativity. Thus, “theory change is a community process of feedback, experiment, observation, and communication. It usually involves interpreting existing data in new ways and incorporating those views with new results” (“Even Theories Change.” Understanding Science. University of California Museum of Paleontology. 23 July 2018 <[http://www.understandingscience.org/article/alvarez\\_01](http://www.understandingscience.org/article/alvarez_01)>).

### ***Becoming Critical and Engaged Consumers of Science and Engineering***

As learners encounter diverse perspectives related to scientific issues, it is crucial that they become **integrative and informed thinkers** (Maine Guiding Principle E) able to discern reliable and valid information. Such information is generated through accepted scientific and engineering practices (e.g., analyzing and interpreting data, engaging in argument from evidence, etc.). Armed with knowledge and these skills, learners will be able to function as **responsible and involved citizens** (Maine Guiding Principle D) who utilize **clear and effective communication** strategies (Maine Guiding Principle A) to participate productively in decision making that impacts the broader community.

#### References:

National Research Council. 2012. *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas*. Washington, DC: The National Academies Press.

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NGSS Lead States. (2013). *Next Generation Science Standards: For states, by states*. Washington, DC: The National Academies Press.

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Committee on Science Literacy and Public Perception of Science; Board on Science Education; Division of Behavioral and Social Sciences and Education; National Academies of Sciences, Engineering, and Medicine; Snow CE, Dibner KA, editors. Washington (DC): [National Academies Press \(US\)](#); 2016 Oct 14.

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**OUTLINE OF SCIENCE, TECHNOLOGY AND ENGINEERING STRANDS AND STANDARDS**

## Physical Sciences

- PS1 Matter and Its Interactions
- PS2 Motion and Stability: Forces and Interactions
- PS3 Energy
- PS4 Waves and Their Applications in Technologies

## Life Sciences

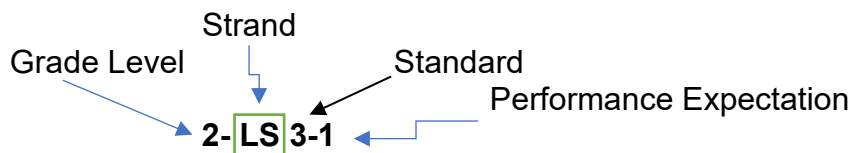
- LS1 From Molecules to Organisms: Structures and Processes
- LS2 Ecosystems: Interactions, Energy, and Dynamics
- LS3 Heredity: Inheritance and Variation of Traits
- LS4 Biological Evolution: Unity and Diversity

## Earth and Space Sciences

- ESS1 Earth's Place in the Universe
- ESS2 Earth's Systems
- ESS3 Earth and Human Activity

## Engineering, Technology, and Applications of Science

- ETS1 Engineering Design

**HOW TO READ THE STANDARDS****COLOR SCHEME**

- Science & Engineering Practices (blue)
- Disciplinary Core Ideas (orange)
- Crosscutting Concepts (green)

Strand	Physical Science (PS)		
Standard	PS1: Matter and Its Interactions		
	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations			<p><b><u>2-PS1-1</u> Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.</b>  Further explanation: Observations could include color, texture, hardness, and flexibility. Patterns could include the similar properties that different materials share.  Planning and Carrying out Investigations, Structure and Properties of Matter, Patterns</p> <p><b><u>2-PS1-2</u> Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.</b>  Further explanation: Examples of properties could include strength, flexibility, hardness, texture, and absorbency. Potential Maine connections include snow tires vs. regular tires and mittens made of varying materials (e.g. wool, cotton, Gortex, etc.)  Analyzing and Interpreting Data, Structure and Properties of Matter, Cause and Effect</p> <p><b><u>2-PS1-3</u> Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.</b>  Further explanation: Examples of pieces could include blocks, building bricks, or other assorted small objects.  Constructing Explanations and Designing Solutions, Structure and Properties of Matter, Energy and Matter</p>

			<p><b>2-PS1-4 Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.</b></p> <p>Further explanation: Examples of reversible changes could include materials such as water and butter at different temperatures. Potential Maine examples include snow and ice having reversible properties (e.g. water freezes and thaws which allows for ice fishing and skating in colder months). Examples of irreversible changes could include cooking an egg, freezing a plant leaf, heating paper and burning wood in a campfire or woodstove.</p> <p>Engaging in Argument from Evidence, Chemical Reactions, Cause and Effect</p>
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Strand	Physical Science (PS)		
Standard	PS1: Matter and Its Interactions		
	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations			<p><b>5-PS1-1 Develop a model to describe that matter is made of particles too small to be seen.</b></p> <p>Further Explanation: Examples of evidence could include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water. Investigate the science behind creating Maine maple sugar.</p> <p>Developing and Using Models, Structure and Properties of Matter, Scale, Proportion, and Quantity</p> <p><b>5-PS1-2 Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing</b></p>

			<p><b>substances, the total weight of matter is conserved.</b>  Further Explanation: Examples of reactions or changes could include phase changes, dissolving, and mixing that form new substances. Investigate the conservation of mass when making fake snow and how the crystals form.  Using Mathematics and Computational Thinking, Structure and Properties of Matter, Chemical Reactions, Cause and Effect</p> <p><b><u>5-PS1-3</u> Make observations and measurements to identify materials based on their properties.</b>  Further Explanation: Examples of materials to be identified could include baking soda and other powders, metals, minerals, and liquids. Examples of properties could include color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, and solubility; density is not intended as an identifiable property. Possibly examine Maine minerals.  Planning and Carrying out Investigations, Structure and Properties of Matter, Scale, Proportion and Quantity</p> <p><b><u>5-PS1-4</u> Conduct an investigation to determine whether the mixing of two or more substances results in new substances.</b>  Planning and Carrying out Investigations, Chemical Reactions, Cause and Effect</p>
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Strand	Physical Science (PS)
Standard	PS1: Matter and Its Interactions
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b><u>MS-PS1-1</u> Develop models to describe the atomic composition of simple molecules and extended structures.</b>  Further explanation: Emphasis is on developing models of molecules that vary in complexity. Examples of simple molecules could include ammonia and methanol. Examples of extended structures could include sodium chloride or diamonds. Examples of molecular-level models could include drawings, three-dimensional ball and stick structures, or computer representations showing different molecules with different types of atoms.  Developing and using models; Obtaining, evaluating, and communicating information; structure and properties of matter; scale, proportion, and quantity</p> <p><b><u>MS-PS1-2</u> Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.</b>  Further explanation: Examples of reactions could include burning sugar or steel wool, fat reacting with sodium hydroxide, and mixing zinc with hydrogen chloride. Examine electrical conductivity differences between fresh water and sea water.  Obtaining, evaluating, and communicating information; Analyzing and interpreting data; structure and properties of matter; chemical reactions; patterns</p> <p><b><u>MS-PS1-3</u> Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.</b>  Further explanation: Emphasis is on natural resources that undergo a chemical process to form synthetic material. Examples of new materials could include new medicines, foods, and alternative fuels (alternative plastics derived from potatoes and jet fuel made from trees). Other possible areas of study might include plastics from organics, advanced composites and wood products under development at UMO.  Obtaining, evaluating, and communicating information; chemical reactions; structure and properties of matter; structure and function</p> <p><b><u>MS-PS1-4</u> Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.</b>  Further explanation: Emphasis is on qualitative molecular-level models of solids, liquids, and gases to show that adding or removing thermal energy increases or decreases kinetic energy of the particles until a change of</p>

	<p>state occurs. Examples of models could include drawings and diagrams. Examples of particles could include molecules or inert atoms. Examples of pure substances could include water, carbon dioxide, and helium.          Developing and using models; structure and properties of matter; definitions of energy; cause and effect</p>
	<p><b>MS-PS1-5 Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.</b>          Further explanation: Emphasis is on the law of conservation of matter and on physical models or drawings, including digital forms that represent atoms.          Developing and using models; chemical reactions; energy and matter</p>
	<p><b>MS-PS1-6 Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.</b>          Further explanation: Emphasis is on design, controlling the transfer of energy to the environment, and modification of a device using factors such as type and concentration of a substance. Examples of designs could involve chemical reactions such as dissolving ammonium chloride or calcium chloride for road treatments in Maine winters.          Constructing explanations and designing solutions; chemical reactions; developing possible solutions; optimizing the design solution; structure and function</p>

Strand	Physical Science (PS)
Standard	PS1: Matter and Its Interactions
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HS-PS1-1 Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms.</b>          Further explanation: Examples of properties that could be predicted from patterns could include reactivity of metals, types of bonds formed, numbers of bonds formed, and reactions with oxygen. Examples include the properties and bonding of water and the rusting of metals as found in guardrails, ship parts, etc. Consider the metal compounds found in fireworks.          Developing and Using Models, structure and properties of matter, types of interactions, patterns</p>

**HS-PS1-2 Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties.**

Further explanation: Examples of chemical reactions could include the reaction of sodium and chlorine, carbon and oxygen, or carbon and hydrogen. Examples could include ocean salt formation, combustion (as found in the burning of fuels in Maine homes, cars and the trucking industry) or the detection of carbon monoxide in a home (complete vs incomplete combustion).

Constructing Explanations and Designing Solutions, structure and properties of matter, chemical reaction, patterns

**HS-PS1-3 Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles.**

Further explanation: Emphasis is on understanding the strengths of forces between particles, not on naming specific intermolecular forces (such as dipole-dipole). Examples of particles could include ions, atoms, molecules, and networked materials (such as graphite). Examples of bulk properties of substances could include the melting point and boiling point, vapor pressure, and surface tension. Examples could consider why we salt roads in the winter, differences in melting points of water vs saltwater, the production of maple syrup or the strength of Maine minerals.

Planning and Carrying out Investigations, structure and properties of matter, types of interactions, patterns

**HS-PS1-4 Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends on the changes in total bond energy.**

Further explanation: Emphasis is on the idea that a chemical reaction is a system that affects the energy change. Examples of models could include molecular-level drawings and diagrams of reactions, graphs showing the relative energies of reactants and products, and representations showing energy is conserved.

Developing and Using Models, structure and properties of matter, Energy and Matter

**HS-PS1-5 Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.**

Further explanation: Emphasis is on student reasoning that focuses on the number and energy of collisions between molecules. Examples could include the varied rates of oxidation of metals in winter vs in summer or the rate of dissolution of calcium shells in the ocean due to an increase in carbon dioxide an increase in temperature from climate change.

Constructing Explanations and Designing Solutions, Chemical Reactions, patterns

**HS-PS1-6 Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium.**

Further explanation: Emphasis is on the application of Le Chatelier's Principle and on refining designs of chemical reaction systems, including descriptions of the connection between changes made at the macroscopic level and what happens at the molecular level. Examples of designs could include different ways to increase product formation including adding reactants or removing products. Other examples to consider include the Kraft paper making process, soap making or rock candy formation.

Constructing Explanations and Designing Solutions, structure and properties of matter, Chemical Reactions, Types of Interactions, Optimizing Design Solution patterns, cause and effect, scale, proportion, and quantity

**HS-PS1-7 Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.**

Further explanation: Emphasis is on using mathematical ideas to communicate the proportional relationships between masses of atoms in the reactants and the products, and the translation of these relationships to the macroscopic scale using the mole as the conversion from the atomic to the macroscopic scale. Emphasis is on assessing students' use of mathematical thinking and not on memorization and rote application of problem-solving techniques. Examples could include the proportion of ingredients combined in baked goods or the combustion of fuels.

Using Mathematics and Computational Thinking, Chemical Reactions, Energy and Matter

**HS-PS1-8 Develop models to illustrate the changes in the composition of the nucleus of the atom and the energy released during the processes of fission, fusion, and radioactive decay.**

Further explanation: Emphasis is on simple qualitative models, such as pictures or diagrams and on the scale of energy released in nuclear processes relative to other kinds of transformations. Examples could include radon gas in basements, thorium in white gas mantles or, historically, Wiscasset's Maine Yankee nuclear power plant and Fukushima in Japan.

Developing and engineering practices, Nuclear Processes, patterns, cause and effect, scale, proportion, and quantity

Strand	Physical Science (PS)		
Standard	PS2: Motion and Stability: Forces and Interactions		
	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	<p><b><u>K-PS2-1</u> Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.</b></p> <p>Further explanation: Examples of pushes or pulls could include a string attached to an object being pulled, a person pushing an object, a person stopping a rolling ball, and two objects colliding and pushing on each other.</p> <p>Planning and Carrying out Investigations, Forces and Motion, Types of Interactions, Relationship between Energy and Forces, Cause and Effect</p> <p><b><u>K-PS2-2</u> Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.</b></p> <p>Further explanation: Examples of problems requiring a solution could include having a marble or other object move a certain distance, follow a particular path, and knock down other objects. Examples of solutions could include tools such as a ramp to increase the speed of the object and a structure that would cause an object such as a marble or ball to turn.</p>		

	<p>Analyzing and Interpreting Data, Forces and Motion, Defining Engineering Problems, Cause and Effect</p>		
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Strand	Physical Science (PS)		
Standard	PS2: Motion and Stability: Forces and Interactions		
	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	<p><b>3-PS2-1 Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.</b>                      Further Explanation: Examples could include an unbalanced force on one side of a ball can make it start moving and balanced forces pushing on a box from both sides will not produce any motion at all. Other examples can be found in a variety of Maine sports from ice skating, curling, skiing to sledding.                      Planning and Carrying Out Investigations, Forces and Motion, Types of Interactions, Cause and Effect</p> <p><b>3-PS2-2 Make observations and/or measurements of an object’s motion to provide evidence that a pattern can be used to predict future motion.</b>                      Further Explanation: Examples of motion with a predictable pattern could include a child swinging in a swing, a ball rolling back and forth in a bowl, and two children on a see-saw. Other examples include dropping down in a skate park, snowboarding pipes</p>		<p><b>5-PS2-1 Support an argument that the gravitational force exerted by Earth on objects is directed down.</b>                      Further Explanation: “Down” is a local description of the direction that points toward the center of the spherical Earth.                      Engaging in Argument from Evidence, Types of Interactions, Cause and Effect</p>

	<p>and telemark skiing (slowing down, turns, etc.).</p> <p>Planning and Carrying out Investigations, Forces and Motion, Patterns</p> <p><b>3-PS2-3 Ask questions to determine cause and effect relationships of electrical or magnetic interactions between two objects not in contact with each other.</b></p> <p>Further Explanation: Examples of an electric force could include the force on hair from an electrically charged balloon and the electrical forces between a charged rod and pieces of paper; examples of a magnetic force could include the force between two permanent magnets, the force between an electromagnet and steel paperclips, and the force exerted by one magnet versus the force exerted by two magnets. Examples of cause and effect relationships could include how the distance between objects affects strength of the force and how the orientation of magnets affects the direction of the magnetic force.</p> <p>Asking Questions and Defining Problems, Types of Interactions, Cause and Effect</p> <p><b>3-PS2-4 Define a simple design problem that can be solved by applying scientific ideas about magnets.</b></p> <p>Further Explanation: Examples of problems could include constructing a latch to keep a door shut and creating a device to keep two moving objects from touching each other. Other examples include a magnetic latch for</p>		
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	<p>a container or device (Apple and magnetic plug for charger).</p> <p>Asking Questions and Defining Problems, Types of Interactions</p>		
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Strand	Physical Science (PS)
Standard	PS2: Motion and Stability: Forces and Interactions
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b><u>MS-PS2-1</u> Apply Newton’s Third Law to design a solution to a problem involving the motion of two colliding objects.</b></p> <p>Further explanation: Examples of practical problems could include the impact of collisions between two cars, between a car and stationary objects, and between a meteor and a space vehicle.</p> <p>Constructing explanations and designing solutions; forces and motion; system and system models;</p>
	<p><b><u>MS-PS2-2</u> Plan an investigation to provide evidence that the change in an object’s motion depends on the sum of the forces on the object and the mass of the object.</b></p> <p>Further explanation: Emphasis is on balanced (Newton’s First Law) and unbalanced forces in a system, qualitative comparisons of forces, mass and changes in motion (Newton’s Second Law), frame of reference, and specification of units.</p> <p>Plan and carry out investigations; forces and motion; stability and change;</p>
	<p><b><u>MS-PS2-3</u> Ask questions about data to determine the factors that affect the strength of electrical and magnetic forces.</b></p> <p>Further explanation: Examples of devices that use electrical and magnetic forces could include electromagnets, electric motors, or generators. Examples of data could include the effect of the number of turns of wire on the strength of an electromagnet, or the effect of increasing the number or strength of magnets on the speed of an electric motor. Possible explorations include the effects of living near high tension power lines, the similarities found in hydroelectric generators and wind turbines or the growing electric car market in Maine.</p> <p>Asking questions and defining problems; types of interactions; cause and effect;</p>

	<p><b>MS-PS2-4 Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.</b>                  Further explanation: Examples of evidence for arguments could include data generated from simulations or digital tools and charts displaying mass, strength of interaction, distance from the Sun, and orbital periods of objects within the solar system. Examples include the gravitational effects of the moon on Maine tides.                  Engaging in argument from evidence; types of interactions; system and system models;</p>
	<p><b>MS-PS2-5 Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.</b>                  Further explanation: Examples of this phenomenon could include the interactions of magnets, electrically-charged strips of tape, electrically-charged pith balls, and maglev trains. Examples of investigations could include first-hand experiences or simulations.                  Plan and carry out investigations; types of interactions; cause and effect;</p>

Strand	Physical Science (PS)
Standard	PS2: Motion and Stability: Forces and Interactions
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HS-PS2-1 Analyze data to support the claim that Newton’s second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.</b>                  Further explanation: Examples of data could include tables or graphs of position or velocity as a function of time for objects subject to a net unbalanced force, such as a falling object, an object rolling down a ramp, or moving object being pulled by a constant force. Examples could include the acceleration of a snowmobile in different gears (same mass with different forces creating different accelerations) or the comparison of gas mileage between a truck vs a truck hauling a boat (same acceleration with different masses).                  Analyzing and Interpreting Data, Types of Interactions, Forces and Motion, Cause and Effect</p>
	<p><b>HS-PS2-2 Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system.</b>                  Further explanation: Emphasis is on the quantitative conservation of momentum in interactions and the qualitative meaning of this principle. Examples could include jumping off a boat or canoe and the total momenta of all the various pieces exploding from fireworks.                  Using Mathematics and Computational Thinking, Forces and Motion, Systems and System Models</p>

	<p><b><u>HS-PS2-3</u> Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision.</b></p> <p>Further explanation: Examples of evaluation and refinement could include determining the success of a device at protecting an object from damage and modifying the design to improve it. Examples of a device could include a football helmet or a parachute. Examples could also include the barriers on the sides of NASCAR tracks, truck safety hills on the sides of highways, bike helmets or car bumpers.</p> <p>Constructing Explanations and Designing Solutions, structure and properties of matter, Forces and Motion, Defining and Delimiting Engineering Problems, Optimizing the Design Solution, types of interactions, Cause and Effects</p>
	<p><b><u>HS-PS2-4</u> Use mathematical representations of Newton’s Law of Gravitation and Coulomb’s Law to describe and predict the gravitational and electrostatic forces between objects.</b></p> <p>Further explanation: Emphasis is on both quantitative and conceptual descriptions of gravitational and electrical fields.</p> <p>Using Mathematics and Computational Thinking, Types of Interactions, Patterns</p>
	<p><b><u>HS-PS2-5</u> Plan and conduct an investigation to provide evidence that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current.</b></p> <p>Further explanation: Examples could include wind turbines or generators along with any DC motorized toy.</p> <p>Planning and Carrying out an Investigation, Types of Interactions, Definitions of Energy, Cause and Effect</p>
	<p><b><u>HS-PS2-6</u> Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials.</b></p> <p>Further explanation: Emphasis is on the attractive and repulsive forces that determine the functioning of the material. Examples could include why electrically conductive materials are often made of metal, flexible but durable materials are made up of long chained molecules, and pharmaceuticals are designed to interact with specific receptors. Examples could also include composite material substitutes for wood and the structure of solar cells along with how they work.</p> <p>Obtaining, Evaluating, and Communicating Information, Structure and Property of Matter, Types of Interactions, Structure and Function</p>

Strand	Physical Science (PS)		
Standard	PS3: Energy		
	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	<p><b><u>K-PS3-1</u> Make observations to determine the effect of sunlight on Earth’s surface.</b>  Further explanation: Examples of Earth’s surface could include sand, soil, rocks, and water. Potential Maine connections could also include beach sand in the sun vs. beach sand in the shade.  Planning and Carrying out Investigations, Conservation of Energy and Energy Transfer, Cause and Effect</p> <p><b><u>K-PS3-2</u> Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.</b>  Further explanation: Examples of structures could include umbrellas, canopies, and tents that minimize the warming effect of the sun.  Constructing Explanations and Designing Solutions, Conservation of Energy and Energy Transfer, Cause and Effect</p>		

Strand	Physical Science (PS)		
Standard	PS3: Energy		
	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations		<p><b>4-PS3-1 Use evidence to construct an explanation relating the speed of an object to the energy of that object.</b>  <b>Further Explanation:</b> Examples include coasting on a bike down a hill or how bumping into someone or something when walking or running changes speed. Other examples include dropping into a skateboard bowl or off of a ramp.            Constructing Explanations and Designing Solutions, Definitions of Energy, Cause and Effect</p> <p><b>4-PS3-2 Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.</b>            Planning and Carrying out Investigations, Definitions of Energy, Conservation of Energy and Energy Transfer, Cause and Effect</p>	<p><b>5-PS3-1 Use models to describe that energy in animals' food (used for body repair, growth, and motion, and to maintain body warmth) was once energy from the sun.</b>  <b>Further Explanation:</b> Examples of models could include diagrams, and flow charts.            Developing and Using Models, Energy in Chemical Processes and Everyday Life, Organization for Matter and Energy Flow in Organisms, Energy and Matter</p>

		<p><b>4-PS3-3 Ask questions and predict outcomes about the changes in energy that occur when objects collide.</b></p> <p>Further Explanation: Emphasis is on the changes in the energy due to the changes in speed, not on the forces, as objects interact. These changes can be observed in playing pool or marbles.</p> <p>Asking Questions and Defining Problems, Definitions of Energy, Conservation of Energy and Energy Transfer, Relationship between Energy and Forces, Cause and Effect</p> <p><b>4-PS3-4 Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.</b></p> <p>Further Explanation: Examples of devices could include electric circuits that convert electrical energy into motion energy of a vehicle, light, or sound and a passive solar heater that converts light into heat. Such devices can be used to make s'mores or to turn on a small light when camping in the Maine woods. Examples of constraints could include the materials, cost, or time to design the device.</p> <p>Constructing Explanations and Designing Solutions, Natural Hazards, Conservation of Energy and Energy Transfer, Energy in Chemical Processes, Defining Engineering Problems, Cause and Effect</p>	
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Strand	Physical Science (PS)
Standard	PS3: Energy
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b>MS-PS3-1 Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.</b>  Further explanation: Emphasis is on descriptive relationships between kinetic energy and mass separately from kinetic energy and speed. Examples could include riding a bicycle at different speeds, rolling different sizes of rocks downhill, and getting hit by a whiffle ball versus a tennis ball. Consider different sized skiers or different vehicles from pulp trucks to personal cars.  Analyzing and interpreting data; definitions of energy; scale, proportion, and quantity</p>
	<p><b>MS-PS3-2 Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.</b>  Further explanation: Emphasis is on relative amounts of potential energy, not on calculations of potential energy. Examples of objects within systems interacting at varying distances could include the Earth and either a roller coaster cart at varying positions on a hill or objects at varying heights on shelves, changing the direction/orientation of a magnet, and a balloon with static electrical charge being brought closer to a classmate's hair. Examples of models could include representations, diagrams, pictures, and written descriptions of systems.  Developing and using models; definitions of energy; relationship between energy and forces; system and system models</p>
	<p><b>MS-PS3-3 Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.</b>  Further explanation: Examples of devices could include an insulated box, a solar cooker, and a Styrofoam cup. Possible explorations could include insulating outerwear and clothing for winter sports or emergency shelters designed for Maine winters.  Constructing explanations and designing solutions; definitions of energy; conservation of energy and energy transfer; defining and delimiting an engineering problem; developing possible solutions; energy and matter</p>
	<p><b>MS-PS3-4 Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.</b>  Further explanation: Examples of experiments could include comparing final water temperatures after different masses of ice melted in the same volume of water with the same initial temperature, the temperature change of</p>

	<p>samples of different materials with the same mass as they cool or heat in the environment, or the same material with different masses when a specific amount of energy is added.</p> <p>Planning and carrying out investigations, Definitions of energy; conservation of energy and energy transfer; scale, proportion, and quantity</p>
	<p><b>MS-PS3-5 Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.</b></p> <p>Further explanation: Examples of empirical evidence used in arguments could include an inventory or other representation of the energy before and after the transfer in the form of temperature changes or motion of an object.</p> <p>Engaging in argument from evidence; conservation of energy and energy transfer; energy and matter</p>

Strand	Physical Science (PS)
Standard	PS3: Energy
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HS-PS3-1 Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.</b></p> <p>Further explanation: Emphasis is on explaining the meaning of mathematical expressions used in the model. Examples could include wind turbines, hydroelectric or tidal power. Further examples could be found in FunTown USA roller coasters or any sport (e.g. why a hockey puck changes motion, a baseball being hit, etc.).</p> <p>Using Mathematics and Computational Thinking, Definitions of Energy, Conservation of Energy and Energy Transfer, Systems and System Models</p>
	<p><b>HS-PS3-2 Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative position of particles (objects).</b></p> <p>Further explanation: Examples of phenomena at the macroscopic scale could include the conversion of kinetic energy to thermal energy, the energy stored due to position of an object above the earth, and the energy stored between two electrically-charged plates. Examples of models could include diagrams, drawings, descriptions, and computer simulations.</p> <p>Developing and Using Models, Definitions of Energy, Energy and Matter</p>
	<p><b>HS-PS3-3 Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.</b></p>

	<p>Further explanation: Emphasis is on both qualitative and quantitative evaluations of devices. Examples of devices could include Rube Goldberg devices, wind turbines, solar cells, solar ovens, and generators. Examples of constraints could include use of renewable energy forms and efficiency. Consider the Wind Blade Challenge or use of a solar oven when camping.                  Constructing Explanations and Designing Solutions, Definitions of Energy, Defining and Delimiting Engineering Problems, Energy and Matter</p>
	<p><b>HS-PS3-4 Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics).</b>                  Further explanation: Emphasis is on analyzing data from student investigations and using mathematical thinking to describe the energy changes both quantitatively and conceptually. Examples of investigations could include mixing liquids at different initial temperatures or adding objects at different temperatures to water. Other examples can be found in heat pumps for radiant heat systems, insulation (to prevent heat transfer) or the use of hot rocks to warm a tent when camping.                  Planning and Carrying out an Investigation, Conservation of Energy and Energy Transfer, Energy in Chemical Processes, Systems and System Models</p>
	<p><b>HS-PS3-5 Develop and use a model of two objects interacting through electrical or magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to the interaction.</b>                  Further explanation: Examples of models could include drawings, diagrams, and texts, such as drawings of what happens when two charges of opposite polarity are near each other.                  Developing and Using Models, Relationship between Energy and Forces, Cause and Effect</p>

Strand	Physical Science (PS)		
Standard	PS4: Waves and Their Applications in Technologies for Information Transfer		
	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations		<p><b>1-PS4-1 Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.</b>                  Further explanation: Examples of vibrating materials that make sound could include tuning forks and plucking a stretched string.</p>	

		<p>Examples of how sound can make matter vibrate could include holding a piece of paper near a speaker making sound and holding an object near a vibrating tuning fork. Planning and Carrying Out Investigations, Wave Properties, Cause and Effect</p> <p><b>1-PS4-2 Make observations to construct an evidence-based account that objects can be seen only when illuminated.</b> Further explanation: Examples of observations could include those made in a completely dark room, a pinhole box, and a video of a cave explorer (in Acadia National Park) with a flashlight. Illumination could be from an external light source or by an object giving off its own light. Constructing Explanations and Designing Solutions, Electromagnetic Radiation, Cause and Effect</p> <p><b>1-PS4-3 Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.</b> Further explanation: Examples of materials could include those that are transparent (such as clear plastic), translucent (such as wax paper), opaque (such as cardboard), and reflective (such as a mirror). Planning and Carrying out Investigations, Electromagnetic Radiation, Cause and Effect</p> <p><b>1-PS4-4 Use tools and materials to design and build a device that uses light or sound</b></p>	
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		<p><b>to solve the problem of communicating over a distance.</b>                  Further explanation: Examples of devices could include a light source to send signals, paper cup and string “telephones,” and a pattern of drum beats.                  Constructing Explanations and Designing Solutions, Information Technologies and Instrumentation</p>	
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Strand	Physical Science (PS)		
Standard	PS4: Waves and Their Applications in Technologies for Information Transfer		
	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations		<p><b>4-PS4-1</b> Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.                  Further Explanation: Examples of models could include diagrams, analogies, and physical models using wire to illustrate wavelength and amplitude of waves. Use an oscilloscope app to illustrate the patterns in an animal call or musical instrument and engineer a pattern to mimic the call.                  Developing and Using Models, Wave Properties, Patterns</p> <p><b>4-PS4-2</b> Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.                  Further Explanation: Examples of Maine animal eyes at night such as coyotes, deer and foxes reflecting light from their retinas.</p>	

		<p>Developing and Using Models, Electromagnetic Radiation, Patterns</p> <p><b>4-PS4-3 Generate and compare multiple solutions that use patterns to transfer information.</b></p> <p>Further Explanation: Examples of solutions could include drums sending coded information through sound waves, using a grid of 1's and 0's representing black and white to send information about a picture, and using Morse code to send text or introduce basic computer code.</p> <p>Constructing Explanations and Designing Solutions, Information Technologies and Instrumentation, Optimizing the Design Solution, Patterns</p>	
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Strand	Physical Science (PS)
Standard	PS4: Waves and Their Applications in Technologies for Information Transfer
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b>MS-PS4-1 Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.</b></p> <p>Further explanation: Emphasis is on describing waves with both qualitative and quantitative thinking. Possibilities for exploration might include coastal wave erosion, effects of the wind turbines/farms on the air flow patterns and harmonics.</p> <p>Using mathematics and computational thinking; Obtaining, evaluating, and communicating information; wave properties; patterns</p> <p><b>MS-PS4-2 Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.</b></p> <p>Further explanation: Emphasis is on both light and mechanical waves. Examples of models could include drawings, simulations, and written descriptions. Possibilities for explorations might include Maine's geographic</p>

	<p>location for utilizing solar power, power generation from ocean waves, possibility for extended farming seasons with artificial lighting.</p> <p>Developing and using models; wave properties; electromagnetic radiation; structure and function</p>
	<p><b>MS-PS4-3 Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.</b></p> <p>Further explanation: Emphasis is on a basic understanding that waves can be used for communication purposes. Examples could include using fiber optic cable to transmit light pulses, radio wave pulses in Wi-Fi devices, and conversion of stored binary patterns to make sound or text on a computer screen.</p> <p>Obtaining, evaluating, and communicating information; information technologies and instrumentation; structure and function</p>

Strand	Physical Science (PS)
Standard	PS4: Waves and Their Applications in Technologies for Information Transfer
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HS-PS4-1 Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.</b></p> <p>Further explanation: Examples of data could include electromagnetic radiation traveling in a vacuum and glass, sound waves traveling through air and water, and seismic waves traveling through the Earth. Examples include rainbows and how to aim when spearfishing.</p> <p>Using Mathematics and Computational Thinking, Wave Properties, Cause and Effect</p>
	<p><b>HS-PS4-2 Evaluate questions about the advantages of using a digital transmission and storage of information.</b></p> <p>Further explanation: Examples of advantages could include that digital information is stable because it can be stored reliably in computer memory, transferred easily, and copied and shared rapidly. Disadvantages could include issues of easy deletion, security, and theft.</p> <p>Asking Questions and Defining Problems, Wave Properties, Stability and Change</p>
	<p><b>HS-PS4-3 Evaluate the claims, evidence, and reasoning behind the idea that electromagnetic radiation can be described either by a wave model or a particle model, and that for some situations one model is more useful than the other.</b></p>

	<p>Further explanation: Emphasis is on how the experimental evidence supports the claim and how a theory is generally modified in light of new evidence. Examples of a phenomenon could include resonance, interference, diffraction, and photoelectric effect.  Engaging in Argument from Evidence, Wave Properties, Systems and System Models</p>
	<p><b>HS-PS4-4 Evaluate the validity and reliability of claims in published materials of the effects that different frequencies of electromagnetic radiation have when absorbed by matter.</b>  Further explanation: Emphasis is on the idea that photons associated with different frequencies of light have different energies, and the damage to living tissue from electromagnetic radiation depends on the energy of the radiation. Examples of published materials could include trade books, magazines, web resources, videos, and other passages that may reflect bias. Arguments around evidence could be made for dangers of cell phone usage or living near high voltage power lines.  Obtaining, Evaluating, and Communicating Information, Electromagnetic Radiation, Cause and Effect</p>
	<p><b>HS-PS4-5 Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy.</b>  Further explanation: Examples could include solar cells capturing light and converting it to electricity; medical imaging; and communications technology.  Obtaining, Evaluating, and Communicating Information, Wave Properties, Electromagnetic Radiation, Information Technologies and Instrumentation, Cause and Effect</p>

Strand	Life Sciences (LS)		
Standard	LS1: From Molecules to Organisms: Structures and Processes		
	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	<p><b>K-LS1-1 Use observations to describe patterns of what plants and animals (including humans) need to survive.</b>  Further explanation: Examples of patterns could include that animals need</p>	<p><b>1-LS1-1 Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.</b>  Further explanation: Examples of human problems that can be solved by mimicking plant or animal solutions could include</p>	

	<p>to take in food but plants do not, the different kinds of food needed by different types of animals, the requirement of plants to have light, and that all living things need water. Examples could include the pattern a bear makes when preparing to hibernate for winter, the seasonal patterns of trees losing and/or keeping their leaves.</p> <p>Analyzing and Interpreting Data, Organization for Matter and Energy Flow in Organisms, Patterns</p>	<p>designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animal scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills; waterproofing boots, jackets, gloves thereby mimicking animal feathers and, detecting intruders by mimicking eyes and ears.</p> <p>Constructing Explanations and Designing Solutions, Structure and Function, Information Processing, Structure and Function</p> <p><b>1-LS1-2 Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.</b></p> <p>Further explanation: Examples of patterns of behaviors could include the signals that offspring make (such as crying, cheeping, and other vocalizations) and the responses of the parents (such as feeding, comforting, and protecting the offspring). Potential Maine connections include Maine animal sounds to signal their offspring (e.g. loons, moose, deer, coyotes, etc.) and how animals, especially birds, bring back food for their young.</p> <p>Obtaining, Evaluating, and Communicating Information, Growth and Development of Organisms, Patterns</p>	
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Strand	Life Sciences (LS)		
Standard	LS1: From Molecules to Organisms: Structures and Processes		
	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	<p><b>3-LS1-1</b> Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.</p> <p>Further Explanation: Changes organisms go through during their life form a pattern.</p> <p>Potential Maine connections include frogs in vernal pools, Atlantic salmon life cycle and gestation vs. metamorphosis.</p> <p>Developing and Using Models, Growth and Development of Organisms, Patterns</p>	<p><b>4-LS1-1</b> Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.</p> <p>Further Explanation: Examples of structures could include thorns, stems, roots, colored petals, heart, stomach, lung, brain, and skin found in Maine plants and animals.</p> <p>Engaging in Argument from Evidence, Structure and Function, Systems and System Models</p> <p><b>4-LS1-2</b> Use a model to describe that animals receive different types of information</p>	<p><b>5-LS1-1</b> Support an argument that plants get the materials they need for growth chiefly from air and water.</p> <p>Further Explanation: Emphasis is on the idea that plant matter comes mostly from air and water, not from the soil. Investigate Maine plants.</p> <p>Engaging in Argument from Evidence, Organization for Matter and Energy Flow in Organisms, Energy and Matter</p>

		<p><b>through their senses, process the information in their brain, and respond to the information in different ways.</b>  <b>Further Explanation: Emphasis is on systems of information transfer.</b>  <b>Engaging in Argument from Evidence, Information Processing, Systems and System Models</b></p>	
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Strand	Life Sciences (LS)
Standard	LS1: From Molecules to Organisms: Structures and Processes
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b><u>MS-LS1-1</u> Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.</b>  <b>Further explanation: Emphasis is on developing evidence that living things are made of cells, distinguishing between living and non-living things, and understanding that living things may be made of one cell or many and varied cells.</b>  <b>Planning and carrying out investigations; structure and function; scale, proportion, and quantity</b></p> <p><b><u>MS-LS1-2</u> Develop and use a model to describe the function of a cell as a whole and ways the parts of cells contribute to the function.</b>  <b>Further explanation: Emphasis is on the cell functioning as a whole system and the primary role of identified parts of the cell, specifically the nucleus, chloroplasts, mitochondria, cell membrane, and cell wall.</b>  <b>Developing and using models; structure and function; structure and function</b></p> <p><b><u>MS-LS1-3</u> Use argument supported by evidence for how the body is a system of interacting sub-systems composed of groups of cells.</b></p>

Further explanation: Emphasis is on conceptual understanding that cells form tissues and tissues form organs specialized for particular body functions. Examples could include the interaction of sub-systems within a system and the normal functioning of those systems.

Engaging in argument from evidence; structure and function; system and system models

**MS-LS1-4 Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants, respectively.**

Further explanation: Examples of behaviors that affect the probability of animal reproduction could include nest building to protect young from cold, herding of animals to protect young from predators, and vocalization of animals and colorful plumage to attract mates for breeding. Examples of animal behaviors that affect the probability of plant reproduction could include transferring pollen or seeds and creating conditions for seed germination and growth. Examples of plant structures could include bright flowers attracting butterflies that transfer pollen, flower nectar and odors that attract insects that transfer pollen, and hard shells on nuts that squirrels bury. Potential Maine connections could include herding of white-tail deer and caribou, vocalizations of moose and cardinals, and keystone species such as those on the coast (e.g. harbor seals and sea stars).

**MS-LS1-5 Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.**

Further explanation: Examples of local environmental conditions could include availability of food, light, space, and water. Examples of genetic factors could include large breed cattle and species of grass affecting the growth of organisms. Examples of evidence could include drought decreasing plant growth, fertilizer increasing plant growth, different varieties of plant seeds growing at different rates in different conditions, and fish growing larger in large ponds than in small ponds. Examples could include winter and cold temperatures, hibernation (e.g. black bear), and the migration of hummingbirds and Canada geese.

Constructing explanations and designing solutions; growth and development of organisms; cause and effect

**MS-LS1-6 Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.**

Further explanation: Emphasis is on tracing movement of matter and flow of energy.

Constructing explanations and designing solutions; organization for matter and energy flow in organisms; energy in chemical processes and everyday life; energy and matter

**MS-LS1-7 Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.**

	<p>Further explanation: Emphasis is on describing that molecules are broken apart and put back together and that in this process energy is released.                  Developing and using models; organization for matter and energy flow in organisms; energy in chemical processes and everyday life; energy and matter</p>
	<p><b>MS-LS1-8 Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.</b>                  Obtaining, evaluating, and communicating information; information processing; cause and effect</p>

Strand	Life Sciences (LS)
Standard	LS1: From Molecules to Organisms: Structures and Processes
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HS-LS1-1 Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells.</b>                  Further explanation: Emphasis is on protein synthesis from DNA to codon to amino acid sequence.                  Constructing Explanations and Designing Solutions, Structure and Function, Structure and Function</p>
	<p><b>HS-LS1-2 Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.</b>                  Further explanation: Emphasis is on functions at the organism system level such as nutrient uptake, water delivery, and organism movement in response to neural stimuli. An example of an interacting system could be an artery depending on the proper function of elastic tissue and smooth muscle to regulate and deliver the proper amount of blood within the circulatory system. Another example could be the water and nutrient intake in soft shell clams.                  Developing and Using Models, Structure and Function, Systems and System Models</p>
	<p><b>HS-LS1-3 Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.</b></p>

	<p>Further explanation: Examples of investigations could include heart rate response to exercise, stomate response to moisture and temperature, and root development in response to water levels. Another example is commonly observed in the daphnia heart rate response to changes in temperature, caffeine, alcohol, or nicotine.</p> <p>Planning and Carrying out Investigations, Structure and Function, Stability and Change</p>
	<p><b>HS-LS1-4 Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.</b></p> <p>Developing and Using Models, Growth and Development of Organisms, Systems and System Models</p>
	<p><b>HS-LS1-5 Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.</b></p> <p>Further explanation: Emphasis is on illustrating inputs and outputs of matter and the transfer and transformation of energy in photosynthesis by plants and other photosynthesizing organisms. Examples of models could include diagrams, chemical equations, and conceptual models. Models may focus on Maine based economy of photosynthetic organisms such as seaweeds, potatoes and pine trees.</p> <p>Developing and Using Models, Organization for Matter and Energy flow in Organisms, Energy and Matter</p>
	<p><b>HS-LS1-6 Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules.</b></p> <p>Further explanation: Emphasis is on using evidence from models and simulations to support explanations.</p> <p>Constructing Explanations and Designing Solutions, Organization for Matter and energy Flow in Organisms, Energy and Matter</p>
	<p><b>HS-LS1-7 Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed, resulting in a net transfer of energy.</b></p> <p>Further explanation: Emphasis is on the conceptual understanding of the inputs and outputs of the process of cellular respiration. An example could be a moose eating a lily pad, the lily pad producing energy for the moose and the breathing of oxygen by the moose to enable the process of cellular respiration.</p> <p>Developing and Using Models, Organization for Matter and Energy Flow in Organisms, Energy and Matter</p>

Strand	Life Sciences (LS)		
Standard	LS2: Ecosystems: Interactions, Energy, and Dynamics		
	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations			<p><b>2-LS2-1 Plan and conduct an investigation to determine if plants need sunlight and water to grow.</b>                      Planning and Carrying out Investigations, Interdependent Relationships in Ecosystems, Cause and Effect</p> <p><b>2-LS2-2 Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.</b>                      Further explanation: Examples of animals or insects that pollinate plants or disperse seeds could include bees, hummingbirds or bats. An example of a model could be using Velcro to show how seeds of burdocks are spread.                      Developing and Using Models, Interdependent Relationships in Ecosystems, Developing Possible Solutions, Structure and Function</p>

Strand	Life Sciences (LS)		
Standard	LS2: Ecosystems: Interactions, Energy, and Dynamics		
	Childhood		
	Grade 3	Grade 4	Grade 5

<p>Performance Expectations</p>	<p><b>3-LS2-1 Construct an argument that some animals form groups that help members survive.</b>                  Further explanation: Maine animals that form groups such as coyotes, deer herds, turkeys, bees, moose, salmon and alewives migration.                  Engaging in Argument from Evidence, Social Interactions and Group Behaviors, Cause and Effect</p>		<p><b>5-LS2-1 Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.</b>                  Further Explanation: Emphasis is on the idea that matter that is not food (air, water, decomposed materials in soil) is changed by plants into matter that is food. Examples of systems could include organisms, ecosystems, and the Earth. Utilize Maine or Atlantic plants and animals to develop a model of a food chain or web.                  Developing and Using Models, Interdependent Relationships in Ecosystems, Cycles of Matter and Energy Transfer, Systems and System Models</p>
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<p>Strand</p>	<p>Life Sciences (LS)</p>		
<p>Standard</p>	<p>LS2: Ecosystems: Interactions, Energy, and Dynamics</p>		
	<p>Early Adolescence</p>		
	<p>Grades 6-8</p>		
<p>Performance Expectations</p>	<p><b>MS-LS2-1 Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.</b>                  Further explanation: Emphasis is on cause and effect relationships between resources and the growth of individual organisms and the numbers of organisms in ecosystems during periods of abundant and scarce resources.                  Analyzing and interpreting data; interdependent relationships in ecosystems; cause and effect</p> <p><b>MS-LS2-2 Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.</b></p>		

Further explanation: Emphasis is on predicting consistent patterns of interactions in different ecosystems in terms of the relationships among and between organisms and abiotic components of ecosystems. Examples of types of interactions could include competitive, predatory, and mutually beneficial. Potential Maine connections include predation: coyotes and house cats with smaller prey or white tail deer and wolves; mutualism in the union of algae and fungus to form lichen; parasitism in deer ticks on dogs; and commensalism when barnacles attach to minke whales or a grey squirrel makes a nest in a red oak tree.

Constructing explanations and designing solutions; interdependent relationships in ecosystems; patterns

**MS-LS2-3 Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.**

Further explanation: Emphasis is on describing the conservation of matter and flow of energy into and out of various ecosystems and on defining the boundaries of the system. Explore the reason behind burning blueberry fields biennially and the cycling of matter.

Developing and using models; cycle of matter and energy transfer in ecosystems; energy and matter

**MS-LS2-4 Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.**

Further explanation: Emphasis is on recognizing patterns in data and making warranted inferences about changes in populations and on evaluating empirical evidence supporting arguments about changes to ecosystems. Examples include the introduction of invasive species like the green crab or knotweed and their impact on native species. Explore the impacts of farming, urban sprawl and pollution.

Engaging in argument from evidence; ecosystem dynamics, functioning, and resilience; stability and change

**MS-LS2-5 Evaluate competing design solutions for maintaining biodiversity and ecosystem services.**

Further explanation: Examples of ecosystem services could include water purification, nutrient recycling, and prevention of soil erosion. Examples of design solution constraints could include scientific, economic, and social considerations. Consider the balance of conservation with the logging of forests or with the lobster and blueberry industries.

Engaging in argument from evidence; ecosystem dynamics, functioning, and resilience; biodiversity and humans; developing possible solutions; stability and change

Strand	Life Sciences (LS)
Standard	LS2: Ecosystems: Interactions, Energy, and Dynamics
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b><u>HS-LS2-1</u> Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.</b></p> <p>Further Explanation: Emphasis is on quantitative analysis and comparison of the relationships among interdependent factors including boundaries, resources, climate, and competition. Examples of mathematical comparisons could include graphs, charts, histograms, and population changes gathered from simulations or historical data sets. Examples could include a look at historical data of the population of a species that has moved north into Maine, such as opossum, and how it has changed as the climate in Maine has changed. Observe data of the populations of harbor seals and the effect that a hunting ban has had on their population and the resulting increase in the number of large predatory sharks in the Gulf of Maine.</p> <p>Using Mathematics and Computational Thinking, Interdependent Relationships in Ecosystems, Scale, Proportion, and Quantity</p>
	<p><b><u>HS-LS2-2</u> Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.</b></p> <p>Further explanation: Examples of mathematical representations include finding the average, determining trends, and using graphical comparisons of multiple sets of data. Examples could include a graphical analysis of historical data on the population of trout and/or landlocked salmon before and after the introduction of bass into Moosehead Lake. Or data on a variety of populations (biodiversity) affected by dredging for sea scallops.</p> <p>Using Mathematics and Computational Thinking, Interdependent Relationships in Ecosystems, Scale, Proportion, and Quantity</p>
	<p><b><u>HS-LS2-3</u> Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.</b></p> <p>Further explanation: Emphasis is on conceptual understanding of the role of aerobic and anaerobic respiration in different environments. An example could include a classroom lab activity around a Winogradsky Column with groups changing a variable such as temperature or light. Additional examples could look at the fermentation processes when blue-green algae is grown in aerobic and anaerobic environments.</p> <p>Constructing Explanations and Designing Solutions, Cycles of Matter and Energy Transfer in Ecosystems, Energy and Matter</p>

**HS-LS2-4 Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem.**

Further Explanation: Emphasis is on using a mathematical model of stored energy in biomass to describe the transfer of energy from one trophic level to another and that matter and energy are conserved as matter cycles and energy flows through ecosystems. Emphasis is on atoms and molecules such as carbon, oxygen, hydrogen and nitrogen being conserved as they move through an ecosystem. An example could include an illustration of a food pyramid students may find in Maine (e.g. seaweed → snail → fish → shark, or grass → insects → turkeys → foxes).

Using Mathematics and Computational Thinking, Cycles of Matter and Energy Transfer in Ecosystems, Energy and Matter

**HS-LS2-5 Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.**

Further explanation: Examples of models could include simulations and mathematical models. Models may include multi-media illustration of the carbon cycle to include a Maine ecosystem they are familiar with such as pond, seaside, farm, forest, etc.

Developing and Using Models, Cycles of Matter and Energy Transfer, Energy in Chemical Processes, Systems and System Models

**HS-LS2-6 Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.**

Further explanation: Examples of changes in ecosystem conditions could include modest biological or physical changes, such as moderate hunting or a seasonal flood; and extreme changes, such as volcanic eruption or sea level rise. Examples could include how the number of moose hunting licenses impacts other populations or how fishing limits or shortened seasons decreases the catch of many fish species and the effects on ground fish or smaller fish.

Engaging in Argument from Evidence, Ecosystem Dynamics, Functioning, and Resilience, Stability and Change

**HS-LS2-7 Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.**

Further explanation: Examples of human activities can include urbanization, building dams, and dissemination of invasive species. Potential Maine connections include the effects of: salting the roads in winter, introducing green crabs into coastal waters, introducing invasive species into Maine lakes, or examining historical data on water pollution in the Androscoggin during the height of mill activity, closing of mills and legislation on water quality.

	<p>Constructing Explanations and Designing Solutions, Ecosystem Dynamics, Functioning, and Resilience, Biodiversity and Humans, Developing Possible Solutions, Stability and Change</p>
	<p><b>HS-LS2-8 Evaluate the evidence for the role of group behavior on individual and species’ chances to survive and reproduce.</b></p> <p>Further explanation: Emphasis is on: (1) distinguishing between group and individual behavior, (2) identifying evidence supporting the outcomes of group behavior, and (3) developing logical and reasonable arguments based on evidence. Examples of group behaviors could include flocking, schooling, herding, and cooperative behaviors such as hunting, migrating, and swarming. Examples could include turkeys flocking to evade hunters or Canada geese migrating to and through Maine for breeding purposes.</p> <p>Engaging in Argument from Evidence, Social Interactions and Group Behavior, Cause and Effect</p>

Strand	Life Sciences (LS)		
Standard	LS3 Heredity: Inheritance and Variation of Traits		
	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations		<p><b>1-LS3-1 Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.</b></p> <p>Further explanation: Examples of patterns could include features that plants or animals share. Examples of observations could include that leaves from the same kind of plant are the same shape but can differ in size and that a particular breed of dog looks like its parents but is not exactly the same.</p>	

		Constructing Explanations and Designing Solutions, <b>Inheritance of Traits, Variation of Traits, Patterns</b>	
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Strand	Life Sciences (LS)		
Standard	LS3 Heredity: Inheritance and Variation of Traits		
	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	<p><b>3-LS3-1 Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.</b></p> <p>Further Explanation: Patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings. Emphasis is on organisms other than humans, such as lupins, apples or garden plants.</p> <p>Analyzing and Interpreting Data, <b>Inheritance of Traits, Variation of Traits, Patterns</b></p> <p><b>3-LS3-2 Use evidence to support the explanation that traits can be influenced by the environment.</b></p> <p>Further Explanation: Examples of the environment affecting a trait could include normally tall plants grown with insufficient water are stunted; and, a pet dog that is given too much food and little exercise may become overweight. In addition, hydrangea grown under higher acidic conditions will cause the petals to turn blue.</p>		

	Constructing Explanations and Designing Solutions, Inheritance of Traits, Variation of Traits, Cause and Effect		
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Strand	Life Sciences (LS)
Standard	LS3 Heredity: Inheritance and Variation of Traits
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b>MS-LS3-1</b> Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of an organism.</p> <p>Further explanation: Emphasis is on conceptual understanding that changes in genetic material may result in making different proteins.</p> <p>Developing and using models; inheritance of traits; variation of traits; structure and function</p>
	<p><b>MS-LS3-2</b> Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.</p> <p>Further explanation: Emphasis is on using models such as Punnett squares, diagrams, and simulations to describe the cause and effect relationship of gene transmission from parent(s) to offspring and the resulting genetic variation. Connections can be made to Maine agricultural crops, i.e. strawberries, blueberries, and potatoes.</p> <p>Developing and using models; growth and development of organisms; inheritance of traits; variation of traits; cause and effect</p>

Strand	Life Sciences (LS)
Standard	LS3 Heredity: Inheritance and Variation of Traits
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HS-LS3-1</b> Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring</p>

	<p>Further explanation: Emphasis is on the asking of clarifying questions about the general principles of genetics. An example is how cystic fibrosis (one of the most common autosomal recessive inherited diseases in Maine) is passed from parents to child.                  Asking Questions and Defining Problems, Structure and Function, Inheritance of Traits, Cause and Effect</p>
	<p><b>HS-LS3-2 Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors.</b>                  Further explanation: Emphasis is on using data to support arguments for the way variation occurs. Provide data on specific mutations caused by environmental factors.                  Engaging in Argument from Evidence, Variation of Traits, Cause and Effect</p>
	<p><b>HS-LS3-3 Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.</b>                  Further explanation: Emphasis is on the use of mathematics to describe the probability of traits as it relates to genetic and environmental factors in the expression of traits. An example would be the population of red fox in Maine and the incidences of the red allele vs. the sable allele.                  Analyzing and Interpreting Data, Variation of Traits, Scale, Proportion, and Quantity</p>

Strand	Life Sciences (LS)		
Standard	LS4 Biological Evolution: Unity and Diversity		
	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations			<p><b>2-LS4-1 Make observations of plants and animals to compare the diversity of life in different habitats.</b>                  Further Explanation: Emphasis is on the diversity of living things in each of a variety of different habitats. Potential Maine connections include Maine habitats (e.g. ocean, lake/pond, mountains, forests, cities, etc.)</p>

			<p>Planning and Carrying out Investigations, Biodiversity in Humans</p>
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Strand	Life Sciences (LS)		
Standard	LS4 Biological Evolution: Unity and Diversity		
	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	<p><b>3-LS4-1 Analyze and interpret data from fossils to provide evidence of the organisms and environments in which they lived long ago.</b>                      Further Explanation: Examples of data could include type, size, and distributions of fossil organisms. Examples of fossils and environments could include marine fossils found on dry land, tropical plant fossils found in Arctic areas, and fossils of extinct organisms.                      Analyzing and Interpreting Data, Evidence of Common Ancestry and Diversity, Scale, Proportion, and Quantity</p> <p><b>3-LS4-2 Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.</b>                      Further Explanation: Examples of cause and effect relationships could be plants that have larger thorns than other plants may be less likely to be eaten by predators and animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring such as yellow spotted salamanders and newts.</p>		

	<p>Constructing Explanations and Designing Solutions, Natural Selection, Cause and Effect</p> <p><b>3-LS4-3 Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.</b></p> <p>Further Explanation: Examples of evidence could include needs and characteristics of the organisms (such as loons) and habitats involved. The organisms and their habitats make up a system in which the parts depend on each other. Potential Maine connections include the introduction of Pike and Bass into areas that are non-native to the species and their impact on native trout and other native species.</p> <p>Engaging in Argument from Evidence, Inheritance of Traits, Variation of Traits, Scale, Proportion, and Quantity, Cause and Effect</p> <p><b>3-LS4-4 Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.</b></p> <p>Further Explanation: Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms. Lobster migrate as a result of water temperature, Cod follow prey fish (Mackerel), Atlantic Salmon start life in streams and migrate to saltwater.</p> <p>Engaging in Argument from Evidence, Biodiversity and Humans, Ecosystem Dynamics, Functioning, and Resilience, Systems and System Models</p>		
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Strand	Life Sciences (LS)
Standard	LS4 Biological Evolution: Unity and Diversity
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b><u>MS-LS4-1</u> Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.</b></p> <p>Further explanation: Emphasis is on finding patterns of changes in the level of complexity of anatomical structures in organisms and the chronological order of fossil appearance in rock layers.</p> <p>Analyzing and interpreting data; evidence of common ancestry and diversity; patterns</p>
	<p><b><u>MS-LS4-2</u> Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.</b></p> <p>Further explanation: Emphasis is on explanations of the evolutionary relationships among organisms in terms of similarities or differences of the gross appearance of anatomical structures.</p> <p>Constructing explanations and designing solutions; evidence of common ancestry and diversity; patterns</p>
	<p><b><u>MS-LS4-3</u> Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy.</b></p> <p>Further explanation: Emphasis is on inferring general patterns of relatedness among embryos of different organisms by comparing the macroscopic appearance of diagrams or pictures.</p> <p>Analyzing and interpreting data; evidence of common ancestry and diversity; patterns</p>
	<p><b><u>MS-LS4-4</u> Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.</b></p> <p>Further explanation: Emphasis is on using simple probability statements and proportional reasoning to construct explanations.</p> <p>Constructing explanations and designing solutions; natural selection; cause and effect</p>
	<p><b><u>MS-LS4-5</u> Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.</b></p>

	<p>Further explanation: Emphasis is on synthesizing information from reliable sources about the influence of humans on genetic outcomes in artificial selection (such as genetic modification, animal husbandry, and gene therapy) and on the impacts these technologies have on society as well as the technologies leading to these scientific discoveries.</p> <p>Obtaining, evaluating, and communicating information; natural selection; cause and effect</p>
	<p><b>MS-LS4-6 Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.</b></p> <p>Further explanation: Emphasis is on using mathematical models, probability statements, and proportional reasoning to support explanations of trends in changes to populations over time.</p> <p>Using mathematics and computational thinking; adaptation; cause and effect</p>

Strand	Life Sciences (LS)
Standard	LS4 Biological Evolution: Unity and Diversity
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HS-LS4-1 Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.</b></p> <p>Further explanation: Emphasis is on a conceptual understanding of the role each line of evidence has relating to common ancestry and biological evolution. Examples of evidence could include similarities in DNA sequences, anatomical structures, and order of appearance of structures in embryological development.</p> <p>Obtaining, Evaluating, and Communicating Information, Evidence of Common Ancestry and Diversity, Patterns</p>
	<p><b>HS-LS4-2 Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited</b></p>

**resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.**

Further explanation: Emphasis is on using evidence to explain the influence each of the four factors has on number of organisms, behaviors, morphology, or physiology in terms of ability to compete for limited resources and subsequent survival of individuals and adaptation of species. Examples of evidence could include mathematical models such as simple distribution graphs and proportional reasoning.

Constructing Explanations and Designing Solutions, Adaptation, Cause and Effect

**HS-LS4-3 Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.**

Further explanation: Emphasis is on analyzing shifts in numerical distribution of traits and using these shifts as evidence to support explanations. Observe historical data for the distribution of humpback whales in the Gulf of Maine looking specifically at skin pigmentation.

Analyzing and Interpreting Data, Natural Selection, Adaptation, Patterns

**HS-LS4-4 Construct an explanation based on evidence for how natural selection leads to adaptation of populations.**

Further explanation: Emphasis is on using data to provide evidence for how specific biotic and abiotic differences in ecosystems (such as ranges of seasonal temperature, long-term climate change, acidity, light, geographic barriers, or evolution of other organisms) contribute to a change in gene frequency over time, leading to adaptation of populations.

Constructing Explanations and Designing Solutions, Adaptation, Cause and Effect

**HS-LS4-5 Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.**

Further explanation: Emphasis is on determining cause and effect relationships for how changes to the environment such as deforestation, fishing, application of fertilizers, drought, flood, and the rate of change of the environment affect distribution or disappearance of traits in species.

Engaging in Argument from Evidence, Adaptation, Cause and Effect

**HS-LS4-6 Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.**

	<p>Further explanation: Emphasis is on designing solutions for a proposed problem related to threatened or endangered species, or to genetic variation of organisms for multiple species.</p> <p>Using Mathematics and Computational Thinking, Biodiversity and Humans, Developing Possible Solutions, Cause and Effect</p>
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Strand	Earth and Space Sciences (ESS)		
Standard	ESS1 Earth’s Place in the Universe		
	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations		<p><b>1-ESS1-1 Use observations of the sun, moon, and stars to describe patterns that can be predicted.</b></p> <p>Further explanation: Examples of patterns could include that the sun and moon appear to rise in one part of the sky, move across the sky, and set and that stars other than our sun are visible at night but not during the day.</p>	<p><b>2-ESS1-1 Use information from several sources to provide evidence that Earth events can occur quickly or slowly.</b></p> <p>Further Explanation: Examples of events and timescales could include volcanic explosions and earthquakes, which happen quickly, and erosion of rocks, which occurs</p>

		<p>Analyzing and Interpreting Data, The Universe and Its Stars, Patterns</p> <p><b>1-ESS1-2 Make observations at different times of the year to relate the amount of daylight to the time of year.</b></p> <p>Further explanation: Emphasis is on relative comparisons of the amount of daylight in the winter or summer to the amount in the spring or fall.</p> <p>Planning and Carrying out Investigations, Earth and the Solar System, Patterns</p>	<p>slowly. Examples of Maine phenomena (e.g. flash floods, erosion and tides).</p> <p>Constructing Explanations and Designing Solutions, The History of Planet Earth, Stability and Change</p>
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Strand	Earth and Space Sciences (ESS)		
Standard	ESS1 Earth's Place in the Universe		
	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations		<p><b>4-ESS1-1 Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.</b></p> <p>Further Explanation: Examples of evidence from patterns could include rock layers with marine shell fossils above rock layers with plant fossils</p>	<p><b>5-ESS1-1 Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth.</b></p> <p>Engaging in Argument from Evidence, The Universe and its Stars, Scale Proportion and Quantity</p>

		<p>and no shells, indicating a change from land to water over time and a canyon with different rock layers in the walls and a river in the bottom, indicating that over time a river cut through the rock.</p> <p>Constructing Explanations and Designing Solutions, The History of Planet Earth, Patterns</p>	<p><b>5-ESS1-2 Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.</b></p> <p>Further Explanation: Examples of patterns could include the position and motion of Earth with respect to the sun and selected stars that are visible only in particular months.</p> <p>Analyzing and Interpreting Data, Earth and the Solar System, Patterns</p>
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Strand	Earth and Space Sciences (ESS)
Standard	ESS1 Earth's Place in the Universe
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b>MS-ESS1-1 Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.</b></p> <p>Further explanation: Examples of models can be physical, graphical, or conceptual. Examples could incorporate latitude and season connections, why Lubec is the first town in the continental U.S. to see the sunrise, and tides (king, neap, spring).</p> <p>Developing and using models; the universe and its stars; earth and the solar system; patterns</p>

	<p><b>MS-ESS1-2 Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.</b>                  Further explanation: Emphasis for the model is on gravity as the force that holds together the solar system and Milky Way galaxy and controls orbital motions within them. Examples of models can be physical (such as the analogy of distance along a football field or computer visualizations of elliptical orbits) or conceptual (such as mathematical proportions relative to the size of familiar objects such as students’ school or state).                  Developing and using models; the universe and its stars; earth and the solar system; systems and system models</p>
	<p><b>MS-ESS1-3 Analyze and interpret data to determine scale properties of objects in the solar system.</b>                  Further explanation: Emphasis is on the analysis of data from Earth-based instruments, space-based telescopes, and spacecraft to determine similarities and differences among solar system objects. Examples of scale properties include the sizes of an object’s layers (such as crust and atmosphere), surface features (such as volcanoes), and orbital radius. Examples of data include statistical information, drawings and photographs, and models.                  Analyzing and interpreting data; earth and the solar system; scale, proportion, and quantity</p>
	<p><b>MS-ESS1-4 Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth’s 4.6-billion-year-old history.</b>                  Further explanation: Emphasis is on how analysis of rock formations and the fossils they contain are used to establish relative ages of major events in Earth’s history. Examples of Earth’s major events could range from being very recent (such as the last Ice Age or the earliest fossils of homo sapiens) to very old (such as the formation of Earth or the earliest evidence of life). Examples can include the formation of mountain chains and ocean basins, the evolution or extinction of particular living organisms, or significant volcanic eruptions.                  Constructing explanations and designing solutions; the history of planet earth; scale, proportion, and quantity</p>

Strand	Earth and Space Sciences (ESS)
Standard	ESS1 Earth’s Place in the Universe
	Adolescence
	Grades 9-Diploma
Performance Expectations	<b>HS-ESS1-1 Develop a model based on evidence to illustrate the life span of the sun and the role of nuclear fusion in the sun’s core to release energy that eventually reaches Earth in the form of radiation.</b>

	<p>Further explanation: Emphasis is on the energy transfer mechanisms that allow energy from nuclear fusion in the sun's core to reach Earth. Examples of evidence for the model include observations of the masses and lifetimes of other stars, as well as the ways that the sun's radiation varies due to sudden solar flares ("space weather"), the 11- year sunspot cycle, and non-cyclic variations over centuries.</p> <p>Developing and Using Models, The Universe and its Stars, Energy in Chemical Processes and Everyday Life, Scale, Proportion and Quantity</p>
	<p><b>HS-ESS1-2 Construct an explanation of the Big Bang theory based on astronomical evidence of light spectra, motion of distant galaxies, and composition of matter in the universe.</b></p> <p>Further explanation: Emphasis is on the astronomical evidence of the red shift of light from galaxies as an indication that the universe is currently expanding, the cosmic microwave background as the remnant radiation from the Big Bang, and the observed composition of ordinary matter of the universe, primarily found in stars and interstellar gases (from the spectra of electromagnetic radiation from stars), which matches that predicted by the Big Bang theory (3/4 hydrogen and 1/4 helium).</p> <p>Constructing Explanations and Designing Solutions, The Universe and its Stars, Electromagnetic Radiation, Energy and Matter</p>
	<p><b>HS-ESS1-3 Communicate scientific ideas about the way stars, over their life cycle, produce elements.</b></p> <p>Further explanation: Emphasis is on the way nucleosynthesis, and therefore the different elements created, varies as a function of the mass of a star and the stage of its lifetime.</p> <p>Obtaining, Evaluating, and Communicating Information, The Universe and its Stars, Energy and Matter</p>
	<p><b>HS-ESS1-4 Use mathematical or computational representations to predict the motion of orbiting objects in the solar system.</b></p> <p>Further explanation: Emphasis is on Newtonian gravitational laws governing orbital motions, which apply to human-made satellites as well as planets and moons.</p> <p>Using Mathematical and Computational Thinking, Earth and the Solar System, Scale, Proportion, and Quantity</p>
	<p><b>HS-ESS1-5 Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks.</b></p> <p>Further explanation: Emphasis is on the ability of plate tectonics to explain the ages of crustal rocks. Examples include evidence of the ages oceanic crust increasing with distance from mid-ocean ridges (a result of plate spreading) and the ages of North American continental crust increasing with distance away from a central ancient core (a result of past plate interactions). Examples could also be found from looking at differences</p>

	<p>between coastal Maine and interior Maine rock types and their ages as evidence to explain the formation of land structures and plate boundaries that cause them.  <a href="#">Engaging in Argument from Evidence</a>, <a href="#">The History of Planet Earth</a>, <a href="#">Plate Tectonics and Large-Scale System Interactions</a>, <a href="#">Nuclear Processes</a>, <a href="#">Patterns</a></p>
	<p><b>HS-ESS1-6 Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth’s formation and early history.</b>                  Further explanation: Emphasis is on using available evidence within the solar system to reconstruct the early history of Earth, which formed along with the rest of the solar system 4.6 billion years ago. Examples of evidence include the absolute ages of ancient materials (obtained by radiometric dating of meteorites, moon rocks, and Earth’s oldest minerals), the sizes and compositions of solar system objects, and the impact cratering record of planetary surfaces.  <a href="#">Constructing Explanations and Designing Solutions</a>, <a href="#">The History of Planet Earth</a>, <a href="#">Stability and Change</a></p>

Strand	Earth and Space Sciences (ESS)		
Standard	ESS2 Earth’s Systems		
	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	<p><b><u>K-ESS2-1</u> Use and share observations of local weather conditions to describe patterns over time.</b>                  Further explanation: Examples of qualitative observations could include descriptions of the weather (such as sunny, cloudy, rainy, and warm); examples of quantitative observations could include graphing the number of sunny, windy, and rainy or snowy days in a month. Examples of patterns could include that it is usually cooler in the morning than in the afternoon and the</p>		<p><b><u>2-ESS2-1</u> Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.</b>                  Further Explanation: Examples of solutions could include different designs of dikes and windbreaks to hold back wind and water and different designs for using shrubs, grass, and trees to hold back land.  <a href="#">Constructing Explanations and Designing Solutions</a>, <a href="#">Earth Materials and Systems</a>, <a href="#">Optimizing the Design Solution</a>, <a href="#">Stability and Change</a></p>

	<p>number of sunny days versus cloudy days in different months.                  Analyzing and Interpreting Data, Weather and Climate, Patterns</p> <p><b>K-ESS2-2 Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.</b>                  Further explanation: Examples of plants and animals changing their environment could include a squirrel digging in the ground to hide its food and tree roots can break concrete. Examples could include ways that humans change their environment to meet their needs (cutting down trees to provide heat, farming to provide food, and the process of snow removal, e.g. sanding/salting the roads, snowplowing, etc.).                  Engaging in Argument from Evidence, Biogeology, Human Impacts on Earth Systems, Systems and System Models</p>		<p><b>2-ESS2-2 Develop a model to represent the shapes and kinds of land and bodies of water in an area.</b>                  Developing and Using Models, Plate Tectonics and the Large-Scale System Interactions, Patterns</p> <p><b>2-ESS2-3 Obtain information to identify where water is found on Earth and that it can be solid or liquid.</b>                  Obtaining, Evaluating, and Communicating Information, The Roles of Water in Earth's Surface Processes, Patterns</p>
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Strand	Earth and Space Sciences (ESS)		
Standard	ESS2 Earth's Systems		
	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	<b>3-ESS2-1 Represent data in tables and graphical displays to describe typical weather</b>	<b>4-ESS2-1 Make observations and/or measurements to provide evidence of the effects of weathering or the rate of</b>	<b>5-ESS2-1 Develop a model using an example to describe ways the geosphere,</b>

	<p><b>conditions expected during a particular season.</b>  <b>Further Explanation:</b>  Examples of data could include average temperature, precipitation, and wind direction  Analyzing and Interpreting Data, Weather and Climate, Patterns</p> <p><b><u>3-ESS2-2</u> Obtain and combine information to describe climates in different regions of the world.</b>  Obtaining, Evaluating, and Communicating Information, Weather and Climate, Patterns</p>	<p><b>erosion by water, ice, wind, or vegetation.</b>  <b>Further Explanation:</b> Examples of variables to test could include angle of slope in the downhill movement of water, amount of vegetation, speed of wind, relative rate of deposition, cycles of freezing and thawing of water, cycles of heating and cooling, and volume of water flow. Maine pot holes and frost heaves are evidence of the effects of weathering and explain why roads in Maine are repaved more frequently than roads in Florida.  Planning and Carrying out Investigations, Earth Materials and Systems, Biogeology, Cause and Effect</p> <p><b><u>4-ESS2-2</u> Analyze and interpret data from maps to describe patterns of Earth's features.</b>  <b>Further Explanation:</b> Maps can include topographic maps of Earth's land and ocean floor, as well as maps of the locations of mountains, continental boundaries, volcanoes, and earthquakes. Investigate the formation of the Appalachian Mountains and compare them to the formation of the Rocky or Cascade Mountain Ranges.</p>	<p><b>biosphere, hydrosphere, and/or atmosphere interact.</b>  <b>Further Explanation:</b> Examples could include the influence of the ocean on ecosystems, landform shape, and climate; the influence of the atmosphere on landforms and ecosystems through weather and climate; and the influence of mountain ranges on winds and clouds in the atmosphere. The geosphere, hydrosphere, atmosphere, and biosphere are each a system.  Developing and Using Models, Earth's Materials and Systems, Systems and System Models</p> <p><b><u>5-ESS2-2</u> Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.</b>  Using Mathematics and Computational Thinking, The Roles of Water in Earth's Surface Processes, Scale, Proportion, and Quantity</p>
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Analyzing and Interpreting Data,  
Plate Tectonics and Large-Scale  
System Interactions, Patterns

Strand	Earth and Space Sciences (ESS)
Standard	ESS2 Earth's Systems
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b>MS-ESS2-1 Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process</b>                      Further explanation: Emphasis is on the processes of melting, crystallization, weathering, deformation, and sedimentation, which act together to form minerals and rocks through the cycling of Earth's materials. Potential Maine connections include Deer Isle granite, Rockland limestone, Maine tourmaline, Acadia National Park pink granite, along with Maine mining history at Bald Mountain or Katahdin Iron Works.                      Developing and using models, earth's materials and systems, stability and change</p> <p><b>MS-ESS2-2 Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.</b>                      Further explanation: Emphasis is on how processes change Earth's surface at time and spatial scales that can be large (such as slow plate motions or the uplift of large mountain ranges) or small (such as rapid landslides or microscopic geochemical reactions), and how many geoscience processes (such as earthquakes, volcanoes, and meteor impacts) usually behave gradually but are punctuated by catastrophic events. Examples of geoscience processes include surface weathering and deposition by the movements of water, ice, and wind. Emphasis is on geoscience processes that shape local geographic features, where appropriate. Potential Maine connections include the Desert of Maine, glacial erratics, alluvial fans, Appalachian Trail and Baxter State Park, and the fjord on Mount Desert Island.                      Constructing explanations and designing solutions, earth's materials and systems, the roles of water in earth's surface processes, scale proportion and quantity</p> <p><b>MS-ESS2-3 Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.</b>                      Further explanation: Examples of data include similarities of rock and fossil types on different continents, the shapes of the continents (including continental shelves), and the locations of ocean structures (such as ridges,</p>

	<p>fracture zones, and trenches). Potential Maine connections can be found in the Gulf of Maine, Georges Bank and the inner continental shelf.</p> <p>Analyzing and interpreting data, the history of planet earth, plate tectonics and large-scale system interactions, patterns</p>
	<p><b>MS-ESS2-4 Develop a model to describe the cycling of water through Earth’s systems driven by energy from the sun and the force of gravity.</b></p> <p>Further explanation: Emphasis is on the ways in which water changes its state as it moves through the multiple pathways of the hydrologic cycle. Examples of models can be conceptual or physical.</p> <p>Developing and using models, the roles of water in earth’s surface processes, energy and matter</p>
	<p><b>MS-ESS2-5 Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions.</b></p> <p>Further explanation: Emphasis is on how air masses flow from regions of high pressure to low pressure, causing weather (defined by temperature, pressure, humidity, precipitation, and wind) at a fixed location to change over time and how sudden changes in weather can result when different air masses collide. Emphasis is on how weather can be predicted within probabilistic ranges. Examples of data can be provided to students (such as weather maps, diagrams, and visualizations) or obtained through laboratory experiments (such as with condensation). Potential Maine connections include “Bombogenesis” snow storms, coastal fog, Nor’easters, sea smoke and valley fog.</p> <p>Planning and carrying out investigations, the roles of water in earth’s surface processes, weather and climate, cause and effect</p>
	<p><b>MS-ESS2-6 Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.</b></p> <p>Further explanation: Emphasis is on how patterns vary by latitude, altitude, and geographic land distribution. Emphasis of atmospheric circulation is on the sunlight-driven latitudinal banding, the Coriolis effect, and resulting prevailing winds; emphasis of ocean circulation is on the transfer of heat by the global ocean convection cycle, which is constrained by the Coriolis effect and the outlines of continents. Examples of models can be diagrams, maps and globes, or digital representations.</p> <p>Developing and using models, the roles of water in earth’s surface processes, weather and climate, systems and system models</p>

Strand	Earth and Space Sciences (ESS)
Standard	ESS2 Earth's Systems
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b><u>HS-ESS2-1</u> Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features.</b>  Further explanation: Emphasis is on how the appearance of land features (such as mountains, valleys, and plateaus) and sea floor features (such as trenches, ridges, and seamounts) are a result of both constructive forces (such as volcanism, tectonic uplift, and orogeny) and destructive mechanisms (such as weathering, mass wasting, and coastal erosion). An example could be to utilize Maine Geologic maps, including tectonic maps, as data to create a model to illustrate how Maine's land features or oceanic features were formed. Consider looking to Maine's glacial history, features formed and materials deposited by glaciers.  Developing and Using Models, Plate Tectonics and Large-Scale System Interactions, Earth Materials and Systems, Stability and Change</p> <p><b><u>HS-ESS2-2</u> Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems.</b>  Further explanation: Examples should include climate feedbacks, such as how an increase in greenhouse gases causes a rise in global temperatures that melts glacial ice, which reduces the amount of sunlight reflected from Earth's surface, increasing surface temperatures and further reducing the amount of ice. Examples could also be taken from other system interactions, such as how the loss of ground vegetation causes an increase in water runoff and soil erosion; how dammed rivers increase groundwater recharge, decrease sediment transport, and increase coastal erosion; and how the loss of wetlands causes a decrease in local humidity that further reduces the wetlands' extent. An example could consider timber harvesting practices related to erosion and water runoff issues, river damming, or coastal erosion of Maine's beaches and dunes.  Analyzing and Interpreting Data, Earth Materials and Systems, Stability and Change</p> <p><b><u>HS-ESS2-3</u> Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection.</b>  Further explanation: Emphasis is on both a one-dimensional model of Earth, with radial layers determined by density, and a three-dimensional model, which is controlled by mantle convection and the resulting plate tectonics. Examples of evidence include maps of Earth's three-dimensional structure obtained from seismic waves, records of the rate of change of Earth's magnetic field (as constraints on convection in the outer core), and identification of the composition of Earth's layers from high-pressure laboratory experiments.</p>

Developing and Using Models, Earth Materials and Systems, Plate Tectonics and Large-Scale System Interactions, Wave Properties, Energy and Matter

**HS-ESS2-4 Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate.**

Further explanation: Examples of the causes of climate change differ by timescale, over 1-10 years: large volcanic eruptions, ocean circulation; 10s to 100s of years: changes in human activity, ocean circulation, solar output; 10s a-100s of thousands of years: changes to Earth's orbit and the orientation of its axis; and 10s-100s of millions of years: long-term changes in atmospheric composition. Consider the climatic impacts of the Gulf stream and the Labrador currents on the Gulf of Maine, e.g. water temperature changes and fishing industry disruptions.

Developing and Using Models, Earth and the Solar System, Earth Materials and Systems, Weather and Climate, Scale, Proportion, and Quantity

**HS-ESS2-5 Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes.**

Further explanation: Emphasis is on mechanical and chemical investigations with water and a variety of solid materials to provide evidence for the connections between the hydrologic cycle and system interactions commonly known as the rock cycle. Examples of mechanical investigations include stream transportation and deposition using a stream table, erosion using variations in soil moisture content, and frost wedging by the expansion of water as it freezes. Examples of chemical investigations include chemical weathering and recrystallization (by testing the solubility of different materials) or melt generation (by examining how water lowers the melting temperature of most solids). Draw connections to Maine phenomena such as ice jams, frost heaves and potholes.

Planning and Carrying Out Investigations, The Role of Water in Earth's Surface Processes, Structure and Function

**HS-ESS2-6 Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.**

Further explanation: Emphasis is on modeling biogeochemical cycles that include the cycling of carbon through the ocean, atmosphere, soil, and biosphere (including humans), providing the foundation for living organisms.

Developing and Using Models, Weather and Climate, Energy and Matter

	<p><b>HS-ESS2-7 Construct an argument based on evidence about the simultaneous coevolution of Earth’s systems and life on Earth.</b></p> <p>Further explanation: Emphasis is on the dynamic causes, effects, and feedbacks between the biosphere and Earth’s other systems, whereby geoscience factors control the evolution of life, which in turn continuously alters Earth’s surface. Examples include how photosynthetic life altered the atmosphere through the production of oxygen, which in turn increased weathering rates and allowed for the evolution of animal life; how microbial life on land increased the formation of soil, which in turn allowed for the evolution of land plants; and how the evolution of corals created reefs that altered patterns of erosion and deposition along coastlines and provided habitats for the evolution of new life forms.</p> <p>Engaging in Argument from Evidence, Weather and Climate, Biogeology, Stability and Change</p>
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Strand	Earth and Space Sciences (ESS)		
Standard	ESS3 Earth and Human Activity		
	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	<p><b>K-ESS3-1 Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.</b></p> <p>Further explanation: Examples of relationships could include that deer eat buds and leaves and therefore usually live in forested areas and that grasses need sunlight so they often grow in meadows. Plants, animals, and their surroundings make up a system. Examples could include coastal tidepools, humans in Maine live in insulated buildings for protection during cold months, or uninsulated structures during warm months (e.g. camping in a tent). Examples of animals that migrate include monarch butterflies, ducks, Canada geese, etc.</p>		

	<p>Developing and Using Models, Natural Resources, Systems and System Models</p> <p><b><u>K-ESS3-2</u> Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.</b></p> <p>Further explanation: Emphasis is on local forms of severe weather. Examples could include local forms of severe weather (flooding, ice, blizzards, heat, etc.) and checking the weather forecast to determine proper clothing to wear.</p> <p>Asking Questions and Defining Problems, Obtaining, Evaluating, and Communicating Information, Natural Hazards, Defining and Delimiting an Engineering Problem, Cause and Effect</p> <p><b><u>K-ESS3-3</u> Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.</b></p> <p>Further explanation: Examples of human impact on land could include cutting trees to produce paper and using resources to produce bottles. Examples of solutions could include reusing paper and recycling cans and bottles. Examples could also include what we can do to clean public areas (e.g. beaches, parks, lakes, trails, etc.).</p> <p>Obtaining, Evaluating, and Communicating Information, Developing Possible Solutions,</p>		
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	Human Impacts on Earth Systems, Cause and Effect		
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Strand	Earth and Space Sciences (ESS)		
Standard	ESS3 Earth and Human Activity		
	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	<p><b><u>3-ESS3-1</u> Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.</b></p> <p>Further Explanation: Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, and lightning rods. Potential Maine connections include the construction of seawalls in southern Maine to prevent damage to homes from strong ocean storms.</p> <p>Engaging in Argument from Evidence, Natural Hazards, Cause and Effect</p>	<p><b><u>4-ESS3-1</u> Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.</b></p> <p>Further Explanation: Examples of renewable energy resources could include wind energy, water behind dams, and sunlight; nonrenewable energy resources are fossil fuels and fissile materials. Examples of environmental effects could include loss of habitat due to dams, loss of habitat due to surface mining, and air pollution from burning of fossil fuels. Investigate the pros and cons of heating homes with wood, fossil fuels, and solar energy. Investigate what a wind or solar farm is and why they are controversial in Maine.</p> <p>Obtaining, Evaluating, and Communicating Information, Natural Resources, Cause and Effect</p> <p><b><u>4-ESS3-2</u> Generate and compare multiple solutions to reduce the</b></p>	<p><b><u>5-ESS3-1</u> Obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources and environment.</b></p> <p>Obtaining, Evaluating and Communicating Information, Human Impacts on Earth systems, Systems and System Models</p>

		<p><b>impacts of natural Earth processes on humans.</b>                  Further Explanation: Examples of solutions could include designing an earthquake resistant building and improving monitoring of volcanic activity. Design a microburst resistant building or design a telephone/electric pole that could sustain less damage in an ice storm.                  Constructing Explanations and Designing Solutions, Natural Hazards, Designing Solutions to Engineering Problems, Cause and Effect</p>	
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Strand	Earth and Space Sciences (ESS)		
Standard	ESS3 Earth and Human Activity		
	Early Adolescence		
	Grades 6-8		
Performance Expectations	<p><b>MS-ESS3-1 Construct a scientific explanation based on evidence for how the uneven distributions of Earth’s mineral, energy, and groundwater resources are the result of past and current geoscience processes.</b>                  Further explanation: Emphasis is on how these resources are limited and typically non-renewable and on how their distributions are significantly changing as a result of removal by humans. Examples of uneven distributions of resources as a result of past processes include but are not limited to petroleum (locations of the burial of organic marine sediments and subsequent geologic traps), metal ores (locations of past volcanic and hydrothermal activity associated with subduction zones), and soil (locations of active weathering and/or deposition of rock).                  Constructing explanations and designing solutions, natural resources, cause and effect</p>		
	<p><b>MS-ESS3-2 Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.</b>                  Further explanation: Emphasis is on how some natural hazards, such as volcanic eruptions, and severe weather, are preceded by phenomena that allow for reliable predictions, but others, such as earthquakes, occur</p>		

suddenly and with no notice and thus are not yet predictable. Examples of natural hazards can be taken from interior processes (such as earthquakes and volcanic eruptions), surface processes (such as mass wasting and tsunamis), or severe weather events (such as hurricanes, tornadoes, and floods). Examples of data can include the locations, magnitudes, and frequencies of the natural hazards. Examples of technologies can be global (such as satellite systems to monitor hurricanes or forest fires) or local (such as building basements in tornado-prone regions or reservoirs to mitigate droughts).

Analyzing and interpreting data, natural hazards, patterns

**MS-ESS3-3 Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.**

Further explanation: Examples of the design process include examining human environmental impacts, assessing the kinds of solutions that are feasible, and designing and evaluating solutions that could reduce that impact. Examples of human impacts can include water usage (such as the withdrawal of water from streams and aquifers or the construction of dams and levees), land usage (such as urban development, agriculture, or the removal of wetlands), and pollution (such as of the air, water, or land).

Constructing explanations and designing solutions, human impacts on earth systems, cause and effect

**MS-ESS3-4 Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.**

Further explanation: Examples of evidence include grade-appropriate databases on human populations and the rates of consumption of food and natural resources (such as freshwater, mineral, and energy). Examples of impacts can include changes to the appearance, composition, and structure of Earth's systems as well as the rates at which they change. The consequences of increases in human populations and consumption of natural resources are described by science, but science does not make the decisions for the actions society takes.

Engaging in argument from evidence, human impacts on earth systems, cause and effect

**MS-ESS3-5 Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.**

Further explanation: Examples of factors include human activities (such as fossil fuel combustion, cement production, and agricultural activity) and natural processes (such as changes in incoming solar radiation or volcanic activity). Examples of evidence can include tables, graphs, and maps of global and regional temperatures, atmospheric levels of gases such as carbon dioxide and methane, and the rates of human activities. Emphasis is on the major role that human activities play in causing the rise in global temperatures.

Asking questions and defining problems, global climate change, stability and change

Strand	Earth and Space Sciences (ESS)
Standard	ESS3 Earth and Human Activity
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b><u>HS-ESS3-1</u> Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.</b></p> <p>Further explanation: Examples of key natural resources include access to fresh water (such as rivers, lakes, and groundwater), regions of fertile soils such as river deltas, and high concentrations of minerals and fossil fuels. Examples of natural hazards can be from interior processes (such as volcanic eruptions and earthquakes), surface processes (such as tsunamis, mass wasting and soil erosion), and severe weather (such as hurricanes, floods, and droughts). Examples of the results of changes in climate that can affect populations or drive mass migrations include changes to sea level, regional patterns of temperature and precipitation, and the types of crops and livestock that can be raised. Other examples include the impacts of climate change on Maine’s ski industry, fishing industry, maple sugar industry and on sea levels or droughts.</p> <p>Constructing Explanations and Designing Solutions, Natural Resources, Natural Hazards, Cause and Effect</p>
	<p><b><u>HS-ESS3-2</u> Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.</b></p> <p>Further explanation: Emphasis is on the conservation, recycling, and reuse of resources (such as minerals and metals) where possible, and on minimizing impacts where it is not. Examples include developing best practices for agricultural soil use (for farming, timber industry, blueberry and potato crops), mining (for coal, tar sands, and oil shales), and pumping (for petroleum and natural gas). Science knowledge indicates what can happen in natural systems—not what should happen.</p> <p>Engaging in Argument from Evidence, Natural Resources, Developing Possible Solutions</p>
	<p><b><u>HS-ESS3-3</u> Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.</b></p> <p>Further explanation: Examples of factors that affect the management of natural resources include costs of resource extraction and waste management, per-capita consumption, and the development of new technologies. Examples of factors that affect human sustainability include agricultural efficiency, levels of conservation, and urban planning. Consider the effects of urban sprawl and the loss of farmland.</p> <p>Using Mathematics and Computational Thinking, Human Impacts on Earth Systems, Stability and Change</p>

	<p><b>HS-ESS3-4 Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.</b>                  Further explanation: Examples of data on the impacts of human activities could include the quantities and types of pollutants released, changes to biomass and species diversity, or areal changes in land surface use (such as for urban development, agriculture and livestock, or surface mining). Examples for limiting future impacts could range from local efforts (such as reducing, reusing, and recycling resources) to large-scale geoengineering design solutions (such as altering global temperatures by making large changes to the atmosphere or ocean). Other examples include the use of propane-powered buses in Acadia (evaluate pros and cons).                  Constructing Explanations and Designing Solutions, Developing Possible Solutions, Stability and Change</p>
	<p><b>HS-ESS3-5 Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth’s systems.</b>                  Further explanation: Examples of evidence, for both data and climate model outputs, are for climate changes (such as precipitation and temperature) and their associated impacts (such as on sea level, glacial ice volumes, or atmosphere and ocean composition).                  Analyzing and Interpreting Data, Global Climate Change, Stability and Change</p>
	<p><b>HS-ESS3-6 Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.</b>                  Further explanation: Examples of Earth systems to be considered are the hydrosphere, atmosphere, cryosphere, geosphere, and/or biosphere. An example of the far-reaching impacts from a human activity is how an increase in atmospheric carbon dioxide results in an increase in photosynthetic biomass on land and an increase in ocean acidification, with resulting impacts on sea organism health and marine populations. Use and interpret graphs and data of carbon dioxide levels in the Gulf of Maine for oysters and sea scallops. Consider the impacts of ocean acidification on shellfish.                  Using Mathematics and Computational Thinking, Weather and Climate, Global Climate Change, Systems and System Models</p>

Strand	Engineering, Technology, and Applications of Science (ETS)		
Standard	ETS1 Engineering Design		
	Childhood		
	Kindergarten	Grade 1	Grade 2

<p>Performance Expectations</p>	<p><b><u>K-2-ETS1-1</u> Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</b>                  Asking Questions and Defining Problems, Defining and Delimiting Engineering Problems</p>	<p><b><u>K-2-ETS1-2</u> Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.</b>                  Developing and Using Models, Developing Possible Solutions, Structure and Function</p>	<p><b><u>K-2-ETS1-3</u> Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.</b>                  Analyzing and Interpreting Data, Optimizing the Design Solution</p>
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Strand	Engineering, Technology, and Applications of Science (ETS)		
Standard	ETS1 Engineering Design		
	Childhood		
	Grade 3	Grade 4	Grade 5
<p>Performance Expectations</p>	<p><b><u>3-5-ETS1-1</u> Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.</b>                  Asking Questions and Defining Problems, Defining and Delimiting Engineering Problems, Influence of Engineering, Technology,</p>	<p><b><u>3-5-ETS1-2</u> Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.</b>                  Constructing Explanations and Designing Solutions, Developing Possible Solutions, Influence of Engineering, Technology, and Science on Society and the Natural World</p>	<p><b><u>3-5-ETS1-3</u> Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.</b>                  Planning and Carrying out Explanations, Developing Possible Solutions, Optimizing the Design Solution</p>

	and Science on Society and the Natural World		
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Strand	Engineering, Technology, and Applications of Science (ETS)
Standard	ETS1 Engineering Design
	Early Adolescence
	Grades 6-8
Performance Expectations	<p><b><u>MS-ETS1-1</u> Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.</b></p> <p>Further explanation: To solve a problem it needs to have clearly defined set goals and limits. The more limitations applied to a problem, the more elegant and successful the solution is likely to be. Limitations would take into account potential impacts on the environment, social/cultural norms, and allowable interactions. The application of science principles is to be used as a tool to verify solutions. Examples could include hydroelectric dams as a viable, cost effective and ecologically friendly way to generate electrical power. However, the dam holds fish populations from traveling freely through the environment. There is a need to provide a safe way for aquatic life to pass by the hydroelectric turbine in a way that does not impact the electrical generation, the original water flow of the river dammed, is cost effective to existing dam models, and has no negative impact on human populations.</p> <p>Asking questions and defining problems, defining and delimiting engineering problems, influence of science, engineering, and technology on society and the natural world</p>
	<p><b><u>MS-ETS1-2</u> Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.</b></p> <p>Further explanation: When designing a solution to a problem, there need to be many possible solutions explored, tested, verified, and compared, and the use of some tool to determine the validity of competing designs in meeting the design criteria. These tools would be used to make testing data understandable, comparable, and accessible.</p> <p>Engaging in argument from evidence, developing possible solutions</p>
	<p><b><u>MS-ETS1-3</u> Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.</b></p>

	<p>Further explanation: Testing and data is used to evaluate the solutions or part of the solutions that best solve the given problem. The data needs to be assessed and then used to modify, combine, and deny solutions and then retested to arrive at the best possible solution within the constraints of the problem. Examples could include tables, graphs, matrices, check lists, spreadsheets, public polls, Venn diagrams, mathematical models, etc.</p> <p>Analyzing and interpreting data, developing possible solutions, optimizing design solution</p>
	<p><b>MS-ETS1-4 Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.</b></p> <p>Further explanation: Developing the proper test to verify which solutions meet and which excel when applied against the constraints. That test is then applied to a prototype or model to allow faults to be identified and then corrected, frequently the combination of two or more solutions can produce a better solution and then retest it to see if it is the best solution. Examples could include materials science testing (shear strength, compression testing, tension testing, etc.), weather testing (temperature, rain, snow, wind, sun exposure), wind tunnel, failure or destructive testing, mathematical models, etc.</p> <p>Developing and using models, developing possible solutions, optimizing design solution</p>

Strand	Engineering, Technology, and Applications of Science (ETS)
Standard	ETS1 Engineering Design
	Adolescence
	Grades 9-Diploma
Performance Expectations	<p><b>HS-ETS1-1 Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.</b></p> <p>Further explanation: Examples of challenges include local and global climate change issues, biodiversity loss or United Nations sustainable development goals.</p> <p>Asking Questions and Defining Problems, Defining and Delimiting Engineering Problems</p>
	<p><b>HS-ETS1-2 Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.</b></p> <p>Further explanation: Examples could include transportation issues, dams, green energy and wind power in Maine.</p> <p>Constructing Explanations and Designing Solutions, Optimizing the Design Solution</p>

	<p><b><u>HS-ETS1-3</u> Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.</b></p> <p>Further explanation: Examples could include lobstering and exports of lobster, dry wells and water conservation in Maine, or saltwater intrusion in coastal Maine wells.</p> <p>Constructing Explanations and Designing Solutions, Developing Possible Solutions</p>
	<p><b><u>HS-ETS1-4</u> Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.</b></p> <p>Using Mathematics and Computational Thinking, Developing Possible Solutions, Systems and System Models</p>

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## SOCIAL STUDIES

### Introduction

The great architects of American public education, such as Thomas Jefferson, Horace Mann, and John Dewey, believed that every student must be well versed in our nation's history, the principles and practices which support and sustain citizenship, and the institutions that define our government. Understandings of commerce and geography were critical to their thinking as well. In essence, Jefferson, Mann, and Dewey viewed the study of social studies as critical to the mission of public schools. According to the National Council for the Social Studies: *advocates of citizenship education cross the political spectrum, but they are bound by a common belief that our democratic republic will not sustain unless students are aware of their changing cultural and physical environments; know the past; read, write, and think deeply; and act in ways that promote the common good.* (C3 Framework for Social Studies, 2013).

A strong Social Studies education depends upon a clear understanding of its interrelated disciplines and inclusion of Maine's Guiding Principles. Without knowledge of the geography and economics of earlier times, history offers only lists of people, events, and dates. Without knowledge of history, the institutions of American government and the dynamics of today's global economy are difficult to understand. Although social studies curricula vary in their breadth and depth, the Social Studies Standards reflect a focus on government, history, geography, personal finance and economics as the pillars of the content, with other disciplines within the social sciences deemed important, but not essential.

### Guiding Principles

The Guiding Principles guide education in Maine and should be reflected throughout Social Studies curriculum. Examples of how students can show evidence of those guiding principles in Social Studies may include:

- A. Clear and Effective Communicator:** Students research and use background knowledge to give audiovisual presentations about current and historical issues.
  - B. Self-Directed and Lifelong Learner:** Students generate questions and explore primary and secondary sources to answer those questions while demonstrating a growth mindset.
  - C. Creative and Practical Problem Solver:** Students draw conclusions about current and historical problems using valid research and critical thinking.
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**D. Responsible and Involved Citizen:** Students practice and apply the duties of citizenship through the exercise of constitutional rights.

**E. Integrative and Informed Thinker:** Students compare and contrast to analyze point of view and differentiate between reliable and unreliable primary and secondary sources.

*Performance Expectations* that include the application of the Guiding Principles through Social Studies knowledge and skills are denoted in the standards with an asterisk (\*).

### **Skills in Social Studies:**

The application of skills in Social Studies is crucial to any curriculum. Best practices in Social Studies reflect curriculum, instruction, and assessment that give students opportunities to demonstrate research and develop positions on current Social Studies issues. Students will be asked to identify key words and concepts related to research questions and locate and access information by using text features. Additionally, students will demonstrate facility with note-taking, organizing information, and creating bibliographies. Students will distinguish between primary and secondary sources as well as evaluate and verify the credibility of the information found in print and non-print sources. Equally important is that students use additional sources to resolve contradictory information.

### **Key Ideas in the Social Studies Standards:**

**Growth mindset** - Our mindset includes beliefs about our abilities and qualities that include intelligence, creativity or musicality. Having a growth mindset means that students know that their abilities and strengths can change or develop, and that those changes are within their control.

**Understand** - The word “understand” appears in performance expectations throughout the Social Studies Standards. It refers to a variety of different levels of thinking and was used intentionally to serve as an umbrella term for the cognitive demand that is described by the descriptors beneath the performance expectations. Look to the grade level expectation for grades K-5 or to the grade span expectations in spans 6-8 and 9-12 (Foundational or Developmental as noted by “F” or “D”) to define the level of cognitive demand for student performance.

**Various** -The Social Studies Standards refer to “various” peoples, nations, regions of the world, historical eras, and enduring themes. School administrative units should develop a local curriculum that assists students in gaining a coherent, broad perspective on a variety of peoples, nations, regions, historical eras, and enduring themes.

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**Major Enduring Themes** - The term “major enduring themes” is used in several places in the Social Studies Standards. This term refers to general topics or issues that have been relevant over a long period of time. Using a consistent set of themes can serve as a framework within which other concepts, topics, and facts can be organized. It can also help students make connections between events within and across historical eras, and use history to help make informed decisions. The Civics and Government, Personal Finance and Economics, Geography, and History Standards all include performance expectations that address individual, cultural, international, and global connections. It will be up to the School Administrative Units to determine whether they use these performance expectations as an opportunity to integrate across the disciplines of the social studies or address them separately. The “enduring themes,” some of which overlap, include:

- Freedom and Justice
- Conflict and Compromise
- Technology and Innovation
- Unity and Diversity
- Continuity and Change Over Time
- Supply and Demand

**Eras** – School Administrative Units (SAU) should develop a coherent curriculum that provides students with a balanced exposure to the major eras of United States and World History. The term “various eras” in this document refers to those eras that are selected by an SAU to build a cohesive, balanced understanding. The “eras,” some of which overlap, include:

<b>Eras in United States History*</b>	<b>Eras in World History*</b>
<p><b>1. Beginnings to 1607:</b> Migration, contact, and exchange between Native Americans, Africans, and Europeans.</p> <p><b>2. 1607 to 1754:</b> Conflict and competition -- Europeans and Native Americans; emergence of distinctive Colonial and Native societies.</p>	<p><b>1. Beginnings to 600 BCE:</b> Technological and environmental transformations.</p> <p><b>2. 600 BCE to 600 CE:</b> Organization and reorganization of human societies.</p> <p><b>3. 600 to 1450:</b> Regional and interregional interactions.</p>

<p><b>3. 1754 to 1800:</b> Social, political, and economic tensions -- Revolution and the Early National Period.</p> <p><b>4. 1800 to 1848:</b> Defining and extending democratic ideals during rapid economic, territorial, and demographic changes.</p> <p><b>5. 1844 to 1877:</b> Regional tensions and civil war.</p> <p><b>6. 1865 to 1898:</b> Move from agricultural to industrialized society.</p> <p><b>7. 1890 to 1945:</b> Domestic and global challenges; debate over Government's role and the role of the US in the world.</p> <p><b>8. 1945 to 1980:</b> Challenges with prosperity, living up to ideals, and unfamiliar international responsibilities.</p> <p><b>9. 1980 to present:</b> Cultural debates, adaptation to economic globalization and revolutionary changes in science and technology.</p> <p><i>*All eras are circa.</i></p>	<p><b>4. 1450 to 1750:</b> Political, social, economic and global interactions led to revolutions.</p> <p><b>5. 1750 to 1900:</b> Industrialization and global integration.</p> <p><b>6. 1900 to present:</b> Accelerating global change and realignments.</p>
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**Spiraling K-12** - A course of study in which students will see the same topics throughout their school career, with each encounter increasing in complexity and reinforcing previous learning. The Social Studies Standards and performance expectations have been created in order to reflect a progression of increasing complexity from K-5 and between the 6-8, and 9-diploma grade spans.

### Maine Statutes Related to Social Studies

Title 20-A: Education §4722. High school diploma standards.

1. Minimum instructional requirements. A comprehensive program of instruction must include a minimum 4-year program that meets the curriculum requirements established by this chapter and any other instructional requirements established by the commissioner and the school board. [2009, c. 313, §15 (AMD).]

2. Required subjects. Courses in the following subjects shall be provided in separate or integrated study programs to all students and required for a high school diploma: .... Social studies and history, including American history, government, civics and personal finance--2 years; [2013, c. 244, §1 (AMD).]

Title 20-A MRSA §4706, as amended by PL 1991, c. 655, §4, is further amended to read:  
 §4706. Instruction in American history, Maine studies and Maine Native American history.

The following subjects are required: .... Maine Studies... American History... Maine Native American history (including Maine tribal governments, Maine Native American culture, Maine Native American territories, and Maine Native American economic systems). Maine Native American history and culture must be taught in all elementary and secondary schools, both public and private.

**Maine Native Americans** - The phrase “Maine Native Americans” refers to the four Maine Native American tribes – the Penobscot, the Passamaquoddy, the Micmac, and the Maliseet.

Strand	Civics & Government		
Standard	Students draw on concepts from civics and government to understand political systems, power, authority, governance, civic ideals and practices, and the role of citizens in the community, Maine, the United States, and the world.		
	Childhood		
	Kindergarten	Grade 1	Grade 2
Performance Expectations	<p><b>Civics &amp; Government 1:</b> Students understand key ideas and processes that characterize democratic government in the community and the United States by identifying community workers and volunteers and the roles they play in promoting the common good.</p> <p><b>Civics &amp; Government 2:</b> Students understand key ideas and processes that characterize democratic government in the community and the United States by recognizing symbols, monuments, celebrations, and leaders of local government.</p> <p><b>Civics &amp; Government 3:</b> Students understand the concepts of <i>rights, duties, responsibilities,</i> and <i>participation</i> by explaining the purpose of school/classroom rules and local laws encountered in daily experiences to promote the common</p>	<p><b>Civics &amp; Government 1:</b> Students understand key ideas and processes that characterize democratic government in the community and the United States by recognizing symbols, monuments, celebrations, and leaders of State government.</p> <p><b>Civics &amp; Government 2:</b> Students understand the concepts of <i>rights, duties, responsibilities,</i> and participation by explaining the purpose of school/classroom rules and state laws encountered in daily experiences to promote the common good and the peaceful resolution of conflict.</p> <p><b>Civics &amp; Government 3:</b> Students understand Maine</p>	<p><b>Civics &amp; Government 1:</b> Students understand key ideas and processes that characterize democratic government in the community and the United States by describing and providing examples of <i>democratic ideals</i></p> <p><b>Civics &amp; Government 2:</b> Students understand key ideas and processes that characterize democratic government in the community and the United States by recognizing symbols, monuments, celebrations, and leaders of national government.</p> <p><b>Civics &amp; Government 3:</b> Students understand the concepts of <i>rights, duties, responsibilities,</i> and participation by explaining the purpose of school/classroom rules and national laws encountered in daily experiences to promote the common good and the peaceful resolution of conflict through selecting, planning, and participating in a <i>civic action</i> or <i>service-learning</i> project based on a classroom or</p>

	<p>good and the peaceful resolution of conflict.</p> <p><b>Civics &amp; Government 4:</b> Students understand the concepts of <i>rights, duties, responsibilities</i>, and participation by describing classroom <i>rights, duties, and responsibilities</i> including how students participate in some classroom decisions and are obliged to follow classroom rules.</p> <p><b>Civics &amp; Government 5:</b> Students understand civic aspects of classroom traditions and decisions by identifying and comparing diverse interests and opinions related to classroom traditions and decisions.</p>	<p>Native Americans by explaining their traditions and customs.</p>	<p>school asset or need, and describing the project’s potential civic contribution. *</p> <p><b>Civics &amp; Government 4:</b> Students understand the traditions of Maine Native Americans and various cultures by comparing national traditions and customs.</p>
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Strand	Civics & Government		
Standard	Students draw on concepts from civics and government to understand political systems, power, authority, governance, civic ideals and practices, and the role of citizens in the community, Maine, the United States, and the world.		
	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	<p><b>Civics &amp; Government 1:</b> Students understand the basic ideals, purposes, principles, structures, and processes of democratic government in Maine and the United States by explaining that the study of government includes how governments are organized and how citizens participate.</p> <p><b>Civics &amp; Government 2:</b> Students understand the basic</p>	<p><b>Civics &amp; Government 1:</b> Students understand the basic ideals, purposes, principles, structures, and processes of democratic government in Maine and the United States by explaining and providing examples of <i>democratic ideals</i> and <i>constitutional principles</i> to include the rule of law, legitimate power, and common good.</p> <p><b>Civics &amp; Government 2:</b> Students understand the basic ideals, purposes, principles, structures, and processes of</p>	<p><b>Civics &amp; Government 1:</b> Students understand the basic ideals, purposes, principles, structures, and processes of democratic government in Maine and the United States by explaining that the <i>structures</i> and processes of <i>government</i> are described in documents, including the Constitution of the United States.</p> <p><b>Civics &amp; Government 2:</b> Students understand the basic ideals, purposes, principles, structures, and processes of democratic government in Maine and the</p>

	<p>ideals, purposes, principles, structures, and processes of democratic government in Maine and the United States by explaining how leaders are elected and how laws are made and implemented.</p> <p><b>Civics &amp; Government 3:</b> Students understand the basic <i>rights, duties, responsibilities</i>, and roles of citizens in a democratic republic by identifying the <i>rights, duties, and responsibilities</i> of citizens within the class, school, or community.</p> <p><b>Civics &amp; Government 4:</b> Students understand the basic <i>rights, duties, responsibilities</i>, and roles of citizens in a democratic republic by providing examples of how people influence government and work for the common good including voting and writing to legislators.</p> <p><b>Civics &amp; Government 5:</b> Students understand civic aspects of unity and diversity in the daily life of various cultures in Maine and the United States by identifying examples of unity (sameness) and diversity (variety).</p> <p><b>Civics &amp; Government 6:</b> Students understand civic aspects of unity and diversity in</p>	<p>democratic government in Maine by explaining and giving examples of <i>governmental structures</i> including the legislative, executive, and judicial branches and the local and State levels of government.</p> <p><b>Civics &amp; Government 3:</b> Students understand the basic ideals, purposes, principles, structures, and processes of democratic government in Maine by explaining that the <i>structures</i> and processes of <i>government</i> are described in documents, including the Constitution of Maine.</p> <p><b>Civics &amp; Government 4:</b> Students understand the basic <i>rights, duties, responsibilities</i>, and roles of citizens in a democratic republic by providing examples of how people influence government and work for the common good, including selecting, planning, and participating in a <i>civic action</i> or <i>service-learning</i> project based on a classroom, school, or local community asset or need, and describe evidence of the project's effectiveness and civic contribution. *</p> <p><b>Civics &amp; Government 5:</b> Students understand civic aspects of unity and diversity in the daily life of various cultures in Maine and the United States that relate to how laws protect individuals or groups to support the common good.</p>	<p>United States by explaining and giving examples of <i>governmental structures</i> including the legislative, executive, and judicial branches at national levels of government.</p> <p><b>Civics &amp; Government 3:</b> Students understand the basic <i>rights, duties, responsibilities</i>, and roles of citizens in a democratic republic by identifying and describing the United States Constitution and Bill of Rights as documents that establish government and protect the rights of the individual United States citizen.</p> <p><b>Civics &amp; Government 4:</b> Students understand the basic <i>rights, duties, responsibilities</i>, and roles of citizens in a democratic republic by providing examples of how people influence government and work for the common good, including engaging in civil disobedience.</p> <p><b>Civics &amp; Government 5:</b> Students understand civic aspects of unity and diversity in the daily life of various cultures in the world, by identifying examples of unity and diversity in the United States that relate to how laws protect individuals or groups to support the common good.</p> <p><b>Civics &amp; Government 6:</b> Students understand civic aspects of unity and diversity in the daily life of various cultures of the world by describing civic</p>
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	<p>the daily life of Maine Native Americans and other various cultures in Maine by describing civic beliefs and activities in the daily life of diverse cultures of Maine.</p>	<p><b>Civics &amp; Government 6:</b> Students understand civic aspects of unity and diversity in the daily life of various cultures in the United States by describing civic beliefs and activities in the daily life of diverse cultures.</p>	<p>beliefs and activities in the daily life of diverse cultures.</p>
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<p><b>Strand</b></p>	<p><b>Civics &amp; Government</b></p>		
<p><b>Standard</b></p>	<p>Students draw on concepts from civics and government to understand political systems, power, authority, governance, civic ideals and practices, and the role of citizens in the community, Maine, the United States, and the world.</p>		
	<p>Early Adolescence</p>		
	<p>Grades 6-8</p>		
<p><b>Performance Expectations</b></p>	<p><b>Civics &amp; Government 1:</b> Students understand the basic ideals, purposes, principles, structures, and processes of constitutional government in Maine and the United States as well as examples of other forms of government in the world by:</p>		
	<p>(F1) Explaining that the study of government includes the <i>structures</i> and functions of government and the political and civic activity of citizens.                  (F2) Describing the <i>structures</i> and processes of United States government and government of the State of Maine and how these are framed by the United States Constitution, the Maine Constitution, and other primary sources.                  (F3) Explaining the concepts of federalism and checks and balances and the role these concepts play in the governments of the United States and Maine as framed by the United States Constitution, the Maine Constitution and other primary sources.</p>	<p>(D1) Comparing the <i>structures</i> and processes of United States government with examples of other forms of government.                  (D2) Comparing how laws are made in Maine and at the federal level in the United States.                  (D3) Analyze examples of <i>democratic ideals</i> and <i>constitutional principles</i> that include the rule of law, legitimate power, and common good.</p>	
	<p><b>Civics &amp; Government 2:</b> Students understand constitutional and legal <i>rights</i>, <i>civic duties and responsibilities</i>, and roles of citizens in a constitutional democracy by:</p>		

	<p>(F1) Explaining the constitutional and legal status of "citizen" and provide examples of <i>rights, duties, and responsibilities</i> of citizens.</p> <p>(F2) Describing how the powers of government are limited to protect individual rights and minority rights as described in the United States Constitution and the Bill of Rights.</p>	<p>(D1) Analyzing examples of the protection of rights in court cases or from current events.</p> <p>(D2) Analyzing how people influence government and work for the common good including voting, writing to legislators, performing community service, and engaging in civil disobedience through selecting, planning, and implementing a <i>civic action</i> or <i>service-learning</i> project based on a school, community, or state asset or need, and analyze the project's effectiveness and civic contribution. *</p>
<p><b>Civics &amp; Government 3:</b> Students understand political and civic aspects of cultural diversity by:</p>		
	<p>(F1) Explaining basic civic aspects of historical and/or <i>current issues</i> that involve unity and diversity in Maine, the United States, and other nations.</p> <p>(F2) Describing the political structures and civic responsibilities of the diverse historic and current cultures of Maine, including Maine Native Americans.</p>	<p>(D1) Explaining constitutional and political aspects of historical and/or <i>current issues</i> that involve unity and diversity in Maine, the United States, and other nations.</p> <p>(D2) Describing the political structures and civic responsibilities of the diverse historic and current cultures of the United States and the world.</p>

Strand	Civics & Government	
Standard	Students draw on concepts from civics and government to understand political systems, power, authority, governance, civic ideals and practices, and the role of citizens in the community, Maine, the United States, and the world.	
	Adolescence	
	Grades 9-Diploma	
Performance Expectations	<b>Civics &amp; Government 1:</b> Students understand the ideals, purposes, principles, structures, and processes of constitutional government in the United States and in the American political system, as well as examples of other forms of government and political systems in the world by:	
	<p>(F1) Explaining that the study of government includes the <i>structures</i>, functions, institutions, and forms of government.</p> <p>(F2) Explaining how and why democratic institutions and interpretations of <i>democratic ideals</i> and <i>constitutional principles</i> change over time.</p>	<p>(D1) Evaluating and comparing the relationship of citizens with government in the United States and other regions of the world.</p> <p>(D2) Evaluating <i>current issues</i> by applying <i>democratic ideals</i> and <i>constitutional principles</i> of government in the United States, including checks and balances, federalism, and consent of the governed as put forth in <i>founding documents</i>.</p>

	(F3) Describing the purpose, structures, and processes of the <i>American political system</i> .	(D3) Comparing the <i>American political system</i> with examples of political systems from other parts of the world.
	<b>Civics &amp; Government 2:</b> Students understand the constitutional and legal <i>rights</i> , the <i>civic duties and responsibilities</i> , and roles of citizens in a constitutional democracy and the role of citizens living under other forms of government in the world by:	
	(F1) Explaining the relationship between constitutional and legal <i>rights</i> , and <i>civic duties and responsibilities</i> in a constitutional democracy. (F2) Evaluating the relationship between the government and the individual as evident in the United States Constitution, the Bill of Rights, and landmark court cases. (F3) Evaluating how people influence government and work for the common good, including voting, writing to legislators, performing community service, and engaging in civil disobedience.	(D1) Comparing the <i>rights, duties, and responsibilities</i> of United States citizens with those of citizens from other nations. (D2) Analyzing the <i>constitutional principles</i> and the roles of the citizen and the government in major laws or cases.
	<b>Civics &amp; Government 3:</b> Students understand political and civic aspects of cultural diversity by:	
	(F1) Explaining basic civic aspects of historical and/or <i>current issues</i> that involve unity and diversity in Maine, the United States, and other nations. (F2) Describing the political structures and civic responsibilities of the diverse historic and current cultures of Maine, including Maine Native Americans.	(D1) Analyzing constitutional and political aspects of historical and/or <i>current issues</i> that involve unity and diversity in Maine, the United States, and other nations through selecting, planning, and implementing a <i>civic action</i> or <i>service-learning</i> project based on a community, school, state, national, or international asset or need, and evaluate the project's effectiveness and civic contribution. * (D2) Analyzing the political structures, political power, and political perspectives of the diverse historic and current cultures of the United States and the world.

Strand	Personal Finance & Economics
Standard	Students draw from concepts and processes in personal finance to understand issues of money management, saving, investing, credit, and debt; students draw from concepts and processes in economics to understand issues of production, distribution, consumption in the community, Maine, the United States, and the world.
	Childhood

	Kindergarten	Grade 1	Grade 2
Performance Expectations	<p><b>Personal Finance:</b> Students understand the nature of personal finance as well as key foundational ideas by describing how money has value and can be traded for goods and services.</p> <p><b>Economics:</b> Students understand the nature of economics as well as key foundational ideas by describing how people make choices to meet their needs and wants.</p> <p><b>Global Connections:</b> Students understand the influence of economics on individuals and groups in the United States and the World, including Maine Native Americans, by identifying how individuals, families, and communities are part of an economy.</p>	<p><b>Personal Finance:</b> Students understand the nature of personal finance as well as key foundational ideas by describing how spending, saving, and sharing are ways to use money.</p> <p><b>Economics:</b> Students understand the nature of economics as well as key foundational ideas by explaining and making decisions about how to use scarce resources to meet their needs and wants. *</p> <p><b>Global Connections:</b> Students understand the influence of economics on individuals and groups in the United States and the World, including Maine Native Americans by identifying how individuals, families, and communities are influenced by economic factors.</p>	<p><b>Personal Finance:</b> Students understand the nature of personal finance as well as key foundational ideas by describing how planning for the future is important to managing money.</p> <p><b>Economics:</b> Students understand the nature of economics as well as key foundational ideas by explaining how people make choices about how to use scarce resources and make individual and collaborative plans to meet their own needs and wants. *</p> <p><b>Global Connections:</b> Students understand the influence of economics on individuals and groups in the United States and the World, including Maine Native Americans by describing the work and contributions of various groups to the economics of the local community in the past and present.</p>

Strand	Personal Finance & Economics		
Standard	Students draw from concepts and processes in personal finance to understand issues of money management, saving, investing, credit, and debt; students draw from concepts and processes in economics to understand issues of production, distribution, consumption in the community, Maine, the United States, and the world.		
	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	<p><b>Personal Finance:</b> Students understand the nature of personal finance as well as key foundational ideas by describing situations in which personal</p>	<p><b>Personal Finance:</b> Students understand the principles and process of personal finance by describing situations in which</p>	<p><b>Personal Finance:</b> Students understand the principles and process of personal finance by describing situations in which choices are related to the use of financial resources and financial institutions.</p>

	<p>choices are related to the use of money.  <b>Economics:</b> Students understand economics and the basis of the economies of the community, Maine, the United States, and various regions of the world by explaining how scarcity leads to choices about what goods and services are produced and for whom they are produced.  <b>Global Connections:</b> Students understand economic aspects of unity and diversity in the community, Maine, and regions of the United States and the world, including Maine Native American communities by describing economic similarities and differences within the community, Maine, and the United States.</p>	<p>financial institutions can be used to manage money.  <b>Economics:</b> Students understand economics and the basis of the economies of the community, Maine, the United States, and various regions of the world by explaining how scarcity leads to choices about how goods and services are consumed and distributed, and by making a real or simulated decision related to scarcity. *  <b>Global Connections:</b> Students understand economic aspects of unity and diversity in the community, Maine, and regions of the United States and the world, including Maine Native American communities by identifying economic processes, economic institutions, and economic influences related to Maine Native Americans and various cultures in the United States and the world.</p>	<p><b>Economics:</b> Students understand the basis of the economies of the community, Maine, the United States, and various regions of the world by examining different ways producers of goods and services help satisfy the wants and needs of consumers in a market economy by using entrepreneurship, natural, human and capital resources, as well as collaborating to make a decision. *  <b>Global Connections:</b> Students understand economic aspects of unity and diversity in the community, Maine, and regions of the United States and the world, including Maine Native American communities, by explaining economic processes, economic institutions, and economic influences related to Maine Native Americans and various cultures in the United States and the world.</p>
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Strand	Personal Finance & Economics	
Standard	Students draw from concepts and processes in personal finance to understand issues of money management, saving, investing, credit, and debt; students draw from concepts and processes in economics to understand issues of production, distribution, consumption in the community, Maine, the United States, and the world.	
	Early Adolescence	
	Grades 6-8	
Performance Expectations	<p><b>Personal Finance:</b> Students understand the principles and processes of personal finance by:</p> <p>(F1) Explaining how scarcity influences choices and relates to the market economy.</p>	<p>(D1) Using a process for making spending and savings decisions based on work, wages, income, expenses, and</p>

	(F2) Identifying factors that contribute to spending and savings decisions.	budgets as they relate to the study of individual financial choices. *
	<b>Economics:</b> Students understand the principles and processes of personal economics, the influence of economics on personal life and business, and the economic systems of Maine, the United States, and various regions of the world by:	
	(F1) Describing the functions of financial institutions. (F2) Describing the function and process of taxation.	(D1) Explaining how scarcity requires choices and relates to the market economy, entrepreneurship, supply and demand.
	<b>Global Connections:</b> Students understand economic aspects of unity and diversity in Maine, the United States, and various world cultures, including Maine Native Americans, by:	
	(F1) Researching the pros and cons of economic processes, economic institutions, and economic influences of diverse cultures, including Maine Native Americans, various historical and recent immigrant groups in the United States, and various cultures in the world to propose a solution to an economic problem. *	(D1) Describing factors in economic development, and how states, regions, and nations have worked together to promote economic unity and interdependence.

<b>Strand</b>	<b>Personal Finance &amp; Economics</b>	
<b>Standard</b>	Students draw from concepts and processes in personal finance to understand issues of money management, saving, investing, credit, and debt; students draw from concepts and processes in economics to understand issues of production, distribution, consumption in the community, Maine, the United States, and the world.	
	Adolescence	
	Grades 9-Diploma	
<b>Performance Expectations</b>	<b>Personal Finance:</b> Students understand the principles and process of personal finance by:	
	(F1) Explaining how personal finance involves the use of economics as the basis for saving, investing and managing money. (F2) Identifying factors that impact consumer credit.	(D1) Evaluating ways credit can be used. (D2) Evaluating different strategies for money and risk management.
	<b>Economics:</b> Students understand the principles and processes of personal economics, the role of markets, the economic system of the United States, other economic systems in the world, and how economics serves to inform decisions in the present and future by:	
	(F1) Analyzing the role of financial institutions, the financial markets, and government including fiscal, monetary, and trade policies.	(D1) Analyzing economic activities and policies in relationship to freedom, efficiency, equity, security, growth, and sustainability.

	<p>(F2) Identifying and explaining various economic indicators and how they represent and influence economic activity.</p>	<p>(D2) Explaining and applying the concepts of specialization, economic interdependence, and comparative advantage. (D3) Proposing a solution to a problem using the theory of supply and demand. *</p>
<p><b>Global Connections:</b> Students understand economic aspects of unity and diversity in Maine, the United States, and the world, including Maine Native American communities, by:</p>		
	<p>(F1) Comparing a variety of economic systems and strategies of economic development. (F1) Analyzing how resource distribution effects wealth, poverty, and other economic factors.</p>	<p>(D2) Analyzing multiple views on how resource distribution has affected wealth, poverty, and other economics factors and present an argument as to the role of regional, international, and global organizations that are engaged in economic development. *</p>

Strand	Geography		
Standard	Students draw on concepts and processes from geography to understand issues involving people, places, and environments in the community, Maine, the United States, and the world.		
Childhood			
	Kindergarten	Grade 1	Grade 2
Performance Expectations	<p><b>Geography 1:</b> Students understand the nature and basic ideas of geography by identifying questions about their world and explaining that geography is the study of the Earth’s surface and peoples. *</p> <p><b>Geography 2:</b> Students understand the influence of geography on individuals and their immediate surroundings by identifying the impacts of geographic features on individuals and families.</p>	<p><b>Geography 1:</b> Students understand the nature and basic ideas of geography by gathering information about their immediate neighborhood and community, including maps, photographs, charts and graphs, and then create visual representations of their findings. *</p> <p><b>Geography 2:</b> Students understand the influence of geography on communities by identifying the impacts of geographic features on communities.</p>	<p><b>Geography 1:</b> Students understand the nature and basic ideas of geography by using basic maps and globes to identify local and distant <i>places and locations</i>, directions (including N, S, E, and W), and basic physical, environmental, and cultural features.</p> <p><b>Geography 2:</b> Students understand the influence of geography on individuals and groups in Maine, including Maine Native Americans, the United States and the world by identifying the impacts of geographic features on individuals and groups in those communities.</p>

Strand	Geography		
Standard	Students draw on concepts and processes from geography to understand issues involving people, places, and environments in the community, Maine, the United States, and the world.		
	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	<p><b>Geography 1:</b> Students understand the geography of the community, Maine, the United States, and various regions of the world by explaining that geography includes the study of Earth’s physical features including climate and the distribution of plant, animal, and human life.</p> <p><b>Geography 2:</b> Students understand geographic aspects of unity and diversity in the community and in Maine, including Maine Native American communities by collecting, evaluating, and organizing information about the impacts of geographic features on the daily life of various cultures, including Maine Native Americans and other cultures and communities. *</p>	<p><b>Geography 1:</b> Students understand the geography of the community, Maine, the United States, and various regions of the world by communicating their findings by creating visual representations of the world, showing a basic understanding of the <i>geographic grid</i>, including the equator and prime meridian. *</p> <p><b>Geography 2:</b> Students understand geographic aspects of unity and diversity in various regions of the United States and the world by describing impacts of geographic features on the daily life of various cultures in the United States and the world.</p>	<p><b>Geography 1:</b> Students understand the geography of the community, Maine, the United States, and various regions of the world by identifying the Earth’s major geographic features such as continents, oceans, major mountains, and rivers using a variety of <i>geographic tools</i> including digital mapping tools; and by explaining examples of changes in the Earth’s physical features and their impact on communities and regions.</p> <p><b>Geography 2:</b> Students understand geographic aspects of unity and diversity in the community, Maine, and regions of the United States and the world, including Maine Native American communities, by identifying examples through inquiry of how geographic features unify communities and regions as well as support diversity using print and non-print sources. *</p>

Strand	Geography	
Standard	Students draw on concepts and processes from geography to understand issues involving people, places, and environments in the community, Maine, the United States, and the world.	
	Early Adolescence	
	Grades 6-8	
Performance Expectations	<b>Geography 1:</b> Students understand the geography of the community, Maine, the United States, and various regions of the world and the geographic influences on life in the past, present, and future by:	
	(F1) Using the <i>geographic grid</i> and a variety of <i>types of maps, including digital sources</i> , to locate and access relevant geographic information that reflects multiple perspectives. * (F2) Identifying the major regions of the Earth and their major physical features and political boundaries using a variety of <i>geographic tools</i> including digital tools and resources. * (F3) Evaluating a geographic issue of physical, environmental, or cultural importance. *	(D1) Identifying consequences of geographic influences through inquiry and formulating predictions. (D2) Describing the impact of change on the physical and cultural environment.
	<b>Geography 2:</b> Students understand geographic aspects of unity and diversity in Maine, the United States, and various world cultures, including Maine Native Americans by:	
	(F1) Explaining how geographic features have impacted unity and diversity in Maine, the United States, and other nations. *	(D1) Summarizing and interpreting the relationship between geographic features and cultures of Maine Native Americans, and historical and recent immigrant groups in Maine, United States, and the world. *

Strand	Geography	
Standard	Students draw on concepts and processes from geography to understand issues involving people, places, and environments in the community, Maine, the United States, and the world.	
	Adolescence	

Grades 9-Diploma			
Performance Expectations	<p><b>Geography 1:</b> Students understand the geography of the United States and various regions of the world and the effect of geographic influences on decisions about the present and future by:</p>		
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>(F1) Analyzing local, national, and global geographic data on physical, environmental, and cultural processes that shape and change places and regions. *</p> <p>(F2) Evaluating and developing a well-supported position about the impact of change on the physical and cultural environment. *</p> </td> <td style="width: 50%; vertical-align: top;"> <p>(D1) Proposing a solution to a geographic issue that reflects physical, environmental, and cultural features at local, state, national, and global levels. *</p> <p>(D2) Using inquiry to predict and evaluate consequences of geographic influences.</p> <p>(D3) Describing the major regions of the Earth and their major physical, environmental, and cultural features using a variety of <i>geographic tools</i> including digital tools and resources. *</p> </td> </tr> </table>	<p>(F1) Analyzing local, national, and global geographic data on physical, environmental, and cultural processes that shape and change places and regions. *</p> <p>(F2) Evaluating and developing a well-supported position about the impact of change on the physical and cultural environment. *</p>	<p>(D1) Proposing a solution to a geographic issue that reflects physical, environmental, and cultural features at local, state, national, and global levels. *</p> <p>(D2) Using inquiry to predict and evaluate consequences of geographic influences.</p> <p>(D3) Describing the major regions of the Earth and their major physical, environmental, and cultural features using a variety of <i>geographic tools</i> including digital tools and resources. *</p>
	<p>(F1) Analyzing local, national, and global geographic data on physical, environmental, and cultural processes that shape and change places and regions. *</p> <p>(F2) Evaluating and developing a well-supported position about the impact of change on the physical and cultural environment. *</p>	<p>(D1) Proposing a solution to a geographic issue that reflects physical, environmental, and cultural features at local, state, national, and global levels. *</p> <p>(D2) Using inquiry to predict and evaluate consequences of geographic influences.</p> <p>(D3) Describing the major regions of the Earth and their major physical, environmental, and cultural features using a variety of <i>geographic tools</i> including digital tools and resources. *</p>	
	<p><b>Geography 2:</b> Students understand geographic aspects of unity and diversity in Maine, the United States, and the world, including Maine Native American communities by:</p>		
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>(F1) Analyzing geographic features that have impacted unity and diversity in the United States and other nations. *</p> </td> <td style="width: 50%; vertical-align: top;"> <p>(D1) Summarizing and interpreting the relationship between geographic features and cultures of Maine Native Americans, and historical and recent immigrant groups in Maine, United States, and the world. *</p> </td> </tr> </table>	<p>(F1) Analyzing geographic features that have impacted unity and diversity in the United States and other nations. *</p>	<p>(D1) Summarizing and interpreting the relationship between geographic features and cultures of Maine Native Americans, and historical and recent immigrant groups in Maine, United States, and the world. *</p>	
<p>(F1) Analyzing geographic features that have impacted unity and diversity in the United States and other nations. *</p>	<p>(D1) Summarizing and interpreting the relationship between geographic features and cultures of Maine Native Americans, and historical and recent immigrant groups in Maine, United States, and the world. *</p>		

History				
Strand	History			
Standard	Students draw on concepts and processes using primary and secondary sources from history to develop historical perspective and understand issues of continuity and change in the community, Maine, the United States, and the world.			
Childhood				
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 33%;">Kindergarten</th> <th style="width: 33%;">Grade 1</th> <th style="width: 33%;">Grade 2</th> </tr> </table>	Kindergarten	Grade 1	Grade 2
Kindergarten	Grade 1	Grade 2		
Performance Expectations	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; vertical-align: top;"> <p><b>History 1:</b> Students understand the nature of history by describing history as stories of the past and identifying questions related to social studies. *</p> <p><b>History 2:</b> Students understand the nature of history as well as the key foundation of ideas by</p> </td> <td style="width: 33%; vertical-align: top;"> <p><b>History 1:</b> Students understand the nature of history as well as the key foundation of ideas by identifying past, present, and future in stories, pictures, poems, songs, and video.</p> <p><b>History 2:</b> Students understand historical aspects of the uniqueness and commonality of individuals and</p> </td> <td style="width: 33%; vertical-align: top;"> <p><b>History 1:</b> Students understand the nature of history as well as the key foundation of ideas by following an established procedure to locate sources appropriate to reading level* and identifying a few key figures and events from personal history and the history of the community, the state, and the United</p> </td> </tr> </table>	<p><b>History 1:</b> Students understand the nature of history by describing history as stories of the past and identifying questions related to social studies. *</p> <p><b>History 2:</b> Students understand the nature of history as well as the key foundation of ideas by</p>	<p><b>History 1:</b> Students understand the nature of history as well as the key foundation of ideas by identifying past, present, and future in stories, pictures, poems, songs, and video.</p> <p><b>History 2:</b> Students understand historical aspects of the uniqueness and commonality of individuals and</p>	<p><b>History 1:</b> Students understand the nature of history as well as the key foundation of ideas by following an established procedure to locate sources appropriate to reading level* and identifying a few key figures and events from personal history and the history of the community, the state, and the United</p>
<p><b>History 1:</b> Students understand the nature of history by describing history as stories of the past and identifying questions related to social studies. *</p> <p><b>History 2:</b> Students understand the nature of history as well as the key foundation of ideas by</p>	<p><b>History 1:</b> Students understand the nature of history as well as the key foundation of ideas by identifying past, present, and future in stories, pictures, poems, songs, and video.</p> <p><b>History 2:</b> Students understand historical aspects of the uniqueness and commonality of individuals and</p>	<p><b>History 1:</b> Students understand the nature of history as well as the key foundation of ideas by following an established procedure to locate sources appropriate to reading level* and identifying a few key figures and events from personal history and the history of the community, the state, and the United</p>		

	<p>applying terms such as “before” and “after” in sequencing events.  <b>History 3:</b> Students understand historical aspects of the uniqueness and commonality of individuals and groups, including Maine Native Americans, by explaining how individuals and families share both common and unique aspects of culture, values, and beliefs through stories, traditions, religion, celebrations, or the arts.</p>	<p>groups, including Maine Native Americans by explaining how individuals and families share both common and unique aspects of culture, values, and beliefs through stories, traditions, religion, celebrations, or the arts. Students organize findings at a developmentally appropriate manner and share gathered information using oral and visual examples *  <b>History 3:</b> Students understand historical aspects of the uniqueness and commonality of individuals and groups, including Maine Native Americans, by describing traditions of Maine Native Americans and various historical and recent immigrant groups and traditions common to all.</p>	<p>States, especially those associated with historically-based traditions.  <b>History 2:</b> Students understand the nature of history as well as the key foundation of ideas by creating a brief historical account about family, the local community, or the nation by locating and collecting information from sources including maps, charts, graphs, artifacts, photographs*, or stories of the past.  <b>History 3:</b> Students understand historical aspects of the uniqueness and commonality of individuals and groups, including Maine Native Americans, by describing traditions of Maine Native Americans and various historical and recent immigrant groups and traditions common to all.</p>
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Strand	History		
Standard	Students draw on concepts and processes using primary and secondary sources from history to develop historical perspective and understand issues of continuity and change in the community, Maine, the United States, and the world.		
	Childhood		
	Grade 3	Grade 4	Grade 5
Performance Expectations	<p><b>History 1:</b> Students understand various major eras in the history of the community, Maine, and the United States by explaining that history includes the study of past human experience based on available evidence from a variety of primary and secondary sources. *</p>	<p><b>History 1:</b> Students understand various major eras in the history of the community, Maine, and the United States by identifying major historical eras, major enduring themes, turning points, events, consequences, persons, and timeframes, in the history of the community, the state, and the United States.</p>	<p><b>History 1:</b> Students understand various major eras in the history of the community, Maine, and the United States by tracing and explaining how the history of democratic principles is preserved in historic symbols, monuments, and traditions important in the community, Maine and the United States.</p>

	<p>Students make real or simulated decisions related to the local community or civic organizations by applying appropriate and relevant social studies knowledge and skills, including research skills, and other relevant information. *</p> <p><b>History 2:</b> Students understand historical aspects of unity and diversity in the community, the state, Maine Native American communities, and the United States by identifying research questions, seeking multiple perspectives from varied sources *, and describing examples in the history of the United States of diverse and shared values and traditions.</p>	<p>Students make real or simulated decisions related to the state of Maine or civic organizations by applying appropriate and relevant social studies knowledge and skills, including research skills, and other relevant information. *</p> <p>Students distinguish between facts and opinions/interpretations in sources. *</p> <p><b>History 2:</b> Students understand historical aspects of unity and diversity in the community, the state, Maine Native American communities, and the United States by describing various cultural traditions and contributions of Maine Native Americans and various historical and recent immigrant groups in the community and the state.</p>	<p>Students make real or simulated decisions related to the United States, world, or civic organizations by applying appropriate and relevant social studies knowledge and skills, including research skills, and other relevant information. *</p> <p>Students communicate findings from a variety of print and non-print sources, describe plagiarism and demonstrate appropriate citation. *</p> <p><b>History 2:</b> Students understand <i>historical</i> aspects of unity and diversity in the community, the state, including Maine Native American communities, by describing various cultural traditions and contributions of Maine Native Americans and other cultural groups within the United States.</p>
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Strand	History	
Standard	Students draw on concepts and processes using primary and secondary sources from history to develop historical perspective and understand issues of continuity and change in the community, Maine, the United States, and the world.	
	Early Adolescence	
	Grades 6-8	
Performance Expectations	<p><b>History 1:</b> Students understand major eras, major enduring themes, and <i>historic</i> influences in the history of Maine, the United States, and various regions of the world by:</p> <p>(F1) Explaining that history includes the study of past human experience based on available evidence from a variety of primary and secondary sources; and explaining how history can help one better understand and make informed decisions about the present and future. *</p>	<p>(D1) Analyzing interpretations of <i>historical</i> events that are based on different perspectives and evidence from primary and secondary sources. *</p> <p>(D2) Analyzing major <i>historical</i> eras, major enduring themes, turning points, events, consequences, and people in the</p>

	<p>(F2) Identifying major <i>historical</i> eras, major enduring themes, turning points, events, consequences, and people in the history of Maine, the United States and various regions of the world. *</p> <p>(F3) Tracing the history of <i>democratic ideals</i> and <i>constitutional principles</i> and their importance in the history of the United States and the world. *</p> <p>(F4) Proposing and revising research questions related to a current social studies issue. *</p>	<p>history of Maine, the United States and various regions of the world. *</p> <p>(D3) Explaining the history of <i>democratic ideals</i> and <i>constitutional principles</i> and their importance in the history of the United States and the world. *</p> <p>(D4) Making decisions related to the classroom, school, community, civic organization, Maine, or beyond; applying appropriate and relevant social studies knowledge and skills, including research skills, and other relevant information. *</p>
<p><b>History 2:</b> Students understand historical aspects of unity and diversity in the community, the state, including Maine Native American communities, and the United States by:</p>		
	<p>(F1) Explaining how both unity and diversity have played and continue to play important roles in the history of Maine and the United States.</p> <p>(F2) Identifying a variety of cultures through time, including comparisons of native and immigrant groups in the United States, and eastern and western societies in the world.</p> <p>(F3) Identifying major turning points and events in the history of Maine Native Americans and various <i>historical and recent immigrant groups</i> in Maine, the United States, and other cultures in the world.</p>	<p>(D1) Explaining how both unity and diversity have played and continue to play important roles in the history of the World.</p> <p>(D2) Comparing a variety of cultures through time, including comparisons of native and immigrant groups in the United States, and eastern and western societies in the world.</p> <p>(D3) Describing major turning points and events in the history of Maine Native Americans and various <i>historical and recent immigrant groups</i> in Maine, the United States, and other cultures in the world.</p>

Strand	History	
Standard	Students draw on concepts and processes using primary and secondary sources from history to develop historical perspective and understand issues of continuity and change in the community, Maine, the United States, and the world.	
	Adolescence	
	Grades 9-Diploma	
Performance Expectations	<b>History 1:</b> Students understand major eras, major enduring themes, and <i>historic</i> influences in United States and world history, including the roots of democratic philosophy, ideals, and institutions in the world by:	

	<p>(F1) By explaining that history includes the study of the past based on the examination of a variety of <i>primary and secondary sources</i> and how history can help one better understand and make informed decisions about the present and future. *</p> <p>(F2) Analyzing and critiquing major <i>historical eras</i>: major enduring themes, turning points, events, consequences, and people in the history of the United States and the implications for the present and future.</p> <p>(F3) Tracing and critiquing the roots and evolution of <i>democratic ideals</i> and <i>constitutional principles</i> in the history of the United States using historical sources.</p> <p>(F4) Developing individual and collaborative decisions/plans by considering multiple points of view, weighing pros and cons, building on the ideas of others, and sharing information in an attempt to sway the opinions of others. *</p>	<p>(D1) Analyzing and critiquing varying interpretations of <i>historic</i> people, issues, or events, and explain how evidence from primary and secondary sources is used to support and/or refute different interpretations. *</p> <p>(D2) Analyzing and critiquing major <i>historical eras</i>: major enduring themes, turning points, events, consequences, and people in the history of the world and the implications for the present and future.</p> <p>(D3) Tracing and critiquing the roots and evolution of <i>democratic ideals</i> and <i>constitutional principles</i> in the history of the world using historical sources.</p> <p>(D4) Making a decision related to the classroom, school, community, civic organization, Maine, United States, or international entity by applying appropriate and relevant social studies knowledge and skills, including research skills, ethical reasoning skills, and other relevant information. *</p>
<p><b>History 2:</b> Students understand historical aspects of unity and diversity in the United States, the world, and Native American communities by:</p>		
	<p>(F1) Identifying and critiquing issues characterized by unity and diversity in the history of the United States, and describing their effects, using primary and secondary sources. *</p> <p>(F2) Identifying and analyzing major turning points and events in the history of Native Americans and various <i>historical and recent immigrant groups</i> in the United States, making use of primary and secondary sources. *</p>	<p>(D1) Identifying and critiquing issues characterized by unity and diversity in the history of other nations, and describing their effects, using primary and secondary sources. *</p> <p>(D2) Making use of primary and secondary sources, identifying and analyzing major turning points and events in the history of world cultures as it pertains to various <i>historical and recent migrant groups</i>. *</p>

**Definitions:**

Strand: A body of knowledge in a content area identified by a simple title.

Standard: Enduring understandings and skills that students can apply and transfer to contexts that are new to the student.

Performance Expectation: Building blocks to the standard and measurable articulations of what the student understands and can do.

## VISUAL AND PERFORMING ARTS

**SUMMARY:** The Maine Department of Education Regulation 132 - The Maine *Learning Results: Parameters for Essential Instruction* establishes parameters for essential teaching and learning in grades Kindergarten through Diploma across eight content areas and supports the goals outlined in the Guiding Principles. The *Maine Learning Results: Parameters for Essential Instruction* will inform the blueprint for item development of the large-scale State assessments aligned to the federal accountability standards found in Maine Department of Education Regulation 131 – The Federal, State, and Local Accountability Standards. High school, middle school, and elementary school programming in Maine’s publicly supported schools must be aligned to the knowledge and skills described in the *Maine Learning Results: Parameters for Essential Instruction*.

The Maine Department of Education Regulation 132 - The Maine *Learning Results: Parameters for Essential Instruction* augments and expands upon the content standards for federal accountability (Maine Department of Education Regulation 131: The Maine Federal, State, and Local Accountability Standards) by describing details for essential teaching and learning for eight content areas. These learning goals identify the knowledge and skills required for college, career, and citizenship in the 21<sup>st</sup> Century.

**THE GUIDING PRINCIPLES** – The knowledge and skills described in the Maine Department of Education Regulation 132 support Maine students in achieving the goals established in Maine’s Guiding Principles. The Guiding Principles state that each Maine student must leave school as:

- A. A clear and effective communicator who:
    - 1. Demonstrates organized and purposeful communication in English and at least one other language;
    - 2. Uses evidence and logic appropriately in communication;
    - 3. Adjusts communication based on the audience; and
    - 4. Uses a variety of modes of expression (spoken, written, and visual and performing including the use of technology to create and share the expressions);
  
  - B. A self-directed and lifelong learner who:
    - 1. Recognizes the need for information and locates and evaluates resources;
    - 2. Applies knowledge to set goals and make informed decisions;
    - 3. Applies knowledge in new contexts;
    - 4. Demonstrates initiative and independence;
    - 5. Demonstrates flexibility including the ability to learn, unlearn, and relearn;
    - 6. Demonstrates reliability and concern for quality; and
    - 7. Uses interpersonal skills to learn and work with individuals from diverse backgrounds;
  
  - C. A creative and practical problem solver who: [1995, c. 649, §1 (new).]
    - 1. Observes and evaluates situations to define problems;
-

2. Frames questions, makes predictions, and designs data/information collection and analysis strategies;
  3. Identifies patterns, trends, and relationships that apply to solutions;
  4. Generates a variety of solutions, builds a case for a best response and critically evaluates the effectiveness of the response;
  5. Sees opportunities, finds resources, and seeks results;
  6. Uses information and technology to solve problems; and
  7. Perseveres in challenging situations;
- D. A responsible and involved citizen who:
1. Participates positively in the community and designs creative solutions to meet human needs and wants;
  2. Accepts responsibility for personal decisions and actions;
  3. Demonstrates ethical behavior and the moral courage to sustain it;
  4. Understands and respects diversity;
  5. Displays global awareness and economic and civic literacy; and
  6. Demonstrates awareness of personal and community health and wellness;
- E. An integrative and informed thinker who:
1. Gains and applies knowledge across disciplines and learning contexts and to real life situations with and without technology;
  2. Evaluates and synthesizes information from multiple sources;
  3. Applies ideas across disciplines; and
  4. Applies systems thinking to understand the interaction and influence of related parts on each other and on outcomes.

The visual and performing arts are an essential part of every child's education. Engagement in a well-rounded visual and performing arts education positively impacts students' academic, social and emotional outcomes.<sup>1</sup> Arts education supports lifelong learning and creative problem solving. It enhances a student's understanding of the world around them through multiple viewpoints and critical thinking. Through the arts, students become active and involved citizens who can clearly communicate their thoughts and ideas through various mediums. Arts integration opportunities provide authentic learning experiences for students, connecting the visual and performing arts with other content areas of the curriculum. Research shows that students who are continually involved in visual and performing arts opportunities are more successful in school, more connected within their communities, and perform better academically.

This update of the Maine Learning Results includes separate standards for music, dance, theater, visual arts and media arts. Though Media Arts is a new stand-alone discipline, like other disciplines within the arts, it may be covered in other VPA classrooms or as a stand-alone course.

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<sup>1</sup> <https://www.brookings.edu/blog/brown-center-chalkboard/2019/02/12/new-evidence-of-the-benefits-of-arts-education/> (accessed August 2021); <https://kinder.rice.edu/sites/default/files/downloads/Brief%20-%20Investigating%20Causal%20Effects%20of%20Arts%20Education%20Experiences.pdf> (accessed August 2021); <https://www.publicschoolreview.com/blog/how-the-arts-benefit-your-children-academically-and-behaviorally> (accessed August 2021); <https://www.edutopia.org/blog/creativity-academics-power-of-arts-education-neil-swapp> (accessed August 2021)

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The National Core Arts Standards (NCAS, 2014) define the arts as Dance, Media Arts, Music, Theatre, and Visual Art. In addition to the NCAS other sources were referenced in the creation of these Maine Standards. The format of this document defines Strands to guide educational practices in each Arts discipline. These Strands form the foundation of educational excellence that support students in their journey from early learning experiences in kindergarten through graduation from high school. Teachers and their learning community are meant to collaborate on these foundational standards. These standards are meant as a foundation for teachers to build upon as districts meet the needs of their students. The standards also provide administrators and district decision-makers with critical information for developing and expanding standards-based arts programs. Standards are process oriented, building on skills and concepts as they progress through the grades. The writing of these standards reflects backward design, the process of designing learning experiences and instructional techniques to achieve learning goals.

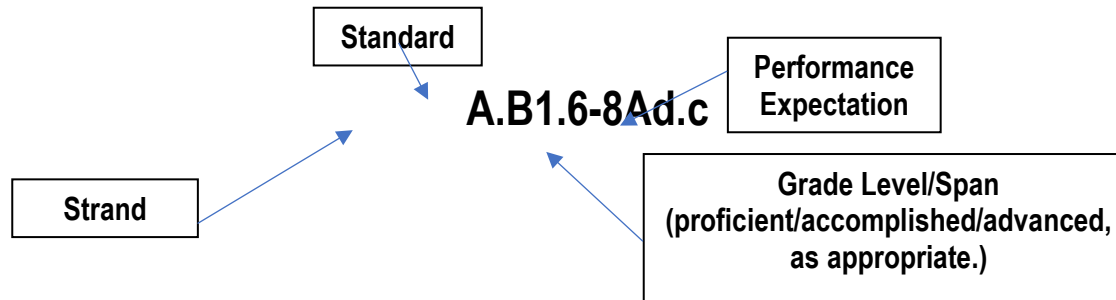
A successful visual and performing arts education is supported through highly qualified teachers, schedules that support visual and performing arts, facilities and materials designed for visual and performing arts education, and a strong collaboration between the visual and performing arts and other disciplines. The key to success is a culture within the community and the school that supports a strong arts education. This document is set forth as a guide toward attaining that goal.<sup>2</sup>

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<sup>2</sup> <https://www.maine.gov/doe/learning/content/arts/resources/essaarts> (accessed August 2021); <https://www.nfhs.org/articles/performing-arts-students-develop-skills-needed-for-life-and-work/> (accessed August 2021).

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## How to Represent the Visual and Performing Arts Standards and Performance Expectations



### **The Dance Standards**

Dance, like language, is found in all human societies. It is an essential component in the process of socialization in all cultures. By honoring personal expression through time and space, dance contributes to the sense of self as no other art form can. Everyone has the instrument of dance - one's own body. Dance education can enhance awareness of the body's physical development, increase recognition of one's place in the physical world, and heighten the sense of self. The human body is the vehicle through which learning occurs. Body and mind are inseparable. In a safe environment, a child is free to discover and rediscover the self. The purpose of dance education is to build on the primitive body movements that begin before birth and to discover and experiment with increasingly more complex interconnections of body and mind, enhancing the physical, intellectual, social and emotional development of the child. Basic dance education plays an important role in this developmental process and should be provided to all children. Such a basic dance education includes opportunities in creative dance, improvisation, choreography, technique, social and contemporary forms and multi-cultural experiences. The use of dance increases the understanding of one's own culture and other cultures of the world. The creativity and discipline of dance contributes to balanced development of the whole person. Maine students need dance education in their public education because: 1) Dance is process-oriented 2) Dance is a tool for self-discovery 3) Dance provides teachers an opportunity to integrate subject matter such as math and social studies into an active learning process 4) Dance provides opportunities for kinetic learners to succeed.

#### **Maine's Dance Education Heritage<sup>3</sup>**

Maine has a long history of dance in education. From the dance styles of the Wabanaki nations to the 19th century May Pole dances at "Normal" schools to today's dances inspired by contemporary music or dances from the heritage of New Mainers dance has a profound effect upon children in Maine. Dance in education in Maine has many interweaving strands. As in other states throughout the country, dance in education began in the physical education programs of state and private colleges. Courses in rhythm, folk dance, square dance, and social dance have existed since the 1880s. University and college drama and music programs have included dance events in the training of teachers for many years. Dance in education has been offered through physical education, drama, and music programs; in individual classrooms; through gifted and talented programs; or through school-based programs organized by individuals or groups in the community. Private dance studios throughout the state have provided instruction in such areas as modern dance, ballet, jazz, hip hop, tap, African dance, Latin dance, acrobatics, clogging and ballroom dance. Each dance form has produced offshoots emphasizing increased specialization. A wide variety of dance instruction exists throughout the state of Maine in private studios, however the opportunity for learning in and through dance and creative movement should be accessible to all children through their public education. Public agencies and organizations such as the *Maine Arts Commission*, the *Arts Education Program of the National Endowment for the Arts*, the *National Dance Education Organization (NDEO)*, the *Maine Alliance for Arts Education (MAAE)*, *VSA Maine*, *Dance Education in Maine Schools (DEMS)*, and the *Maine Association for Health, Physical Education, Recreation and Dance (MAHPERD)* have provided financial and technical support for the development of dance in public education over the years. Maine schools are ready for the development and inclusion of dance in the curriculum. The expression of a child's personal stories through movement and the resulting enhancement of learning, social skills, and self-esteem can be crucial to that child's development.

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<sup>3</sup> Schaper, M. (2021). *Maine Dance Curriculum Guide*.

Strand	A. DANCE			
Standard	A1 - Generate and conceptualize artistic ideas and work.			
Childhood				
	Kindergarten	Grade 1	Grade 2	
Performance Expectations	<ul style="list-style-type: none"> <li>a. Respond in movement to a variety of stimuli (for example, music/sound, text, objects, images, symbols, observed dance).</li> <li>b. Explore different ways to do basic locomotor and non-locomotor movements by changing at least one of the elements of dance.</li> </ul>	<ul style="list-style-type: none"> <li>a. Explore movement inspired by a variety of stimuli (for example, music/sound, text, objects, images, symbols, observed dance, experiences) and identify the source.</li> <li>b. Explore a variety of locomotor and non-locomotor movements by experimenting with and changing the elements of dance.</li> </ul>	<ul style="list-style-type: none"> <li>a. Explore movement inspired by a variety of stimuli (for example, music/sound, text, objects, images, symbols, observed dance, experiences) and suggest additional sources for movement ideas.</li> <li>b. Combine a variety of movements while manipulating the elements of dance.</li> </ul>	
	Grade 3	Grade 4	Grade 5	
Performance Expectations	<ul style="list-style-type: none"> <li>a. Experiment with a variety of self-identified stimuli (for example, music/sound, text, objects, images, notation, observed dance, experiences) for movement.</li> <li>b. Explore a given movement problem. Select and demonstrate a solution.</li> </ul>	<ul style="list-style-type: none"> <li>a. Identify ideas for choreography generated from a variety of stimuli (for example, music/sound, text, objects, images, notation, observed dance, experiences).</li> <li>b. Develop a movement problem and manipulate the elements of dance as tools to find a solution.</li> </ul>	<ul style="list-style-type: none"> <li>a. Build content for choreography using several stimuli (for example, music/sound, text, objects, images, notation, observed dance, experiences, literary forms, natural phenomena, current news, social events).</li> <li>b. Construct and solve multiple movement problems to develop choreographic content.</li> </ul>	

Strand	A. DANCE		
Standard	A1 - Generate and conceptualize artistic ideas and work.		
<b>Early Adolescence</b>			
<b>Grades 6-8</b>			
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Implement movement from a variety of stimuli (for example, music, observed dance, literary forms, notation, natural phenomena, personal experience/recall, current news, or social events) to develop dance content for an original dance study or dance.</li> <li>b. Identify and select personal preferences to create an original dance study or dance. Use genre-specific dance terminology to articulate and justify choices made in movement development to communicate intent.</li> </ul>		
<b>Adolescence</b>			
<b>Grades 9-Diploma Proficient      Grades 9-Diploma Accomplished      Grades 9-Diploma Advanced</b>			
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Explore a variety of stimuli for sourcing movement to develop an improvisational or choreographed dance study. Analyze the process and the relationship between the stimuli and the movement.</li> <li>b. Experiment with the elements of dance to explore personal movement preferences and strengths and select movements that challenge skills and build on strengths in an original dance study or dance.</li> </ul>	<ul style="list-style-type: none"> <li>a. Synthesize content generated from stimulus materials to choreograph dance studies or dances using original or codified movement.</li> <li>b. Apply personal movement preferences and strengths with the movement vocabulary of several dance styles or genres to choreograph an original dance study or dance that communicates an artistic intent. Compare personal choices to those made by well-known choreographers.</li> </ul>	<ul style="list-style-type: none"> <li>a. Synthesize content generated from stimulus material. Experiment and take risks to discover a personal voice to communicate artistic intent.</li> <li>b. Expand personal movement preferences and strengths to discover unexpected solutions that communicate the artistic intent of an original dance. Analyze the unexpected solutions and explain why they were effective in expanding artistic intent.</li> </ul>

Strand	A. DANCE		
Standard	A2 - Organize and develop artistic ideas and work.		
<b>Childhood</b>			
	Kindergarten	Grade 1	Grade 2
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Improvise dance that has a beginning, middle, and end.</li> <li>b. Express an idea, feeling, or image, through improvised movement moving alone or with a partner.</li> </ul>	<ul style="list-style-type: none"> <li>a. Improvise a series of movements that have a beginning, middle, and end, and describe movement choices.</li> <li>b. Choose movements that express an idea or emotion, or that follow a musical phrase.</li> </ul>	<ul style="list-style-type: none"> <li>a. Improvise a dance phrase with a beginning, a middle that has a main idea, and a clear end.</li> <li>b. Choose movements that express a main idea or emotion, or that follow a musical phrase. Explain reasons for movement choices.</li> </ul>
	Grade 3	Grade 4	Grade 5
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Identify and experiment with choreographic devices to create simple movement patterns and dance structures (for example, AB, ABA, theme and development).</li> <li>b. Develop a dance phrase that expresses and communicates an idea or feeling. Discuss the effect of the movement choices.</li> </ul>	<ul style="list-style-type: none"> <li>a. Manipulate or modify choreographic devices to expand movement possibilities and create a variety of movement patterns and structures. Discuss movement choices.</li> <li>b. Develop a dance study that expresses and communicates a main idea. Discuss the reasons and effectiveness of the movement choices.</li> </ul>	<ul style="list-style-type: none"> <li>a. Manipulate or modify a variety of choreographic devices to expand choreographic possibilities and develop a main idea. Explain reasons for movement choices.</li> <li>b. Develop a dance study by selecting a specific movement vocabulary to communicate a main idea. Discuss how the dance communicates non-verbally.</li> </ul>
<b>Grades 6-8</b>			
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Collaborate to select and apply a variety of choreographic devices and dance structures to choreograph an original dance study or dance with a clear artistic intent. Articulate the group process for making movement and structural choices.</li> <li>b. Define and apply artistic criteria to choreograph a dance that communicates personal or cultural meaning. Discuss how the criteria clarify or intensify the meaning of the dance.</li> </ul>		

Strand	A. DANCE		
Standard	A2 - Organize and develop artistic ideas and work.		
<b>Adolescence</b>			
	Grades 9-Diploma Proficient	Grades 9-Diploma Accomplished	Grades 9-Diploma Advanced
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Collaborate to design a dance using choreographic devices and dance structures to support an artistic intent. Explain how the dance structures clarify the artistic intent.</li> <li>b. Develop an artistic statement for an original dance study or dance. Discuss how the use of movement elements, choreographic devices and dance structures serve to communicate the artistic statement.</li> </ul>	<ul style="list-style-type: none"> <li>a. Work individually and collaboratively to design and implement a variety of choreographic devices and dance structures to develop original dances. Analyze how the structure and final composition inform the artistic intent.</li> <li>b. Develop an artistic statement that reflects a personal aesthetic for an original dance study or dance. Select and demonstrate movements that support the artistic statement.</li> </ul>	<ul style="list-style-type: none"> <li>a. Demonstrate fluency and personal voice in designing and choreographing original dances. Justify choreographic choices and explain how they are used to intensify artistic intent.</li> <li>b. Construct an artistic statement that communicates a personal, cultural and artistic perspective.</li> </ul>

<b>Strand</b>	<b>A. Dance</b>			
<b>Standard</b>	<b>A3 - Refine and complete artistic work.</b>			
<b>Childhood</b>				
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>	
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Apply suggestions for changing movement through guided improvisational experiences.</li> <li>b. Depict a dance movement by drawing a picture or using a symbol.</li> </ul>	<ul style="list-style-type: none"> <li>a. Explore suggestions to change movement from guided improvisations and/or short remembered sequences.</li> <li>b. Depict several different types of movements</li> </ul>	<ul style="list-style-type: none"> <li>a. Explore movement inspired by a variety of stimuli (for example, music/sound, text, objects, images, symbols, observed dance, experiences) and suggest additional sources for movement ideas.</li> <li>b. Combine a variety of movements while manipulating the elements of dance.</li> </ul>	
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>	
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Experiment with a variety of self-identified stimuli (for example, music/sound, text, objects, images, notation, observed dance, experiences) for movement.</li> <li>b. Explore a given movement problem. Select and demonstrate a solution.</li> </ul>	<ul style="list-style-type: none"> <li>a. Identify ideas for choreography generated from a variety of stimuli (for example, music/sound, text, objects, images, notation, observed dance, experiences).</li> <li>b. Develop a movement problem and manipulate the elements of dance as tools to find a solution.</li> </ul>	<ul style="list-style-type: none"> <li>a. Build content for choreography using several stimuli (for example, music/sound, text, objects, images, notation, observed dance, experiences, literary forms, natural phenomena, current news, social events).</li> <li>b. Construct and solve multiple movement problems to develop choreographic content.</li> </ul>	

Strand	A. DANCE		
Standard	A3 - Refine and complete artistic work.		
<b>Early Adolescence</b>			
<b>Grades 6-8</b>			
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Implement movement from a variety of stimuli (for example, music, observed dance, literary forms, notation, natural phenomena, personal experience/recall, current news, or social events) to develop dance content for an original dance study or dance.</li> <li>b. Identify and select personal preferences to create an original dance study or dance. Use genre-specific dance terminology to articulate and justify choices made in movement development to communicate intent.</li> </ul>		
<b>Adolescence</b>			
<b>Grades 9-Diploma Proficient      Grades 9-Diploma Accomplished      Grades 9-Diploma Advanced</b>			
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Explore a variety of stimuli for sourcing movement to develop an improvisational or choreographed dance study. Analyze the process and the relationship between the stimuli and the movement.</li> <li>b. Experiment with the elements of dance to explore personal movement preferences and strengths and select movements that challenge skills and build on strengths in an original dance study or dance.</li> </ul>	<ul style="list-style-type: none"> <li>a. Synthesize content generated from stimulus materials to choreograph dance studies or dances using original or codified movement.</li> <li>b. Apply personal movement preferences and strengths with the movement vocabulary of several dance styles or genres to choreograph an original dance study or dance that communicates an artistic intent. Compare personal choices to those made by well-known choreographers.</li> </ul>	<ul style="list-style-type: none"> <li>a. Synthesize content generated from stimulus material. Experiment and take risks to discover a personal voice to communicate artistic intent.</li> <li>b. Expand personal movement preferences and strengths to discover unexpected solutions that communicate the artistic intent of an original dance. Analyze the unexpected solutions and explain why they were effective in expanding artistic intent.</li> </ul>

Strand	A. DANCE		
Standard	B1 - Select, analyze, and interpret artistic work for presentation.		
<b>Childhood</b>			
	Kindergarten	Grade 1	Grade 2
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Make still and moving body shapes that show lines (for example, straight, bent, and curved), levels, and vary in size (large/small).</li> <li>b. Demonstrate tempo contrasts with movements that match to tempo of sound stimuli.</li> <li>c. Identify and apply different characteristics to movements (for example, slow, smooth, or wavy).</li> </ul>	<ul style="list-style-type: none"> <li>a. Demonstrate locomotor and non-locomotor movements that change body shapes, levels, and facings. Move in straight, curved, and zig-zagged pathways. Find and return to place in space. Move with others to form straight lines and circles.</li> <li>b. Relate quick, moderate, and slow movements to duration in time. Recognize steady beat and move to varying tempi of steady beat.</li> <li>c. Demonstrate movement characteristics along with movement vocabulary (for example, use adverbs and adjectives that apply to movement such as a bouncy leap, a floppy fall, a jolly jump, and joyful spin).</li> </ul>	<ul style="list-style-type: none"> <li>a. Demonstrate clear directionality and intent when performing locomotor and non-locomotor movements that change body shapes, facings, and pathways in space. Identify symmetrical and asymmetrical body shapes and examine relationships between body parts. Differentiate between circling and turning as two separate ways of continuous directional change.</li> <li>b. Identify the length of time a move or phrase takes (for example, whether it is long or short). Identify and move on the downbeat in duple and triple meter. Correlate metric phrasing with movement phrasing.</li> <li>c. Select and apply appropriate characteristics to movements (for example, selecting specific adverbs and adjectives and apply them to movements). Demonstrate kinesthetic awareness while dancing the movement characteristics.</li> <li>d.</li> </ul>

Strand	A. DANCE		
Standard	B1 - Select, analyze, and interpret artistic work for presentation.		
<b>Childhood</b>			
	Grade 3	Grade 4	Grade 5
<b>Performance Expectations</b>	<p>a. Judge spaces as distance traveled and use space three-dimensionally. Demonstrate shapes with positive and negative space. Perform movement sequences in and through space with intentionality and focus.</p> <p>b. Fulfill specified duration of time with improvised locomotor and non-locomotor movements. Differentiate between “in time” and “out of time” to music. Perform movements that are the same or of a different time orientation to accompaniment. Use metric and kinesthetic phrasing.</p> <p>c. Change use of energy and dynamics by modifying movements and applying specific characteristics to heighten the effect of their intent.</p>	<p>a. Make static and dynamic shapes with positive and negative space. Perform elevated shapes (jump shapes) with soft landings and movement sequences alone and with others, establishing relationships with other dancers through focus of eyes.</p> <p>b. Accompany other dancers using a variety of percussive instruments and sounds. Respond in movement to even and uneven rhythms. Recognize and respond to tempo changes as they occur in dance and music.</p> <p>c. Analyze movements and phrases for use of energy and dynamic changes and use adverbs and adjectives to describe them. Based on the analysis, refine the phrases by incorporating a range of movement characteristics.</p>	<p>a. Integrate static and dynamic shapes and floor and air pathways into dance sequences. Establish relationships with other dancers through focus of eyes and other body parts. Convert inward focus to outward focus for projecting out to far space.</p> <p>b. Dance to a variety of rhythms generated from internal and external sources. Perform movement phrases that show the ability to respond to changes in time.</p> <p>c. Contrast bound and free-flowing movements. Motivate movement from both central initiation (torso) and peripheral initiation (distal) and analyze the relationship between initiation and energy.</p>

Strand	A. DANCE		
Standard	B1 - Select, analyze, and interpret artistic work for presentation.		

<b>Early Adolescence</b>	
<b>Grades 6-8</b>	
<b>Performance Expectations</b>	<ol style="list-style-type: none"><li>a. Expand movement vocabulary of floor and air pattern designs. Incorporate and modify body designs from different dance genres and styles for the purpose of expanding movement vocabulary to include differently designed shapes and movements for interest and contrast.</li><li>b. Vary durational approach in dance phrasing by using timing accents and variations within a phrase to add interest kinesthetically, rhythmically, and visually.</li><li>c. Compare and contrast movement characteristics from a variety of dance genres or styles. Discuss specific characteristics and use adverbs and adjectives to describe them. Determine what dancers must do to perform them clearly.</li></ol>

Strand	A. DANCE		
Standard	B1 - Select, analyze, and interpret artistic work for presentation.		
<b>Adolescence</b>			
	Grades 9-Diploma Proficient	Grades 9-Diploma Accomplished	Grades 9-Diploma Advanced
<b>Performance Expectations</b>	<p>a. Develop partner and ensemble skills that enable contrasting level changes through lifts, balances, or other means while maintaining a sense of spatial design and relationship. Use space intentionally during phrases and through transitions between phrases. Establish and break relationships with others as appropriate to the choreography.</p> <p>b. Use syncopation and accent movements related to different tempi. Take rhythmic cues from different aspects of accompaniment. Integrate breath phrasing with metric and kinesthetic phrasing.</p> <p>c. Connect energy and dynamics to movements by applying them in and through all parts of the body. Develop total body awareness so that movement phrases demonstrate variances of energy and dynamics.</p>	<p>a. Dance alone and with others with spatial intention. Expand partner and ensemble skills to greater ranges and skill. Execute complex floor and air sequences with others while maintaining relationships through focus and intentionality.</p> <p>b. Perform dance studies and compositions that use time and tempo in unpredictable ways. Use internal rhythms and kinetics as phrasing tools. Dance “in the moment.”</p> <p>c. Initiate movement phrases by applying energy and dynamics. Vary energy and dynamics over the length of a phrase and transition smoothly out of the phrase and into the next phrase, paying close attention to its movement initiation and energy</p>	<p>a. Use the broadest range of movement in space for artistic and expressive clarity. Use inward and outward focus to clarify movement and intent. Establish and break relationships with other dancers and audience as appropriate to the dance.</p> <p>b. Modulate time factors for artistic interest and expressive acuity. Demonstrate time complexity in phrasing with and without musical accompaniment. Use multiple and complex rhythms at the same time. Work with and against rhythm of accompaniment or sound environments.</p> <p>c. Modulate dynamics to clearly express intent while performing dance phrases and choreography. Perform movement sequences expressively using a broad dynamic range and employ dynamic skills for establishing relationships with other dancers and projecting to the audience.</p>
Strand	A. Dance		

Standard	B2 - Develop and refine artistic technique and work for presentation.		
<b>Childhood</b>			
	Kindergarten	Grade 1	Grade 2
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Demonstrate same-side and cross-body locomotor and non-locomotor movements, body patterning movements, and body shapes.</li> <li>b. Move safely in general space and start and stop on cue during activities, group formations, and creative explorations while maintaining personal space.</li> <li>c. Move body parts in relation to other body parts and repeat and recall movements upon request.</li> </ul>	<ul style="list-style-type: none"> <li>a. Demonstrate a range of locomotor and non-locomotor movements, body patterning, body shapes, and directionality.</li> <li>b. Move safely in general space through a range of activities and group formations while maintaining personal space.</li> <li>c. Modify movements and spatial arrangements upon request.</li> </ul>	<ul style="list-style-type: none"> <li>a. Demonstrate a range of locomotor and non-locomotor movements, body patterning, and dance sequences that require moving through space using a variety of different pathways.</li> <li>b. Move safely in a variety of spatial relationships and formations with other dancers, sharing and maintaining personal space.</li> <li>c. Repeat movements with an awareness of self and others in space. Self-adjust and modify movements or placement upon request.</li> </ul>

Strand	A. DANCE		
Standard	B2 - Develop and refine artistic technique and work for presentation.		
<b>Childhood</b>			
	Grade 3	Grade 4	Grade 5
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Replicate body shapes, movement characteristics, and movement patterns in a dance sequence with awareness of body alignment and core support.</li> <li>b. Adjust body use to coordinate with a partner or other dancers to safely change levels, directions, and pathway designs.</li> <li>c. Recall movement sequences with a partner or in group dance activities. Apply the teacher's constructive feedback and self-check to improve dance skills.</li> </ul>	<ul style="list-style-type: none"> <li>a. Demonstrate fundamental dance skills (i.e., alignment, coordination, balance, core support, kinesthetic awareness) and movement qualities when replicating patterns and sequences of locomotor and non-locomotor movements.</li> <li>b. Execute techniques that extend movement range, build strength, and develop endurance. Explain the relationship between execution of technique, safe body use, and healthful nutrition.</li> <li>c. Coordinate phrases and timing with other dancers by cueing off each other and responding to stimuli cues (i.e., music, text, lighting). Reflect on feedback from others to inform personal dance performance goals.</li> </ul>	<ul style="list-style-type: none"> <li>a. Recall and execute a series of dance phrases using fundamental dance skills (i.e., alignment, coordination, balance, core support, kinesthetic awareness, clarity of movement).</li> <li>b. Demonstrate safe body use practices during technical exercises and movement combinations. Discuss how these practices, along with healthful eating habits, promote strength, flexibility, endurance, and injury prevention.</li> <li>c. Collaborate with peer ensemble members to repeat sequences, synchronize actions, and refine spatial relationships to improve performance quality. Apply feedback from others to establish personal performance goals.</li> </ul>

<b>Strand</b>	<b>A. DANCE</b>
<b>Standard</b>	B2 - Develop and refine artistic technique and work for presentation.
<b>Early Adolescence</b>	
<b>Grades 6-8</b>	
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Incorporate technical dance skills (i.e., functional alignment, coordination, balance, core support, clarity of movement, weight shifts, flexibility/range of motion) to replicate, recall, and execute spatial designs and musical or rhythmic dance phrases.</li> <li>b. Evaluate personal healthful practices in dance activities and everyday life including nutrition and injury prevention. Discuss choices made, the effects experiences, and methods for improvement.</li> <li>c. Collaborate with peers to discover strategies for achieving performance accuracy, clarity, and expressiveness. Articulate personal performance goals and practice to reach those goals. Document personal improvement over time (e.g., journaling, portfolio, or timeline.)</li> </ul>

Strand	A. DANCE		
Standard	B2 - Develop and refine artistic technique and work for presentation.		
Adolescence			
	Grades 9-Diploma Proficient	Grades 9-Diploma Accomplished	Grades 9-Diploma Advanced
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Incorporate technical dance skills (i.e., functional alignment, coordination, balance, core support, clarity of movement, weight shifts, flexibility/range of motion) to retain and execute dance choreography.</li> <li>b. Develop a plan for healthful practices in dance activities and everyday life including nutrition and injury prevention. Discuss implementation of the plan and how it supports personal performance goals.</li> <li>c. Collaborate with peers to establish and implement a rehearsal plan to meet performance goals. Use a variety of strategies to analyze and evaluate performances of self and others. Articulate performance goals and justify reasons for selecting particular practice strategies.</li> </ul>	<ul style="list-style-type: none"> <li>a. Dance with sensibility toward other dancers while executing complex spatial, rhythmic, and dynamic sequences to meet performance goals.</li> <li>b. Apply anatomical principles and healthful practices to a range of technical dance skills for achieving fluency of movement. Follow a personal nutrition plan that supports health for everyday life.</li> <li>c. Plan and execute collaborative and independent practice and rehearsal processes with attention to technique and artistry, informed by personal performance goals. Reflect on personal achievements.</li> </ul>	<ul style="list-style-type: none"> <li>a. Apply body-mind principles to technical dance skills in complex choreography when performing solo, partnering, or dancing in ensemble works in a variety of dance genres and styles. Self-evaluate performances and discuss and analyze performance ability with others.</li> <li>b. Research healthful and safe practices for dancers and modify personal practice based on findings. Discuss how research informs practice.</li> <li>c. Initiate, plan, and direct rehearsals with attention to technical details and fulfilling artistic expression. Use a range of rehearsal strategies to achieve performance excellence.</li> </ul>

Strand	A. DANCE			
Standard	B3 – Convey meaning through the presentation of artistic work.			
<b>Childhood</b>				
	Kindergarten	Grade 1	Grade 2	
<b>Performance Expectations</b>	a. Dance for and with others in a designated space. b. Select a prop to use as part of a dance.	a. Dance for others in a space where the audience observes from a different space. b. Explore the use of simple props to enhance performance.	a. Dance for and with others in a space where the audience observes from a different space. b. Use limited production elements (i.e., hand props, simple scenery, or media projections) to enhance performance.	
	Grade 3	Grade 4	Grade 5	
<b>Performance Expectations</b>	a. Identify the main areas of a performance space using production terminology (i.e., stage right, stage left, upstage, downstage, etc.) b. Explore simple production elements (i.e., costumes, scenery, props, etc.) in a dance performed for an audience in a designated specific performance space.	a. Consider how to establish a formal performance space from an informal setting (i.e., gymnasium, outside courtyard, etc.) b. Identify, explore, and experiment with a variety of production elements to heighten the artistic intent and audience experience.	a. Demonstrate the ability to adapt dance to alternative performance venues by modifying spacing and movements to the performance space. b. Identify, explore, and select production elements that heighten and intensify the artistic intent of a dance that are adaptable to various performance spaces.	

<b>Strand</b>	<b>A. DANCE</b>
<b>Standard</b>	B3 – Convey meaning through the presentation of artistic work.
	<b>Early Adolescence</b>
	<b>Grades 6-8</b>
<b>Performance Expectations</b>	<ol style="list-style-type: none"><li>a. Recognize needs and adapt movements to a performance space. Use performance etiquette and practices during class, rehearsal, and performance. Accept post-performance notes from the choreographer and make corrections as needed to apply to future performances.</li><li>b. Compare and contrast a variety of possible production elements that would intensify and heighten the artistic intent of the work. Select choices and explain reasons for those selections using production terminology.</li></ol>

Strand	A. DANCE		
Standard	B3 – Convey meaning through the presentation of artistic work.		
Adolescence			
	Grades 9-Diploma Proficient	Grades 9-Diploma Accomplished	Grades 9-Diploma Advanced
<b>Performance Expectations</b>	<p>a. Demonstrate leadership qualities (i.e., commitment, dependability, responsibility, cooperation) when preparing performances. Demonstrate performance etiquette and practices during class, rehearsal, and performance. Accept post-performance notes from the choreographer and make corrections as needed for future performances. Document the rehearsal and performance process and evaluate methods and strategies using dance and production terminology.</p> <p>b. Evaluate possible designs for the production elements of a performance, selecting and executing the ideas that would intensify and heighten the artistic intent of the dances.</p>	<p>a. Demonstrate leadership qualities when preparing performances. Model performance etiquette and practices during class, rehearsal, and performance. Implement performance strategies to enhance projection. Accept post-performance notes from the choreographer and apply corrections to future performances. Document the rehearsal and performance process and evaluate methods and strategies using dance and production terminology.</p> <p>b. Work collaboratively to produce a dance concert on a stage or alternative space, planning the production elements that would be necessary to fulfill the artistic intent of the dance works.</p>	<p>a. Demonstrate leadership qualities when preparing performances. Model performance etiquette and practices during class, rehearsal, and performance. Enhance performances using a broad repertoire of strategies for dynamic projection. Develop a professional portfolio (e.g., resume and head shot photo) that documents the rehearsal and performance process with fluency in professional dance and production terminology.</p> <p>b. Work collaboratively to produce dance concerts in a variety of venues, designing and organizing the production elements necessary to fulfill the artistic intent of the dance works.</p>

Strand	A. DANCE		
Standard	C1 – Perceive and analyze artistic work.		
<b>Childhood</b>			
	Kindergarten	Grade 1	Grade 2
<b>Performance Expectations</b>	a. Find a movement that repeats in a dance. b. Demonstrate or describe observed or performed dance movements.	a. Find a movement that repeats in a dance to make a pattern. b. Demonstrate and describe observed or performed dance movements from a specific genre or culture.	a. Find movements in a dance that develop a pattern. b. Demonstrate and describe movements in dances from different genres or cultures.
	Grade 3	Grade 4	Grade 5
<b>Performance Expectations</b>	a. Find a movement pattern that creates a movement phrase in a dance work. b. Demonstrate and explain how one dance genre is different from another, or how one cultural movement practice is different from another.	a. Find patterns of movement in dance works that create a style or theme. b. Demonstrate and explain how dance styles differ within a genre or within a cultural movement practice.	a. Find meaning or artistic intent from the patterns of movement in a dance work. b. Using basic dance terminology, describe the qualities and characteristics of a style used in a dance from one's own cultural movement practice. Using basic dance terminology, compare them to the qualities and characteristics of style found in a different dance genre, style, or cultural movement practice.

Strand	A. DANCE		
Standard	C1 – Perceive and analyze artistic work.		
<b>Early Adolescence</b>			
<b>Grades 6-8</b>			
<b>Performance Expectations</b>	a. Describe, demonstrate, and discuss patterns of movement and their relationships to dance in the context of artistic intent. b. Using genre-specific dance terminology, explain how the elements of dance are used in a variety of different genres, styles, or cultural movement practices to communicate intent.		
<b>Adolescence</b>			
<b>Grades 9-Diploma Proficient      Grades 9-Diploma Accomplished      Grades 9-Diploma Advanced</b>			
<b>Performance Expectations</b>	a. Analyze recurring patterns of movement and their relationships in dance in the context of artistic intent. b. Using genre-specific dance terminology, analyze the use of elements of dance in a variety of different genres, styles, and cultural movement practices within a cultural context to communicate intent.	a. Analyze dance works and provide examples of recurring patterns of movement and their relationships that create structure and meaning in dance. b. Using genre-specific dance terminology, analyze and compare the movement patterns and their relationships in a variety of different genres, styles, or cultural movement practices and explain how their differences impact communication and intent within a cultural context.	a. Analyze dance works from a variety of dance genres and styles and explain how recurring patterns of movement and their relationships create well-structured and meaningful choreography. b. Using genre-specific dance terminology, explain how dance communicates aesthetic and cultural values in a variety of genres, styles, and/or cultural movement practices.

<b>Strand</b>	<b>A. Dance</b>		
<b>Standard</b>	<b>C2 – Interpret intent and meaning in artistic work.</b>		
<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	Using simple dance terminology, observe and describe movement.	Using simple dance terminology, select movements from a dance that suggest ideas and explain how the movement captures the idea.	Using simple dance terminology and context clues from movement, identify meaning and intent in a dance.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	Using basic dance terminology, select specific content clues from movement. Explain how they relate to the main idea of the dance.	Using basic dance terminology, relate movements, ideas, and context to decipher meaning in a dance.	Using basic dance terminology, interpret meaning in a dance based on its movements. Explain how the movements communicate the main idea of the dance.
<b>Early Adolescence</b>			
	<b>Grades 6-8</b>		
<b>Performance Expectations</b>	Using genre-specific dance terminology, explain how the artistic expression of a dance is achieved through the elements of dance, use of body, dance technique, dance structure, and context. Explain how these communicate the intent of the dance.		
<b>Adolescence</b>			
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Accomplished</b>	<b>Grades 9-Diploma Advanced</b>
<b>Performance Expectations</b>	Using genre-specific dance terminology, select and compare different dances and discuss their intent and artistic expression. Explain how the relationships among the elements of dance, use of body, dance technique, and context enhance meaning and support intent.	Using genre-specific dance terminology, analyze and discuss how the elements of dance, execution of dance movement principles, and context contribute to artistic expression.	Using genre-specific dance terminology, analyze and interpret how the elements of dance, execution of dance movement principles, and context contribute to artistic expression across different genres, styles, or cultural movement practices.

<b>Strand</b>	<b>A. DANCE</b>		
<b>Standard</b>	<b>C3 – Apply criteria to evaluate artistic work.</b>		
<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	Find a movement that was noticed in a dance. Demonstrate that movement and explain why it attracted attention.	Identify and demonstrate several movements in advance that attracted attention. Describe the characteristics that make the movements interesting and talk about why they were chosen.	Observe or demonstrate dances from a genre or culture. Using simple dance terminology, discuss movements and other aspects of the dances that make the dances work well.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	Select dance movements from specific genres, styles, or cultures. Identify characteristic movements from these dances and, using basic dance terminology, describe the ways in which they are alike and different.	Using basic dance terminology, discuss and demonstrate the characteristics that make a dance artistic and apply those characteristic movements to dances observed and performed in a specific genre, style, or cultural movement practice.	Define the characteristics of dance that make a dance artistic and meaningful. Relate them to the elements of dance in genres, styles, or cultural movement practices. Using basic dance terminology, describe characteristics that make a dance artistic and meaningful.
<b>Early Adolescence</b>			
	<b>Grades 6-8</b>		
<b>Performance Expectations</b>	Discuss the characteristics and artistic intent of a dance from a genre, style, or cultural movement practice and develop artistic criteria to critique the dance using genre-specific dance terminology.		
<b>Adolescence</b>			
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Accomplished</b>	<b>Grades 9-Diploma Advanced</b>
<b>Performance Expectations</b>	Analyze and discuss the artistic expression of a dance using dance terminology and evaluative criteria.	Compare and contrast two or more dances using evaluative criteria and dance terminology to critique artistic expression, considering societal values and a range of perspectives.	Define personal artistic preferences to critique dance. Consider societal and personal values, and a range of artistic expression. Discuss perspectives with peers and justify viewpoints.

Strand	A. Dance		
Standard	D1 – Synthesize and relate knowledge and personal experiences to make art.		
Childhood			
	Kindergarten	Grade 1	Grade 2
<b>Performance Expectations</b>	a. Recognize and name an emotion that is experienced when watching, improvising, or performing dance and relate it to a personal experience. b. Observe a work of visual art. Describe and then express through movement something of interest about the artwork and ask questions for discussion concerning the artwork.	a. Find a familiar experience expressed or portrayed in a dance. Identify the movements that communicate this experience. b. Observe and discuss illustrations from a story, identifying and demonstrating ideas for dance movement.	a. Describe, create, and/or perform a dance that expresses personal meaning and explain how certain movements express this personal meaning. b. Respond to a dance work using an inquiry-based approach (i.e., think, wonder, etc.). Create movement using ideas from responses and explain how certain movements express a specific idea.

Strand	A. DANCE		
Standard	D1 – Synthesize and relate knowledge and personal experiences to make art.		
<b>Childhood</b>			
	Grade 3	Grade 4	Grade 5
<b>Performance Expectations</b>	<p>a. Compare the relationships expressed in a dance to relationships with others. Explain how they are similar and different.</p> <p>b. Ask and research a question about a key aspect of a dance that communicates a perspective about an issue or event. Explore the key aspect through movement. Share movements and describe how the movements help to remember or discover new qualities in these key aspects. Communicate the new learning in oral, written, or movement form.</p>	<p>a. Relate the main idea or content in a dance to other experiences. Explain how the main idea of a dance is similar to or different from one’s own experiences, relationships, ideas or perspectives.</p> <p>b. Develop and research a question relating to a topic of study in school using multiple sources of references. Select key aspects about the topic and choreograph movements that communicate the information. Discuss what was learned from creating the dance and describe how the topic might be communicated using another form of expression.</p>	<p>a. Compare two dances with contrasting themes. Discuss feelings and ideas evoked by each. Describe how the themes and movements relate to points of view and experiences.</p> <p>b. Choose a topic, concept, or content from another discipline of study and research how other art forms have expressed the topic. Create a dance study that expresses the idea. Explain how the dance study expressed the idea and discuss how this learning process is similar to, or different from, other learning situations.</p>

<b>Strand</b>	<b>A. DANCE</b>
<b>Standard</b>	D1 – Synthesize and relate knowledge and personal experiences to make art.
	<b>Early Adolescence</b>
	<b>Grades 6-8</b>
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Observe the movement characteristics or qualities observed in a specific dance genre. Describe differences and similarities about what was observed to one’s attitudes and movement preferences.</li> <li>b. Conduct research using a variety of resources to find information about a social issue of great interest. Use the information to create a dance study that expresses a specific point of view on the topic. Discuss whether the experience of creating and sharing the dance reinforces personal views or offers new knowledge and perspectives.</li> </ul>

Strand	A. DANCE		
Standard	D1 – Synthesize and relate knowledge and personal experiences to make art.		
<b>Adolescence</b>			
	Grades 9-Diploma Proficient	Grades 9-Diploma Accomplished	Grades 9-Diploma Advanced
<b>Performance Expectations</b>	<p>a. Analyze a dance to determine the ideas expressed by the choreographer. Explain how the perspectives expressed by the choreographer may impact one’s own interpretation. Provide evidence to support one’s analysis.</p> <p>b. Collaboratively identify a dance related question or problem. Conduct research through interviews, research databases, text, media, or movement. Analyze and apply information gathered by creating a group dance that answers the question posed. Discuss how the dance communicates new perspectives or realizations. Compare orally and in writing the process used in choreography to that of other creative, academic, or scientific procedures.</p>	<p>a. Analyze a dance that is related to content learned in other subjects and research its context. Synthesize information learned and share new ideas about its impact on one’s perspective.</p> <p>b. Use established research methods and techniques to investigate a topic. Collaborate with others to identify questions and solve movement problems that pertain to the topic. Create and perform a piece of choreography. Discuss orally or in writing the insights relating to knowledge gained through the research process, the synergy of collaboration, and the transfer of learning from this project to other learning situations.</p>	<p>a. Review original choreography developed over time with respect to its content and context and its relationship to personal perspectives. Reflect on and analyze the variables that contributed to changes in one’s personal growth.</p> <p>b. Investigate various dance related careers through a variety of research methods and techniques. Select those careers of most interest. Develop and implement a Capstone Project that reflects a possible career choice.</p>

Strand	A. DANCE		
Standard	D2 – Relate artistic ideas and works with societal, cultural, and historical contexts to deepen understanding.		
<b>Childhood</b>			
	Kindergarten	Grade 1	Grade 2
Performance Expectations	Describe or demonstrate the movements in a dance that was watched or performed.	Watch and/or perform a dance from a different culture and discuss or demonstrate the types of movement danced.	Observe a dance and relate the movement to the people or environment in which the dance was created and performed.
	Grade 3	Grade 4	Grade 5
Performance Expectations	Find a relationship between movement in a dance from a culture, society, or community and the culture from which the dance is derived. Explain what the movements communicate about key aspects of the culture, society, or community.	Select and describe movements in a specific genre or style and explain how the movements relate to the culture, society, historical period, or community from which the dance originated.	Describe how the movement characteristics and qualities of a dance in a specific genre or style communicate the ideas and perspectives of the culture, historical period, or community from which the genre or style originated
<b>Early Adolescence</b>			
	Grades 6-8		
Performance Expectations	Interpret and show how the movement and qualities of a dance communicate its cultural, historical, and/or community purpose or meaning.		

Strand	A. DANCE		
Standard	D2 – Relate artistic ideas and works with societal, cultural, and historical contexts to deepen understanding.		
<b>Adolescence</b>			
	Grades 9-Diploma Proficient	Grades 9-Diploma Accomplished	Grades 9-Diploma Advanced
<b>Performance Expectations</b>	Analyze and discuss dances from selected genres or styles and/or historical time periods and formulate reasons for the similarities and differences between them in relation to the ideas and perspectives of the peoples from which the dances originate.	Analyze dances from several genres or styles, historical time periods, and/or world dance forms. Discuss how dance movement characteristics, techniques, and artistic criteria relate to the ideas and perspectives of the peoples from which the dances originate.	Analyze dances from several genres or styles, historical time periods, and/or world dance forms. Discuss how dance movement characteristics, techniques, and artistic criteria relate to the ideas and perspectives of the peoples from which the dances originate, and how the analysis has expanded one's dance literacy.

### **The Music Standards**

Music plays an important role in our society; it is in every part of our lives. The study of music aids in brain development, listening skills, social and emotional growth, language development, and brings joy throughout one's life. Music serves as a medium for cross-cultural understanding and as a reflection of creator, performer, and consumer. Bennett Reimer, aesthetic music education philosopher, states, "Music and the other arts are basic ways that humans know themselves and their world; they are basic modes of cognition."<sup>4</sup> Therefore, it is important that our educational system provides opportunities for the study of music for all students. Jerome Bruner, a major advocate of the spiral curriculum, argues that any person can learn any topic, as long as the level of complexity is appropriate for the learner.<sup>5</sup>

The Maine Learning Results for Music are written with an inclusive lens, considering all types of notation, skills, ensembles, and knowledge acquisition. These standards are written so that they flow in a natural progression through the grade levels. However, there is also the understanding that students come to the music classroom with varied musical experiences and varying levels of exposure. Differentiation for students is assumed in the music classroom with the goal of each student reaching proficiency. The advanced level is written with the more experienced student in mind, or for districts with diplomas that have specialized certificates. It is also recognized that performance classes have a slightly different focus than non-performance classes and that, although all standards should be explored in all music classes, the rigor of each standard could be different.

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<sup>4</sup> Reimer, B. (2003). *A philosophy in music education: Advancing the vision* (3<sup>rd</sup> Ed.). Prentice Hall.

<sup>5</sup> Bruner, J.S. (1977). *The process of education*. Harvard University Press.

<b>Strand</b>	<b>B. MUSIC</b>		
<b>Standard</b>	<b>A1 – Listen to, apply criteria, and interpret the artist’s intended meaning.</b>		
<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	Listen and respond to diverse music experiences by singing, playing, moving, etc.	With guidance, identify characteristics and themes within diverse music experiences.	With guidance, discuss music characteristics
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	Discuss, compare, and contrast diverse music experiences.	<ul style="list-style-type: none"> <li>a. Compare, contrast, and describe music ideas using appropriate terminology for music elements.</li> <li>b. Explore music elements that convey the song’s purpose.</li> </ul>	<ul style="list-style-type: none"> <li>a. Describe and interpret music ideas using appropriate terminology for music elements.</li> <li>b. Explore the personal, cultural, and historical background of an artist to gain perspective on their intent.</li> </ul>
<b>Early Adolescence</b>			
	<b>Grades 6-8</b>		
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Explore music examples and analyze the music through the lens of the elements of music.</li> <li>b. Reflect on the personal, cultural, and historical contexts of a music example and/or composer/performer to enhance personal connection and understanding of the music.</li> </ul>		
<b>Adolescence</b>			
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Advanced</b>	
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Analyze and evaluate music examples through the lens of the elements of music.</li> <li>b. Reflect on the artist’s intent as well as the personal, historical, and cultural contexts of a music example to enhance personal connection and understanding of the music.</li> </ul>	<ul style="list-style-type: none"> <li>a. Analyze and evaluate a body of musical work through the lens of the elements of music.</li> <li>b. Justify interpretations of the expressive intent and meaning of music works by comparing and synthesizing varied researched sources, including reference to other art forms.</li> </ul>	

<b>Strand</b>	<b>B. MUSIC</b>		
<b>Standard</b>	<b>A2 – Interpret and express music through movement.</b>		
<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	Explore expressive qualities of music through movement.	Respond to expressive qualities of music through movement.	Represent expressive qualities of music through movement.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	Compare and contrast the elements of music through movement.	Demonstrate an understanding of the expressive qualities of music through movement.	Demonstrate an understanding of the elements and expressive qualities of music through structured and improvised movement.
<b>Early Adolescence</b>			
	<b>Grades 6-8</b>		
<b>Performance Expectations</b>	Demonstrate and apply the elements and expressive qualities of specific music examples through structured and/or improvised movement.		
<b>Adolescence</b>			
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Advanced</b>	
<b>Performance Expectations</b>	With guidance, interpret specific music examples by planning and generating structured and/or improvised movements that express the elements, expressive qualities, and implied meaning of each example.	Interpret specific music examples by planning and generating structured and/or improvised movements that express the elements, expressive qualities, and implied meaning of each example.	

<b>Strand</b>	<b>B. MUSIC</b>		
<b>Standard</b>	<b>B1 – Connect with a variety of musical experiences through relationships between music and personal understandings.</b>		
	<b>Childhood</b>		
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	Explore music that represents a range of emotions.	With guidance, identify emotions and personal connections that relate to a selected piece of music.	With guidance, discuss emotions and personal connections that relate to a selected piece of music.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	Explore how personal interests and skills relate to choices when experiencing music.	Explore how personal interests and skills relate to choices when creating, performing, and responding to music.	Demonstrate and explore how personal interests and skills relate to choices when creating, performing, and responding to music.
	<b>Early Adolescence</b>		
	<b>Grades 6-8</b>		
<b>Performance Expectations</b>	Identify various uses of music in daily life, describe the characteristics that make music suitable for a specific use, and demonstrate individual preference for music in those contexts.		
	<b>Adolescence</b>		
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Advanced</b>	
<b>Performance Expectations</b>	Explore and evaluate personal benefits of listening to, performing, and creating music, and the role that music plays in developing empathy.	Discuss and debate the nature of music appreciation and justify music's value to individuals in a society.	

<b>Strand</b>	<b>B. MUSIC</b>		
<b>Standard</b>	<b>B2 – Connect with a variety of musical experiences through the relations between music, the other arts, and other disciplines.</b>		
	<b>Childhood</b>		
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	Explore how music is used for a variety of purposes and occasions.	Explore how music relates to other disciplines when experiencing music.	With guidance, identify relationships between music and another art or discipline outside the arts.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	With guidance, discuss relationships between music and another art or discipline outside the arts.	Identify relationships between music and another art or discipline outside the arts.	Demonstrate and explore how music relates to other disciplines when creating, performing, and responding to music.
	<b>Early Adolescence</b>		
	<b>Grades 6-8</b>		
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Demonstrate and explore skills and concepts that are similar across disciplines.</li> <li>b. Describe and explore how the study of music integrates with other disciplines and professions.</li> </ul>		
	<b>Adolescence</b>		
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Advanced</b>	
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Analyze skills and concepts that are similar across disciplines.</li> <li>b. Analyze the impact of music on other disciplines and professions.</li> </ul>	<ul style="list-style-type: none"> <li>a. Justify the use of music in specific artistic works that combine the other arts.</li> <li>b. Evaluate the impact of music on other disciplines and professions.</li> </ul>	

Strand	B. MUSIC		
Standard	B3 – Connect with a variety of musical experiences through the relationships between music and history and culture.		
<b>Childhood</b>			
	Kindergarten	Grade 1	Grade 2
<b>Performance Expectations</b>	Explore music from a variety of societal, cultural, and historical contexts and respond through singing, listening, or moving.	With guidance, experience repertoire from a variety of societal, cultural, and historical contexts by singing, moving, and playing in a manner appropriate to the context of the music.	With guidance, discuss characteristics of music from a variety of societal, cultural, and historical contexts.
	Grade 3	Grade 4	Grade 5
<b>Performance Expectations</b>	Explore and discuss characteristics of music from a variety of societal, cultural, and historical contexts.	Explore characteristics of music from a variety of societal, cultural, and historical contexts when creating, performing, and responding to music.	Demonstrate and explore characteristics of music from a variety of societal, cultural, and historical contexts when creating, performing, and responding to music.

<b>Strand</b>	<b>B. MUSIC</b>	
<b>Standard</b>	B3 – Connect with a variety of musical experiences through the relationships between music and history and culture.	
<b>Early Adolescence</b>		
<b>Grades 6-8</b>		
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Identify and describe the distinguishing characteristics of musical works from a variety of genres, styles, historical periods, and cultures.</li> <li>b. Compare and contrast, in various cultures and historical periods, the functions of music, the roles of musicians, and the conditions under which participation in music typically occurs.</li> <li>c. Explore unfamiliar musical works by genre, style, historical period, and/or culture and defend the classification.</li> </ul>	
<b>Adolescence</b>		
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Advanced</b>
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Identify and describe the stylistic features of known musical works that serve to define their aesthetic tradition and historical or cultural context.</li> <li>b. Identify and explore music and musicians that influenced societal change and/or politics and describe how they reflected culture at a particular time in history.</li> <li>c. With guidance, classify unfamiliar musical works by genre, style, historical period, and/or culture and defend the classification.</li> </ul>	<ul style="list-style-type: none"> <li>a. Analyze and articulate the stylistic features of known musical works that serve to define their aesthetic tradition and historical or cultural context.</li> <li>b. Analyze music and musicians that influenced societal change and/or politics and describe how they reflected culture at a particular time in history.</li> <li>c. Classify unfamiliar musical works by genre, style, historical period, and/or culture and defend the classification.</li> </ul>

Strand	B. MUSIC		
Standard	C1 – Perform a rich and diverse repertoire of music.		
<b>Childhood</b>			
	Kindergarten	Grade 1	Grade 2
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. With guidance, explore vocal range, pitch flexibility, and types of voices (i.e., whisper, speak, sing, call/shout, thinking/audiate.)</li> <li>b. With guidance, explore a variety of classroom instruments.</li> <li>c. With guidance, perform simple songs and echo phrases.</li> </ul>	<ul style="list-style-type: none"> <li>a. With guidance, sing in head voice and demonstrate types of voices.</li> <li>b. With guidance, perform on a variety of classroom instruments with proper posture and basic techniques.</li> <li>c. With guidance, perform a variety of melodies and call-and-response songs.</li> </ul>	<ul style="list-style-type: none"> <li>a. Sing in head voice with proper posture.</li> <li>b. Perform on a variety of classroom instruments with appropriate hand placement.</li> <li>c. Explore and perform basic forms in music (i.e., binary, ternary, rondo, etc.)</li> </ul>
	Grade 3	Grade 4	Grade 5
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Sing in head voice with increasing pitch accuracy using proper posture.</li> <li>b. Perform songs on a variety of classroom instruments with appropriate technique, and in various tonalities and meters.</li> <li>c. Explore and perform music in basic forms with increasing technical accuracy at a consistent tempo.</li> </ul>	<ul style="list-style-type: none"> <li>a. Sing in head voice with increasing pitch accuracy using proper posture and breath support.</li> <li>b. Perform songs on a variety of classroom instruments with appropriate technique in various tonalities and meters, and with appropriate dynamics.</li> <li>c. Explore and perform music in basic forms with increasing accuracy, proper technique, and at a consistent tempo.</li> </ul>	<ul style="list-style-type: none"> <li>a. Sing in head voice with increasing pitch accuracy, with proper posture, breath support, and appropriate tone.</li> <li>b. Perform songs on a variety of classroom instruments with appropriate technique, in various tonalities and meters, with appropriate dynamics and articulations.</li> <li>c. Perform a rich and diverse repertoire with increasing technical accuracy and proper technique at a consistent tempo.</li> </ul>

Strand	B. MUSIC	
Standard	C1 – Perform a rich and diverse repertoire of music.	
	<b>Early Adolescence</b>	
	<b>Grades 6-8</b>	
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Explore the function of the voice/instrument to support healthy singing/playing habits.</li> <li>b. Accurately and expressively sing and/or play a rich and diverse repertoire of music using appropriate skills throughout a limited range.</li> <li>c. Perform a rich and diverse repertoire of music that includes changes in tempo, key, and meter.</li> </ul>	
	<b>Adolescence</b>	
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Advanced</b>
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Practice healthy playing/singing habits.</li> <li>b. Accurately and expressively sing and/or play a rich and diverse repertoire of music using appropriate skills throughout an expanded range.</li> <li>c. Perform a rich and diverse repertoire that requires attention to phrasing and interpretation, and the ability to perform various meters and rhythms in a variety of keys.</li> </ul>	<ul style="list-style-type: none"> <li>a. Model healthy playing/singing habits and explore the long-term impacts of playing/singing.</li> <li>b. Accurately and expressively sing and/or play a rich and diverse repertoire of music using appropriate skills throughout an advanced range.</li> <li>c. Perform a rich and diverse repertoire that includes a wide range, difficult technical passages, nuanced interpretation, and greater part independence.</li> </ul>

<b>Strand</b>	<b>B. MUSIC</b>		
<b>Standard</b>	<b>C2 – Apply criteria and feedback to rehearse and re-create musical experiences.</b>		
<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	Share short songs as a group with others, in formal and/or informal settings.	Share short songs as a group with others, in formal and/or informal settings. With guidance, apply teacher-provided feedback.	Share sort songs as a group with others, in formal and/or informal settings. As a group, reflect on performances and apply feedback.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	Demonstrate short songs alone or with others, in formal and/or informal settings. With guidance, reflect on performances and apply feedback.	Recreate music experiences alone or with others, in formal and/or informal settings. With guidance, reflect on performances and apply feedback.	Recreate music experiences alone or with others, in formal and/or informal settings. Reflect on and refine performances by applying feedback.
<b>Early Adolescence</b>			
	<b>Grades 6-8</b>		
<b>Performance Expectations</b>	Analyze, evaluate, and refine music experiences using criteria and feedback from the teacher.		
<b>Adolescence</b>			
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Advanced</b>	
<b>Performance Expectations</b>	Analyze, evaluate, and refine music experiences using criteria and feedback from the teacher and others.	Analyze, evaluate, and refine personal elements of music experiences independent of guidance from the composer, conductor, or fellow musicians.	

<b>Strand</b>	<b>B. MUSIC</b>		
<b>Standard</b>	<b>D1 – Audiate and communicate musical ideas.</b>		
	<b>Childhood</b>		
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	With substantial guidance, explore the concept of audiation.	As a group, audiate and perform the motions of a poem and/or song.	With guidance, independently audiate and perform the motions of a poem and/or song.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	Demonstrate the ability to audiate with increasing accuracy by recreating familiar musical ideas alone.	Demonstrate the ability to audiate by accurately recreating familiar musical ideas alone.	Demonstrate the ability to audiate by accurately recreating familiar and unfamiliar musical ideas alone.
	<b>Early Adolescence</b>		
	<b>Grades 6-8</b>		
<b>Performance Expectations</b>	Demonstrate the ability to audiate by accurately recreating familiar and unfamiliar musical excerpts or pieces.		
	<b>Adolescence</b>		
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Advanced</b>	
<b>Performance Expectations</b>	Demonstrate the ability to audiate the elements of music in a given excerpt or piece and perform it.	Demonstrate the ability to audiate the elements of music in a given excerpt or piece and perform it in a musical or culturally authentic way.	

Strand	B. MUSIC		
Standard	D2 – Read and communicate musical ideas using terms and symbols.		
	Childhood		
	Kindergarten	Grade 1	Grade 2
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. With guidance, explore vocal flexibility and songs within an appropriate vocal range.</li> <li>b. With guidance, use movement to explore pulse in duple and triple meter.</li> <li>c. With guidance, explore music opposites (e.g., loud/soft, high/low, fast/slow, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>a. With guidance, show melodic contour and echo a variety of tonal patterns and/or fragments vocally.</li> <li>b. With guidance, maintain a steady pulse in duple and triple meter.</li> <li>c. With guidance, identify music opposites using applicable descriptors.</li> </ul>	<ul style="list-style-type: none"> <li>a. With guidance, recognize familiar tonal patterns and songs performed instrumentally and/or on a neutral syllable.</li> <li>b. With guidance, recognize rhythms of familiar songs and poems, performed instrumentally and/or on a neutral syllable.</li> <li>c. With guidance, discuss expressive qualities of music using applicable descriptors.</li> </ul>
	Grade 3	Grade 4	Grade 5
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. With guidance, echo and decode, with increasing accuracy, a variety of tonal and rhythmic patterns and songs performed instrumentally and/or vocally.</li> <li>b. Discuss and describe expressive qualities of music using applicable descriptors.</li> </ul>	<ul style="list-style-type: none"> <li>a. Echo and decode, with accuracy, a variety of tonal and rhythmic patterns and songs performed instrumentally and/or vocally. With guidance, read a variety of tonal and rhythmic patterns patterns.</li> <li>b. Identify (visually and aurally) and describe common expressive musical symbols and elements.</li> </ul>	<ul style="list-style-type: none"> <li>a. Echo, decode, and read, with accuracy, a variety of tonal and rhythmic patterns and songs performed instrumentally and/or vocally.</li> <li>b. Identify (visually and aurally), describe, and demonstrate musical terms and elements.</li> </ul>

<b>Strand</b>	<b>B. MUSIC</b>	
<b>Standard</b>	D2 – Read and communicate musical ideas using terms and symbols.	
	<b>Early Adolescence</b>	
	<b>Grades 6-8</b>	
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Read the terms and symbols for a piece of music to inform a performance or critique.</li> <li>b. Apply musical terms and symbols to express musical ideas to other musicians.</li> </ul>	
	<b>Adolescence</b>	
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Advanced</b>
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Read and interpret the terms and symbols for a piece of music to inform a performance or critique.</li> <li>b. Analyze musical terms and symbols to express musical ideas to other musicians.</li> </ul>	<ul style="list-style-type: none"> <li>a. Fluently read and interpret familiar and unfamiliar musical terms and symbols while performing.</li> <li>b. Evaluate the ability of musical terms and symbols to express subtle musical ideas to other musicians.</li> </ul>

<b>Strand</b>	<b>B. MUSIC</b>		
<b>Standard</b>	<b>E1 – Generate and conceptualize musical ideas.</b>		
<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	With guidance, explore vocal and instrumental sounds.	With guidance, improvise/create short answers, rhythmic patterns, beat motions, and/or word substitutions.	With guidance, vocally and instrumentally improvise/create short melodies and rhythms.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	Improvise/create melodic and rhythmic phrases to express a musical idea.	Improvise/create, both vocally and instrumentally, melodic and rhythmic phrases to express a musical idea with increasing complexity.	Improvise/create, both vocally and instrumentally, melodic and rhythmic phrases to express a musical idea which conveys a specific purpose.
<b>Early Adolescence</b>			
	<b>Grades 6-8</b>		
<b>Performance Expectations</b>	Generate a wide variety of musical ideas using a set of criteria.		
<b>Adolescence</b>			
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Advanced</b>	
<b>Performance Expectations</b>	Generate a wide variety of musical ideas with heightened expressive qualities by incorporating your personal feelings, opinions, and experiences.	Generate a wide variety of musical ideas considering historical and cultural contexts.	

<b>Strand</b>	<b>B. MUSIC</b>		
<b>Standard</b>	<b>E2 – Organize and develop musical ideas to achieve a creative goal.</b>		
<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	Explore visual and kinesthetic representations of sound.	With guidance, choose visual and kinesthetic representations of sound.	With guidance, plan and arrange visual and kinesthetic representations of sound.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	With guidance, plan and create rhythmic and melodic patterns through multiple pathways.	Plan, create, and notate rhythmic and melodic patterns through multiple pathways.	Plan, create, notate, and refine rhythmic and melodic patterns to convey musical ideas.
<b>Early Adolescence</b>			
	<b>Grades 6-8</b>		
<b>Performance Expectations</b>	Use a goal-oriented process to select, develop ideas, and combine elements of music to improvise, compose, or arrange music.		
<b>Adolescence</b>			
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Advanced</b>	
<b>Performance Expectations</b>	Plan, select, and combine musical ideas to achieve a musical goal.	Plan, select, and combine music from multiple genres to achieve a musical goal.	

<b>Strand</b>	<b>B. MUSIC</b>		
<b>Standard</b>	<b>E3 – Refine and complete music work.</b>		
	<b>Childhood</b>		
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	With guidance, explore ways to change a familiar song or poem.	With guidance, apply collaborative alterations to a familiar song or poem.	With guidance, apply individually selected alterations to a familiar song or poem.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	With guidance, identify ways to use feedback toward musical ideas.	With guidance, use feedback to refine musical ideas.	Use feedback to refine musical ideas.
	<b>Early Adolescence</b>		
	<b>Grades 6-8</b>		
<b>Performance Expectations</b>	Refine musical works using given criteria.		
	<b>Adolescence</b>		
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Advanced</b>	
<b>Performance Expectations</b>	Refine musical works using feedback and considering audience and venue to better achieve a musical goal.	Refine musical works seeking feedback from other artists in the music community.	

<b>Strand</b>	<b>B. MUSIC</b>		
<b>Standard</b>	<b>F1 – Identify positive inter- and intra-personal skills that impact the quality of a musician’s art and participation in the arts.</b>		
	<b>Childhood</b>		
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	Demonstrate taking turns and active listening skills.	Explore cooperative skills (individual and group responsibilities) in order to perform as a group.	With guidance, demonstrate active participation and communication skills in group music making (e.g., basic problem solving, compromise, inclusion, personal responsibility, etc.)
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	Demonstrate active participation and communication skills in group music making (e.g., basic problem solving, compromise, inclusion, personal responsibility, etc.)	Identify skills and habits that support group music-making goals.	Identify and demonstrate skills and habits that positively affect group music-making goals.
	<b>Early Adolescence</b>		
	<b>Grades 6-8</b>		
<b>Performance Expectations</b>	Demonstrate positive interpersonal skills and analyze how interpersonal skills affect participation in the arts.		
	<b>Adolescence</b>		
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Advanced</b>	
<b>Performance Expectations</b>	Demonstrate positive interpersonal skills and reflect on the impact of interpersonal skills on personal success in the arts.	Demonstrate positive leadership skills and reflect on the impact of leadership skills on personal success in the arts.	

<b>Strand</b>	<b>B. MUSIC</b>		
<b>Standard</b>	<b>F2 – Make technical and expressive adjustments to meet the goals of the performing group.</b>		
<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	With guidance, perform songs and poems as a group and respond to teacher cues (i.e., my turn-your turn, start-stop, etc.)	With guidance, perform words, motions, and/or instruments of songs and poems in time with the group.	With guidance, apply simple visual cues from a conductor to a performance.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	With guidance apply simple visual and auditory cues from others.	With guidance, use visual and auditory cues from others to adjust a performance.	Use visual and auditory cues from others to adjust a performance.
<b>Early Adolescence</b>			
	<b>Grades 6-8</b>		
<b>Performance Expectations</b>	Employ strategies to address expressive challenges in a varied repertoire of music, and evaluate success using feedback from ensemble peers and other sources to refine performances.		
<b>Early Adolescence</b>			
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Advanced</b>	
<b>Performance Expectations</b>	Select strategies to address expressive challenges in a varied repertoire of music, and evaluate success using feedback from ensemble peers and other sources to refine performances.	Develop strategies to address expressive challenges in a varied repertoire of music, and evaluate success using feedback from ensemble peers and other sources to refine performances.	

### The Media Arts Standards

The media arts standards are designed to enable students to achieve media arts literacy. Media arts standards assume the diverse forms and categories of media arts as a distinct, stand-alone arts discipline, whose basic categories include the following areas: photography, imaging, sound, animation, video, web design, graphic design, interactive design, combinations utilizing mixed traditional art forms and emerging forms, multimedia, augmented reality and virtual design. The standards for media arts do not address the use of specific media, rather they provide benchmarks that art educators can adapt to specific media. Technology is embedded, integrated, or used as a tool in the media arts, but the emphasis is on process, so that the standards will remain relevant even as technology evolves.

Literacy in media arts is broad, diverse, and addresses creative, conceptual, and technical competencies that exist globally. Media arts are the emerging basis for communications, design, and social interaction in our increasingly digitally centered world, and Maine's strong tradition of art creation that supports a creative economy. Therefore, students should gain experience in production and design that has real-world relevance and applications that can include the following:

- **Multimedia Communication:** The ability to communicate and express messages in a variety of media forms or combined and mixed media, using various tools and processes, for specific purposes, intentions, and audiences.
- **Interdisciplinary Integration:** Media arts projects can incorporate multiple content areas and artistic disciplines, such as a video broadcast of student-produced documentaries, dramatic stories, and public service announcements.
- **Design Thinking:** A set of cognitive, strategic and practical processes (producing iterations, prototypes, and models, that are tested and revised) using creative problem solving by which design concepts are developed.
- **Media and Digital Literacies:** Media arts students practice critical autonomy in discerning the quality and veracity of media. They are empowered in producing their own messages and products in conscientious, civic and social - minded engagements in virtual environments.

Media arts classrooms come in many forms. They can be very active and dynamic, as well as quiet and focused. They will often use technology including a variety of emerging technologies. Students will also be collaboratively engaged in brainstorming, writing, storyboarding or prototyping, designing the environment, organizing and sharing their projects. The enactment of standards can vary as well, depending on the specific form and the way projects are organized. The standards are presented in a linear, sequential format, but teachers should understand that they can access them in any order specific to their instructional approach. For example, lessons and units can easily begin by considering a given context (Connecting), move next to analyzing examples of media arts (Responding), then proceed to generating and refining (Creating) a media artwork for presentation (Producing). Also, the standards represent portions of the holistic creative process, and may be addressed in rapid-fire succession as one is creating work. Therefore, a brainstorming session that begins with the Creating standard may also incorporate Responding and even Connecting standards. One well-structured project can address many, if not all, standards in a holistic, simultaneous manner.

<b>Strand</b>	<b>C. MEDIA ARTS</b>		
<b>Standard</b>	<b>A1 – Generate and conceptualize artistic ideas and work.</b>		
<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	Discover, play, and share ideas for media artworks.	Express and share ideas for media artworks through sketching and modeling.	Discover multiple ideas for media artworks through brainstorming and improvising.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	Develop multiple areas for media artworks using a variety of tools, methods and/or materials.	Conceive of original artistic goals for media artworks using a variety of creative methods.	Envision original ideas and innovations for media artworks using personal experiences and/or the work of others.
<b>Early Adolescence</b>			
	<b>Grades 6-8 Proficient</b>		<b>Grades 6-8 Advanced</b>
<b>Performance Expectations</b>	Formulate variations of goals and solutions for media artworks by practicing chosen creative processes (i.e., sketching, improvising, brainstorming, etc.).		Generate ideas, goals, and solutions for original media artworks through application of focused creative processes (i.e., divergent thinking, experimenting, etc.).
<b>Adolescence</b>			
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Accomplished</b>	<b>Grades 9-Diploma Advanced</b>
<b>Performance Expectations</b>	Use identified generative methods to formulate multiple ideas, develop artistic goals, and problem solve in media arts creation processes.	Strategically utilize generative methods to formulate multiple areas, refine artistic goals, and increase the originality of approaches in media arts creation processes.	Integrate aesthetic principles with a variety of generative methods to fluently form original ideas, solutions, and innovations in media arts creation processes.

<b>Strand</b>	<b>C. MEDIA ARTS</b>		
<b>Standard</b>	<b>A2 – Organize and develop artistic ideas and work.</b>		
<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	With guidance, use ideas to form plans or models for media arts productions.	With guidance, use identified ideas to form plans and models for media arts productions.	Choose ideas to create plans and models for media arts productions.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	Form, share, and test ideas, plans, and models to prepare for media arts productions.	Discuss, test, and assemble ideas, plans, and models for media arts productions, considering artistic goals and the presentation.	Develop, present, and test ideas, plans, models, and proposals for media arts productions, considering the artistic goals and audience.
<b>Early Adolescence</b>			
	<b>Grades 6-8 Proficient</b>		<b>Grades 6-8 Advanced</b>
<b>Performance Expectations</b>	Organize, propose, and evaluate artistic ideas, plans, prototypes, and production processes for media arts productions, considering purposeful intent.		Structure and critique ideas, plans, prototypes, and production processes for media arts productions, considering intent, resources, and presentation context.
<b>Adolescence</b>			
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Accomplished</b>	<b>Grades 9-Diploma Advanced</b>
<b>Performance Expectations</b>	Apply aesthetic criteria in developing, proposing, and refining artistic ideas, plans, prototypes, and production processes for media arts productions, considering original inspirations, goals, and presentation context.	Apply a personal aesthetic in designing, testing, and refining original artistic ideas, prototypes, and production strategies for media arts productions, considering artistic intentions, constraints of resources, and presentation context	Integrate a sophisticated personal aesthetic and knowledge of systems processes in forming, testing, and proposing original artistic ideas, prototypes, and production frameworks, considering complex constraints of goals, time, resources, and personal limitations.

Strand	C. MEDIA ARTS		
Standard	A3 – Refine and complete artistic work.		
<b>Early Adolescence</b>			
	Grades 6-8 Proficient	Grades 6-8 Advanced	
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Experiment with multiple approaches to produce content and components for determined purpose and meaning in media arts productions, utilizing a range of associated principles and point of view.</li> <li>b. Appraise how elements and components can be altered for intentional effects and audience, and refine media artworks to reflect purpose and audience.</li> </ul>	<ul style="list-style-type: none"> <li>a. Implement production processes to integrate content and stylistic conventions for determined meaning in media arts productions, demonstrating understanding of associated principles.</li> <li>b. Refine and modify media artworks, improving technical quality and intentionally accentuating selected expressive and stylistic elements, to reflect an understanding of purpose, audience, and place.</li> </ul>	
<b>Early Adolescence</b>			
	Grades 9-Diploma Proficient	Grades 9-Diploma Accomplished	Grades 9-Diploma Advanced
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Consolidate production processes to demonstrate deliberate choices in organizing and integrating content and stylistic conventions demonstrating understanding of associated principles in media arts productions.</li> <li>b. Refine and modify media artworks, honing aesthetic quality and intentionally accentuating stylistic elements, to reflect an understanding of personal goals and preferences.</li> </ul>	<ul style="list-style-type: none"> <li>a. Consolidate production processes to demonstrate deliberate choices in organizing and integrating content and stylistic conventions, demonstrating understanding of associated principles in media arts productions.</li> <li>b. Refine and elaborate aesthetic elements and technical components to intentionally form impactful expressions in media artworks for specific purposes, intentions, audiences, and contexts.</li> </ul>	<ul style="list-style-type: none"> <li>a. Synthesize content, processes, and components to express compelling purpose, story, emotion, or ideas in complex media arts productions, demonstrating mastery of associated principles.</li> <li>b. Intentionally and consistently refine and elaborate elements and components to form impactful expressions in media artworks, directed at specific purposes, audiences, and contexts.</li> </ul>

<b>Strand</b>	<b>C. MEDIA ARTS</b>		
<b>Standard</b>	<b>B1 – Select, analyze, and interpret artistic work for presentation.</b>		
<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	With guidance, combine art forms and media content.	Combine varied academic, arts, and media content in media artworks.	Practice combining varied academic, arts, and media content into unified media artworks.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	Practice combining varied academic, arts, and media forms and content into unified media artworks.	Demonstrate how a variety of academic, arts, and media forms and content may be mixed and coordinated into media artworks.	Create media artworks through the integration of multiple contents and forms.
<b>Early Adolescence</b>			
	<b>Grades 6-8 Proficient</b>		<b>Grades 6-8 Advanced</b>
<b>Performance Expectations</b>	Validate how integrating multiple contents and forms can support a central idea in a media artwork.		Integrate multiple contents and forms into unified media arts productions that convey specific themes or ideas.
<b>Early Adolescence</b>			
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Accomplished</b>	<b>Grades 9-Diploma Advanced</b>
<b>Performance Expectations</b>	Integrate various arts, media arts forms, and content into unified media arts productions, considering the reaction and interaction of the audience.	Integrate various arts, media arts forms, and academic content into unified media arts productions that retain thematic integrity and stylistic continuity.	Synthesize various arts, media arts, forms and academic content into unified media arts productions that retain artistic fidelity across platforms.

Strand	C. MEDIA ARTS		
Standard	B2 – Develop and refine artistic techniques and work for presentation.		
<b>Childhood</b>			
	Kindergarten	Grade 1	Grade 2
<b>Performance Expectations</b>	Identify and share basic creative skills, such as performing, use of tools, making choices, and cooperating in creating media artworks.	Describe, experiment, plan, and demonstrate various artistic skills, varying techniques and roles, while collaborating and sharing media arts productions.	Enact roles to demonstrate basic ability in various artistic, design, technical, and soft skills. Demonstrate experimentation skills and use tools to capture and form media artworks.
	Grade 3	Grade 4	Grade 5
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Exhibit emerging ability in a variety of artistic, design, technical, organizational roles, and group planning in media arts productions.</li> <li>b. Exhibit basic creative skills, use of tools and techniques to invite new content and solutions within and through media arts productions.</li> </ul>	<ul style="list-style-type: none"> <li>a. Enact identified roles to practice foundational artistic, design, technical, and soft skills.</li> <li>b. Practice foundational innovative abilities, and use design thinking collaboratively in addressing problems within and through media arts productions.</li> <li>c. Demonstrate use of tools and techniques in standard and novel ways while constructing media artworks.</li> </ul>	<ul style="list-style-type: none"> <li>a. Enact various roles to practice fundamental ability in artistic, design, technical, and soft skills in media arts productions.</li> <li>b. Practice fundamental creative and innovative abilities, expanding conventions, addressing problems within and through media arts productions.</li> <li>c. Examine how tools and techniques could be used in standard and experimental ways in constructing media artworks.</li> </ul>

Strand	C. MEDIA ARTS	
Standard	B2 – Develop and refine artistic techniques and work for presentation.	
<b>Early Adolescence</b>		
	Grades 6-8 Proficient	Grades 6-8 Advanced
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Develop a variety of artistic, design, technical, and soft skills through performing various assigned roles in producing media artworks.</li> <li>b. Develop a variety of creative and adaptive innovation abilities, in developing solutions within and through media arts productions.</li> <li>c. Demonstrate adaptability using tools and techniques in standard ways in constructing media artworks.</li> </ul>	<ul style="list-style-type: none"> <li>a. Demonstrate a defined range of artistic, design, technical, and soft skills through performing specific roles in producing media artworks, such as strategizing and collaborative communication.</li> <li>b. Demonstrate a defined range of creative and adaptive innovation abilities, such as divergent solutions and bending conventions, in developing new solutions for identified problems within and through media arts productions.</li> <li>c. Demonstrate adaptability using tools, techniques, and content in standard and experimental ways to communicate intent in the production of media artworks.</li> </ul>

Strand	C. MEDIA ARTS		
Standard	B2 – Develop and refine artistic techniques and work for presentation.		
<b>Adolescence</b>			
	Grades 9-Diploma Proficient	Grades 9-Diploma Accomplished	Grades 9-Diploma Advanced
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Demonstrate progression in artistic, design, technical and soft skills, as a result of selecting and fulfilling specified roles in the production of a variety of media artworks.</li> <li>b. Develop and refine a determined range of creative and adaptive innovation abilities, design thinking, and risk taking, in addressing identified challenges and constraints within and through media arts productions.</li> <li>c. Demonstrate adaptation and innovation through the combination of tools, techniques, and content, in standard and innovative ways to communicate intent in the production of media artworks.</li> </ul>	<ul style="list-style-type: none"> <li>a. Demonstrate effective command of artistic, design, technical, and soft skills in managing and producing media artworks. Demonstrate effective ability in creative and adaptive innovation to address sophisticated challenges within and through media arts productions.</li> <li>b. Demonstrate the skillful adaptation and combination of styles, techniques, and interactivity to achieve specific expressive goals in the production of a variety of media artworks.</li> </ul>	<ul style="list-style-type: none"> <li>a. Employ mastered artistic, design, technical, and soft skills in managing and producing media artworks.</li> <li>b. Fluently employ mastered creative and innovative adaptability in formulating lines of inquiry and solutions to address complex challenges within and through media arts productions.</li> <li>c. Independently utilize and adapt tools, styles, and systems in standard, innovative, and experimental ways in the production of complex media artworks.</li> </ul>

Strand	C. MEDIA ARTS		
Standard	B3 – Convey meaning through the performance/presentation of artistic work.		
<b>Childhood</b>			
	Kindergarten	Grade 1	Grade 2
<b>Performance Expectations</b>	With guidance, identify meaning and share roles in presenting media artworks.	With guidance, discuss presentation conditions and perform a task in presenting media artworks.	Identify, describe, and share presentation conditions and performance tasks in presenting media artworks.
	Grade 3	Grade 4	Grade 5
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Identify and describe the presentation conditions and take on roles and processes in presenting or distributing media artworks.</li> <li>b. Share results of and improvements for presenting media artworks.</li> </ul>	<ul style="list-style-type: none"> <li>a. Explain the presentation conditions and fulfill a role and processes in presenting or distributing media artworks.</li> <li>b. Explain results of and improvements for presenting media artworks.</li> </ul>	<ul style="list-style-type: none"> <li>a. Compare qualities and purposes of presentation formats and fulfill a role and associated processes in presentation and/or distribution of media artworks.</li> <li>b. Compare results of and improvements for presenting media artworks.</li> </ul>

Strand	C. MEDIA ARTS		
Standard	B3 – Convey meaning through the performance/presentation of artistic work.		
<b>Early Adolescence</b>			
	Grades 6-8 Proficient	Grades 6-8 Advanced	
<b>Performance Expectations</b>	a. Analyze various presentation formats and fulfill various tasks and defined processes in the presentation and/or distribution of media artworks. b. Evaluate results of and improvements for presenting media artworks.	a. Design the presentation and distribution of media artworks through multiple formats and/or contexts. b. Evaluate the results of and implement improvements for presenting media artworks, considering impact.	
<b>Adolescence</b>			
	Grades 9-Diploma Proficient	Grades 9-Diploma Accomplished	Grades 9-Diploma Advanced
<b>Performance Expectations</b>	a. Design the presentation and distribution of collections of media artworks, considering combinations of artworks, formats, and audiences. b. Evaluate and implement improvements in presenting media artworks, considering personal and local impacts.	a. Curate and design the presentation and distribution of collections of media artworks through a variety of contexts, audiences, physical and virtual channels. b. Evaluate and implement improvements in presenting media artworks, considering personal, local, and social impacts.	a. Curate, design, and promote the presentation and distribution of media artworks for intentional impacts, through a variety of contexts, such as markets and venues. b. Independently evaluate, compare, and integrate improvements in presenting media artworks, considering personal to global impacts, such as new understandings that were gained by the artist and audience.

<b>Strand</b>	<b>C. MEDIA ARTS</b>		
<b>Standard</b>	<b>C1 – Perceive and analyze artistic work.</b>		
<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	Recognize and share components and messages in media artworks.	With guidance, identify components and messages in a variety of media artworks.	Identify and describe the components, varied experiences, and messages in media artworks.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	Identify and describe how messages are created by components in media artworks and how various forms, methods, and styles in media artworks manage audience experience.	a. Identify, describe, and explain how messages are created by components in media artworks. b. Identify, describe, and explain how various forms, methods, and styles in media artworks manage audience experience.	a. Identify, describe, and differentiate how message and meaning are created by components in media artworks. b. Identify, describe, and differentiate how various forms, methods, and styles in media artworks manage audience experience.
<b>Early Adolescence</b>			
	<b>Grades 6-8 Proficient</b>		<b>Grades 6-8 Advanced</b>
<b>Performance Expectations</b>	Identify, describe, and analyze how message and meaning are created by components in media artworks in order to manage audience experience.		Compare, contrast, and analyze the qualities of and relationships between the components and style in media artworks in order to manage audience experience and create intention.

Strand	C. MEDIA ARTS		
Standard	C1 – Perceive and analyze artistic work.		
<b>Early Adolescence</b>			
	Grades 9-Diploma Proficient	Grades 9-Diploma Accomplished	Grades 9-Diploma Advanced
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Analyze the qualities of and relationships between components, style, and preferences communicated by media artworks and artists.</li> <li>b. Analyze how a variety of media artworks manage audience experience and create intention through multimodal perception.</li> </ul>	<ul style="list-style-type: none"> <li>a. Analyze and synthesize the qualities and relationships of the components in a variety of media artworks, and feedback on how they impact audience.</li> <li>b. Analyze how a broad range of media artworks manage audience experience, create intention and persuasion through multimodal perception.</li> </ul>	<ul style="list-style-type: none"> <li>a. Analyze and synthesize the qualities and relationships of the components and audience impact in a variety of media artworks, and how they impact audience.</li> <li>b. Survey an exemplary range of media artworks, analyzing methods for managing audience experience, creating intention and persuasion through multimodal perception and systemic communications.</li> </ul>

<b>Strand</b>	<b>C. MEDIA ARTS</b>		
<b>Standard</b>	<b>C2 – Interpret intent and meaning in artistic work.</b>		
<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	With guidance, share observations regarding a variety of media artworks.	With guidance, identify the meanings of a variety of media artworks.	Determine the purposes and meanings of media artworks, considering their context.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	Determine the purposes and meanings of media artworks while describing their context.	Determine and explain reactions and interpretations to a variety of media artworks, considering their purpose and context.	Determine and compare personal and group interpretations of a variety of media artworks, considering their intention and context.
<b>Early Adolescence</b>			
	<b>Grades 6-8 Proficient</b>		<b>Grades 6-8 Advanced</b>
<b>Performance Expectations</b>	Analyze the intent of a variety of media artworks, using given criteria.		Analyze the intent and meanings of a variety of media artworks, focusing on intentions, forms, and various contexts.
<b>Early Adolescence</b>			
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Accomplished</b>	<b>Grades 9-Diploma Advanced</b>
<b>Performance Expectations</b>	Analyze the intent, meanings, and reception of a variety of media artworks, focusing on personal and cultural contexts.	Analyze the intent, meanings, and influence of a variety of media artworks, based on personal, societal, historical, and cultural contexts.	Analyze the intent, meanings, and impacts of diverse media artworks, considering complex factors of context and bias.

<b>Strand</b>	<b>C. MEDIA ARTS</b>		
<b>Standard</b>	<b>C3 – Apply criteria to evaluate artistic work.</b>		
<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	Share appealing qualities and possible changes in media artworks.	Identify the effective parts of and possible changes to media artworks, considering viewers.	Discuss the effectiveness of and improvements for media artworks, considering their context.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	Identify basic criteria for and evaluate media artworks, considering possible improvements and context.	Identify and apply basic criteria for evaluating and improving media artworks and production processes, considering context.	Determine and apply criteria for evaluating media artworks and production processes, considering context, and practicing constructive feedback.
<b>Early Adolescence</b>			
	<b>Grades 6-8 Proficient</b>		<b>Grades 6-8 Advanced</b>
<b>Performance Expectations</b>	Determine and apply specific criteria to evaluate various media artworks and production processes, consider context and practice providing constructive feedback.		Evaluate media artworks and production processes with developed criteria, considering context and artistic goals.
<b>Adolescence</b>			
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Accomplished</b>	<b>Grades 9-Diploma Advanced</b>
<b>Performance Expectations</b>	Evaluate media art works and production processes at decisive stages, using identified criteria, and considering context and artistic goals.	Form and apply defensible evaluations in the constructive and systemic critique of media artworks and production processes.	Independently develop rigorous evaluations of, and strategically give feedback for, media artworks and production processes, considering complex goals and factors.

<b>Strand</b>	<b>C. MEDIA ARTS</b>		
<b>Standard</b>	<b>D1 – Synthesize and relate knowledge and personal experiences to create art.</b>		
<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	Use personal experiences and share choices in making media artworks.	Use personal experiences, interests, and models in creating and sharing media artworks.	a. Use personal experiences, interests, information, and models in creating media artworks. b. Discuss media artworks, describing their meaning and purpose.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	Use personal and external resources to create media artworks. Identify and show how media artworks form meanings, situations, and/or culture.	a. Examine and use personal and external resources, and cultural understanding, to create media artworks. b. Examine and show how media artworks form meanings, situations, and/or cultural experiences.	c. Access and use internal and external resources to create media artworks. d. Examine and show how media artworks form meanings, situations, and cultural experiences.
<b>Early Adolescence</b>			
	<b>Grades 6-8 Proficient</b>	<b>Grades 6-8 Advanced</b>	
<b>Performance Expectations</b>	a. Access, evaluate, and use internal and external resources to create media artworks, such as knowledge, experiences, interests, and research. b. Explain and show how media artworks form new meanings, situations, and cultural experiences.	Access, evaluate, and use internal and external resources to inform the creation of media artworks, such as cultural and societal knowledge, research, and exemplary works.	

Strand	C. MEDIA ARTS		
Standard	D1 – Synthesize and relate knowledge and personal experiences to create art.		
<b>Adolescence</b>			
	Grades 9-Diploma Proficient	Grades 9-Diploma Accomplished	Grades 9-Diploma Advanced
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Access, evaluate, and integrate personal and external resources to inform the creation of original media artworks, such as personal interests and cultural experiences.</li> <li>b. Explain and demonstrate the use of media artworks to expand meaning and knowledge, and create cultural experiences, such as learning and sharing through online environments.</li> </ul>	<ul style="list-style-type: none"> <li>a. Synthesize internal and external resources to enhance the creation of persuasive media artworks, such as cultural connections, introspection, research, and exemplary works.</li> <li>b. Explain and demonstrate the use of media artworks to synthesize new meaning and knowledge, and reflect and form cultural experiences, such as new connections between themes and ideas, local and global networks, and personal influence.</li> </ul>	<ul style="list-style-type: none"> <li>a. Independently and proactively access relevant and qualitative resources to inform the creation of cogent media artworks.</li> <li>b. Demonstrate and expound on the use of media artworks to consummate new meaning, knowledge, and impactful cultural experiences.</li> </ul>

Strand	C. MEDIA ARTS		
Standard	D2 – Relate artistic ideas and works with societal, cultural, and historical context to deepen understanding.		
Childhood			
	Kindergarten	Grade 1	Grade 2
<b>Performance Expectations</b>	With guidance, share ideas, relating media artworks with everyday life.	<ul style="list-style-type: none"> <li>a. Discuss and describe media artworks in everyday life.</li> <li>b. Interact appropriately with media arts tools and environments considering safety, rules, and fairness.</li> </ul>	<ul style="list-style-type: none"> <li>a. Discuss how media artworks and ideas relate to everyday and cultural life, such as media messages and media environments.</li> <li>b. Interact appropriately with media arts tools and environments, considering safety, rules, and fairness.</li> </ul>
	Grade 3	Grade 4	Grade 5
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Identify how media artworks and ideas relate to everyday and cultural life and can influence values and online attitudes and behavior.</li> <li>b. Examine and interact appropriately with media arts tools and environments, considering safety, rules, and fairness.</li> </ul>	<ul style="list-style-type: none"> <li>a. Explain verbally and/or in media artworks, how media artworks and ideas relate to everyday cultural life and technology use.</li> <li>b. Examine and interact appropriately with media arts tools and environments, considering ethics, rules, and fairness.</li> </ul>	<ul style="list-style-type: none"> <li>a. Research and show how media artworks and ideas relate to personal, social, and community life.</li> <li>b. Examine, discuss and interact appropriately with media arts tools and environments, considering ethics, rules, and media literacy.</li> </ul>

Strand	C. MEDIA ARTS		
Standard	D2 – Relate artistic ideas and works with societal, cultural, and historical context to deepen understanding.		
<b>Early Adolescence</b>			
	Grades 6-8 Proficient	Grades 6-8 Advanced	
<b>Performance Expectations</b>	a. Research and show how media artworks and ideas relate to personal life, and social, community, and cultural situations, such as personal identity, history, and entertainment. b. Analyze and interact appropriately with media arts tools and environments, considering fair use and copyright, ethics, and media literacy.	a. Demonstrate and explain how media artworks and ideas relate to various contexts, purposes, and values, such as democracy, environment, and connecting people and places. b. Analyze and responsibly interact with media arts tools, environments, legal and technological contexts, considering ethics, media literacy, social media, and virtual worlds.	
<b>Adolescence</b>			
	Grades 9-Diploma Proficient	Grades 9-Diploma Accomplished	Grades 9-Diploma Advanced
<b>Performance Expectations</b>	a. Demonstrate and explain how media artworks and ideas relate to various contexts, purposes, and values, such as social trends, power, equality, and personal/cultural identity. b. Critically evaluate and effectively interact with legal, technological, systemic, and vocational contexts of media arts, considering ethics, media literacy, social media, virtual worlds, and digital identity.	a. Examine in depth and demonstrate the relationships of media arts ideas and works to various contexts, purposes, and values, such as markets, systems, propaganda, and truth. b. Critically investigate and ethically interact with legal, technological, systemic, and vocational contexts of media arts, considering ethics, media literacy, digital identity, and artist/audience interactivity.	a. Demonstrate the relationships of media arts ideas and works to personal and global contexts, purposes, and values, through relevant and impactful media artworks. b. Critically investigate and strategically interact with legal, technological, systemic, and vocational contexts of media arts.

### The Visual Arts Standards

The Visual Arts Standards are designed to enable students to acquire the knowledge, skills, and understandings to navigate the breadth and depth of the Visual Arts experiences through disciplinary literacy and the development of technical artistic skills. Visual Arts literacy occurs as a result of engaging in an authentic creative process, through the use of a wide variety of traditional, nontraditional, and emerging materials, as well as the inclusion of technology, and applying the formal technical artistic skills of the Elements of Art and Principles of Design, knowing an arts language to describe art, and discovering the expressive qualities of art. Creating, Presenting, Responding, and Connecting are essential components of sequential instruction in a comprehensive K-12 Visual Arts program that foster curiosity and collaboration. The Visual Arts Standards describe expectations for learning in the Visual Arts regardless of style, genre, or media. The Standards serve as an impetus for Arts Educators, through the support of their administrators, to inspire, support, and guide their students in the many facets of Visual Arts education so that Maine students are artistically literate and prepared for a lifelong appreciation, understanding, and engagement in the arts.

While presented chronologically, the processes are best designed and taught in a blended fashion to support rich artistic skills and behaviors. Embedded in the standards are ideas about how Visual Arts learning can be broadened and deepened to support students in making meaning of their lives and their world. They support communicating and learning in art by providing language needed for students and stakeholders alike.

Strand	D. VISUAL ARTS		
Standard	A1 – Generate and conceptualize artistic ideas and work.		
	Childhood		
	Kindergarten	Grade 1	Grade 2
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Engage in exploration and imaginative play with various arts materials.</li> <li>b. Engage collaboratively in creative art-making in response to an artistic problem.</li> </ul>	<ul style="list-style-type: none"> <li>a. Engage collaboratively in exploration and imaginative play with materials.</li> <li>b. Use observation and investigation in preparation for making a work of art.</li> </ul>	<ul style="list-style-type: none"> <li>a. Brainstorm to generate multiple approaches to an art or design problem.</li> <li>b. Make art or design with various materials and tools to explore personal interests, questions, and curiosities.</li> </ul>
	Grade 3	Grade 4	Grade 5
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Elaborate on an imaginative idea.</li> <li>b. Apply knowledge of available resources, tools, and technologies to investigate personal ideas through the art-making process.</li> </ul>	<ul style="list-style-type: none"> <li>a. Brainstorm individual and collaborative approaches to a creative art or design problem.</li> <li>b. Collaboratively set goals and create artwork that is meaningful and has purpose to the makers.</li> </ul>	<ul style="list-style-type: none"> <li>a. Combine ideas to generate an innovative idea for art-making.</li> <li>b. Identify and demonstrate diverse methods of artistic investigation to choose an approach for beginning a work of art.</li> </ul>

Strand	D. VISUAL ARTS		
Standard	A1 – Generate and conceptualize artistic ideas and work.		
Early Adolescence			
	Grades 6-8 Proficient	Grades 6-8 Accomplished	Grades 6-8 Advanced
Performance Expectations	<ul style="list-style-type: none"> <li>a. Collaboratively exchange strategies, concepts, and different points of view to generate innovative ideas for creating art.</li> <li>b. Formulate an artistic investigation of personally relevant content for creating art.</li> </ul>	<ul style="list-style-type: none"> <li>a. Apply strategies, concepts, and different points of view to overcome creative blocks.</li> <li>b. Develop criteria to guide making a work of art or design to meet an identified goal.</li> </ul>	<ul style="list-style-type: none"> <li>a. Document and reflect on the stages of the creative process visually and/or verbally in traditional or new media.</li> <li>b. Collaboratively shape an artistic investigation of an aspect of present-day life using a contemporary practice of art and design.</li> </ul>
Adolescence			
	Grades 9-Diploma Proficient	Grades 9-Diploma Accomplished	Grades 9-Diploma Advanced
Performance Expectations	<ul style="list-style-type: none"> <li>a. Use multiple art-making approaches to being creative endeavors.</li> <li>b. Shape an artistic investigation of an aspect of present-day life using a contemporary practice of art or design.</li> </ul>	<ul style="list-style-type: none"> <li>a. Formulate, individually or collaboratively, new creative problems based on students' existing artwork.</li> <li>b. Choose from a range of materials and methods of traditional and contemporary artistic practices to plan works of art and design.</li> </ul>	<ul style="list-style-type: none"> <li>a. Visualize and hypothesize to generate ideas and plans for directions for creating art and design that meets human needs and wants.</li> <li>b. Choose from a range of materials and methods of traditional and contemporary artistic practices, following or breaking established conventions, to plan the making of a body of original artworks based on a theme, idea, or concept.</li> </ul>

Strand	D. VISUAL ARTS			
Standard	A2 – Organize and develop artistic ideas and work.			
<b>Childhood</b>				
	Kindergarten	Grade 1	Grade 2	
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Build skills in various media and approaches to art-making through experimentation.</li> <li>b. Identify safe and nontoxic art materials, tools, and equipment.</li> <li>c. Create art that represents natural and constructed environments.</li> </ul>	<ul style="list-style-type: none"> <li>a. Explore uses of materials and tools to create works of art or design.</li> <li>b. Demonstrate safe procedures for using and leaning materials, tools, and equipment while making art.</li> <li>c. Identify and classify uses of everyday objects through drawings, diagrams, sculptures, or other visual means.</li> </ul>	<ul style="list-style-type: none"> <li>a. Experiment with various materials and tools to explore personal interests in a work of art or design.</li> <li>b. Demonstrate safe procedures for using and cleaning art tools, equipment, and studio spaces.</li> <li>c. Repurpose found objects to make a new artwork or design.</li> </ul>	
	Grade 3	Grade 4	Grade 5	
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Create personally satisfying artwork using a variety of artistic processes and materials.</li> <li>b. Demonstrate an understanding of the safe and proficient use of materials, tools, and equipment for a variety of artistic processes.</li> <li>c. Individually and collaboratively construct representations diagrams, or maps of places that are part of everyday life.</li> </ul>	<ul style="list-style-type: none"> <li>a. Explore and invent art-making techniques and approaches.</li> <li>b. Utilize and care for materials, tools, and equipment in a manner that prevents danger to oneself or others.</li> <li>c. Document, describe, and represent regional constructed environments.</li> </ul>	<ul style="list-style-type: none"> <li>a. Experiment and develop skills in multiple art-making techniques and approaches through practice.</li> <li>b. Demonstrate quality craftsmanship through care for, and use of, materials, tools, and equipment.</li> <li>c. Identify, describe, and visually document places and/or objects of personal significance.</li> </ul>	

Strand	D. VISUAL ARTS		
Standard	A2 – Organize and develop artistic ideas and work.		
Early Adolescence			
	Grades 6-8 Proficient	Grades 6-8 Accomplished	Grades 6-8 Advanced
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Demonstrate openness in trying new ideas, materials, methods, and approaches in making works of art and design.</li> <li>b. Explain environmental implications of conservation, care, and clean-up of arts materials, tools, and equipment.</li> <li>c. Design or redesign objects, places, or systems that meet the identified needs of diverse users.</li> </ul>	<ul style="list-style-type: none"> <li>a. Demonstrate persistence in developing skills with various materials, methods, and approaches in creating works of art or design.</li> <li>b. Demonstrate awareness of ethical responsibilities to oneself and others when posting and sharing images and other materials through the internet, social media, and other communication formats.</li> <li>c. Apply visual organizational strategies to design and produce a work of art, design, or media that clearly communicates information and ideas.</li> </ul>	<ul style="list-style-type: none"> <li>a. Demonstrate willingness to experiment, innovate, and take risks to pursue ideas, forms, and meanings that emerge in the process of art-making or designing.</li> <li>b. Demonstrate awareness of practices, issues, and ethics of appropriation, fair use, copyright, open source, and creative commons as they apply to creating works of art and design.</li> <li>c. Select, organize, and design images and text to make visually clear and compelling artistic work.</li> </ul>

Strand	D. VISUAL ARTS		
Standard	A2 – Organize and develop artistic ideas and work.		
<b>Adolescence</b>			
	Grades 9-Diploma Proficient	Grades 9-Diploma Accomplished	Grades 9-Diploma Advanced
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Engage in making a work of art or design without having a preconceived plan.</li> <li>b. Explain how traditional and nontraditional materials may impact human health and the environment, and demonstrate safe handling of materials, tools, and equipment.</li> <li>c. Collaboratively develop a proposal for an installation, artwork, or space design that transforms the perception and experience of a particular place.</li> </ul>	<ul style="list-style-type: none"> <li>a. Through experimentation, practice, and persistence, demonstrate acquisition of skills and knowledge in a chosen art form.</li> <li>b. Demonstrate awareness of ethical implications of making and distributing creative work.</li> <li>c. Redesign an object, system, place, or design in response to contemporary issues.</li> </ul>	<ul style="list-style-type: none"> <li>a. Experiment, plan, and make multiple works of art and design that explore a personally meaningful theme, idea, or concept.</li> <li>b. Demonstrate understanding of the importance of balancing freedom and responsibility in the use of images, materials, tools, and equipment in the creation and circulation of creative work.</li> <li>c. Demonstrate in works of art or design how visual and material culture defines, shapes, enhances, inhibits, and/or empowers peoples' lives.</li> </ul>

<b>Strand</b>	<b>D. VISUAL ARTS</b>		
<b>Standard</b>	<b>A3 – Refine and complete artistic work.</b>		
<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	Explain the process of making art while creating.	Use vocabulary to describe choices while creating art.	Discuss and reflect with peers about choices made in creating artwork.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	Discuss, reflect, and add details to enhance an artwork’s emerging meaning.	Revise artwork in progress on the basis of insights gained through peer discussion.	Use art vocabulary to describe personal choices in artmaking and in creating artist statements.
<b>Early Adolescence</b>			
	<b>Grades 6-8 Proficient</b>	<b>Grades 6-8 Accomplished</b>	<b>Grades 6-8 Advanced</b>
<b>Performance Expectations</b>	Reflect on whether personal artwork conveys the intended meaning and revise accordingly.	Reflect on and explain important information about personal artwork in an artist statement or another format.	Apply relevant criteria to examine, reflect on, and plan revisions for a work of art or design in progress.
<b>Adolescence</b>			
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Accomplished</b>	<b>Grades 9-Diploma Advanced</b>
<b>Performance Expectations</b>	Apply relevant criteria from traditional and contemporary cultural contexts to examine, reflect on, and plan revisions for works of art and design in progress.	Engage in constructive critique with peers, then reflect on, re-engage, revise, and refine works of art and design in response to personal artistic vision.	Reflect on, re-engage, revise, and refine works of art or design considering relevant traditional and contemporary criteria as well as personal artistic vision.

<b>Strand</b>	<b>D. VISUAL ARTS</b>		
<b>Standard</b>	<b>B1 – Select, analyze, and interpret artistic work for presentation.</b>		
<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	Select art objects for personal portfolio and display, explaining why they were chosen.	Explain why some objects, artifacts, and artworks are valued over others.	Categorize artwork based on a theme or concept for an exhibition.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	Investigate and discuss possibilities and limitations of spaces, for exhibiting artwork, including digital spaces.	Explore how past, present, and emerging technologies have impacted the preservation and presentation of artwork.	Define the roles and responsibilities of a curator, explaining the skills and knowledge needed in preserving, maintaining, and presenting objects, artifacts, and artwork.
<b>Early Adolescence</b>			
	<b>Grades 6-8 Proficient</b>	<b>Grades 6-8 Accomplished</b>	<b>Grades 6-8 Advanced</b>
<b>Performance Expectations</b>	Analyze similarities and differences associated with preserving and presenting two-dimensional, three-dimensional, and digital artwork.	Compare and contrast how technologies have changed the way artwork is preserved, presented, and experienced.	Develop and apply criteria for evaluating a collection of artworks for presentation.
<b>Adolescence</b>			
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Accomplished</b>	<b>Grades 9-Diploma Advanced</b>
<b>Performance Expectations</b>	Analyze, select, and curate artifacts and/or artworks for presentation and preservation.	Analyze, select, and critique personal artwork for a collection or portfolio presentation.	Critique, justify, and present choices in the process of analyzing, selecting, curating, and presenting artwork for a specific exhibit or event.

<b>Strand</b>	<b>D. VISUAL ARTS</b>		
<b>Standard</b>	<b>B2 – Develop and refine artistic techniques and work for presentation.</b>		
<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	Explain the purpose of a portfolio or collection.	Ask and answer questions such as where, when, why, and how artwork should be prepared for presentation or preservation.	Distinguish between different materials or artistic techniques for preparing artwork for presentation.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	Identify exhibit space and prepare works of art, including artists' statements, for presentation.	Analyze the various considerations for presenting and protecting art in various locations, indoor or outdoor settings, in temporary or permanent forms, and in physical or digital formats.	Develop a logical argument for safe and effective use of materials and techniques for preparing and presenting artwork.
<b>Early Adolescence</b>			
	<b>Grades 6-8 Proficient</b>	<b>Grades 6-8 Accomplished</b>	<b>Grades 6-8 Advanced</b>
<b>Performance Expectations</b>	Individually or collaboratively, develop a visual plan for displaying works of art, analyzing exhibit space, the accessibility for the viewer, and the layout of the exhibit.	Based on criteria, analyze and evaluate methods for preparing, preserving, and presenting art.	Collaboratively prepare and present selected theme-based artwork for display and formulate exhibition narratives for the viewer.
<b>Adolescence</b>			
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Accomplished</b>	<b>Grades 9-Diploma Advanced</b>
<b>Performance Expectations</b>	Individually or collaboratively, analyze and evaluate the reasons and ways an exhibition is presented and how it is accessible to the viewer.	Evaluate, select, and apply methods or processes appropriate to display artwork in a specific place.	Investigate, compare, and contrast methods and processes for preserving, presenting, and protecting a variety of art works.

<b>Strand</b>	<b>D. VISUAL ARTS</b>		
<b>Standard</b>	<b>B3 – Convey meaning through the presentation of artistic work.</b>		
<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	Explain what an art museum is and distinguish how an art museum is different from other buildings.	Identify the roles and responsibilities of people who work in and visit museums and places where artwork is displayed.	Analyze how art exhibited inside and outside of schools (such as in museums, galleries, virtual spaces, and other places) contributes to communities.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	Investigate and explain how and where various cultures around the world record and illustrate stories and history of life through art.	Compare and contrast purposes of art museums, art galleries, and other places, as well as the types of personal experiences they provide.	Cite evidence about how an exhibition in a museum or other places presents ideas and provides information about a specific concept or topic.
<b>Early Adolescence</b>			
	<b>Grades 6-8 Proficient</b>	<b>Grades 6-8 Accomplished</b>	<b>Grades 6-8 Advanced</b>
<b>Performance Expectations</b>	Assess, explain, and provide evidence of how museums or other places reflect history and values of a community and/or culture.	Compare and contrast viewing and experiencing collections and exhibitions in different places (physical and/or virtual).	Analyze why and how an exhibition or collection may influence ideas, beliefs, and experiences.
<b>Adolescence</b>			
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Accomplished</b>	<b>Grades 9-Diploma Advanced</b>
<b>Performance Expectations</b>	Analyze and describe the impact that an exhibition or collection has on personal awareness of social, cultural, or political beliefs and understandings.	Make, explain, and justify connections between artists or artwork and social, cultural, and political history.	Curate a collection of objects, artifacts, or artwork to impact the viewer's understanding of social, cultural, and/ or political experiences.

Strand	D. VISUAL ARTS		
Standard	C1 – Perceive and analyze artistic work.		
<b>Childhood</b>			
	Kindergarten	Grade 1	Grade 2
<b>Performance Expectations</b>	a. Identify uses of art within one’s personal environment. b. Describe what an image represents.	a. Select and describe works of art that illustrate daily life experiences of one’s self and others. b. Compare images that represent the same subject.	a. Perceive and describe aesthetic characteristics of one’s natural world and constructed environments. b. Categorize images based on expressive qualities.
	Grade 3	Grade 4	Grade 5
<b>Performance Expectations</b>	a. Hypothesize about the processes an artist uses to create a work of art. b. Determine messages communicated by an image.	a. Compare responses to a work of art before and after working in similar media. b. Analyze components in visual imagery that convey messages.	a. Compare one's own interpretation of a work of art with the interpretation of others. b. Identify and analyze cultural associations suggested by visual imagery.

Strand	D. VISUAL ARTS		
Standard	C1 – Perceive and analyze artistic work.		
<b>Early Adolescence</b>			
	Grades 6-8 Proficient	Grades 6-8 Accomplished	Grades 6-8 Advanced
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Identify and interpret works of art or design that reveal how people live around the world and what they value.</li> <li>b. Analyze ways that visual elements and cultural connections suggested by images influence ideas, emotions, and actions.</li> </ul>	<ul style="list-style-type: none"> <li>a. Explain how the method of display, the location, and the experience of an artwork influence how it is perceived and valued.</li> <li>b. Analyze multiple ways that images influence various audiences.</li> </ul>	<ul style="list-style-type: none"> <li>a. Explain how a person’s aesthetic choices are influenced by culture, environment, and personal experiences that impact the message it conveys to others.</li> <li>b. Compare, and contrast the ways in which context and media influence the ideas, emotions and actions of the viewer.</li> </ul>
<b>Adolescence</b>			
	Grades 9-Diploma Proficient	Grades 9-Diploma Accomplished	Grades 9-Diploma Advanced
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Hypothesize ways in which art influences perception and understanding of human experiences.</li> <li>b. Analyze how experiencing visual imagery affects the viewer’s understanding of the world.</li> </ul>	<ul style="list-style-type: none"> <li>a. Recognize and describe personal aesthetic and empathetic responses to the natural world and constructed environments.</li> <li>b. Evaluate the effectiveness of an image to influence ideas, feelings, and behaviors of various audiences.</li> </ul>	<ul style="list-style-type: none"> <li>a. Analyze how responses to art develop over time based on knowledge of and experience with art and life.</li> <li>b. Determine and evaluate the contexts that generate art trends and the impact that the trends have on the cultures in which they exist.</li> </ul>

<b>Strand</b>	<b>D. VISUAL ARTS</b>		
<b>Standard</b>	<b>C2 – Interpret intent and meaning in artistic work.</b>		
<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	With guidance, share observations comparing artworks.	With guidance, compare and contrast subject matter in works of art.	With guidance, categorize subject matter and identify common themes in works of art.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	Interpret mood in artwork by analyzing subject matter and characteristics of form.	Interpret art by analyzing relevant subject matter, characteristics of form, and use of media.	Interpret art by referring to contextual information and analyzing subject matter, characteristics of form, and use of media.
<b>Early Adolescence</b>			
	<b>Grades 6-8 Proficient</b>	<b>Grades 6-8 Accomplished</b>	<b>Grades 6-8 Advanced</b>
<b>Performance Expectations</b>	Interpret arts by distinguishing between relevant and non-relevant contextual information and analyzing subject matter, characteristics of form and structure, and use of media.	Interpret ideas and mood in art by analyzing artmaking approaches, characteristics of form and structure, relevant contextual information, subject matter, and use of media.	Analyze how the interaction of subject matter, characteristics of form and structure, use of media, artmaking approaches, and relevant contextual information contributes to understanding messages or ideas and mood conveyed.
<b>Adolescence</b>			
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Accomplished</b>	<b>Grades 9-Diploma Advanced</b>
<b>Performance Expectations</b>	Construct interpretations of artwork, supported by relevant and sufficient evidence found both in the work and in various contexts.	Identify types of contextual information useful in the process of constructing interpretations of an artwork or collection of works.	Analyze differing interpretations of an artwork or collection of works in order to select and defend a plausible critical analysis.

<b>Strand</b>	<b>D. VISUAL ARTS</b>		
<b>Standard</b>	<b>C3 – Apply criteria to evaluate artistic work.</b>		
<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	Explain reasons for selecting a preferred artwork.	Categorize artwork, based on different reasons for preferences.	Use learned art vocabulary to express preferences about artwork.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	Evaluate an artwork based on given criteria.	Apply one set of criteria to evaluate more than one work of art.	Develop and apply relevant criteria to evaluate a work of art.
<b>Early Adolescence</b>			
	<b>Grades 6-8 Proficient</b>	<b>Grades 6-8 Accomplished</b>	<b>Grades 6-8 Advanced</b>
<b>Performance Expectations</b>	Recognize differences in criteria used to evaluate works of art, depending on styles, genres, and media as well as on historical and cultural contexts.	Compare and explain the difference between an evaluation of an artwork based on personal criteria and an evaluation of an artwork based on a set of established criteria.	Create a convincing and logical argument to support an evaluation of art.
<b>Adolescence</b>			
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Accomplished</b>	<b>Grades 9-Diploma Advanced</b>
<b>Performance Expectations</b>	Establish relevant criteria in order to evaluate a work of art or collection of works.	Determine the relevance of criteria used by others to evaluate a work of art or collection of works.	Construct evaluations of a work of art or collection of works based on differing sets of criteria.

<b>Strand</b>	<b>D. VISUAL ARTS</b>		
<b>Standard</b>	<b>D1 – Synthesize and relate knowledge and personal experiences to make art.</b>		
<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	Create art that tells a story about a life experience.	Create works of art about events in home, school, or community life.	Create works of art inspired by events in home, school, or community life.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	Develop a work of art based on observations of surroundings.	Create works of art that reflect home, school, or community traditions.	Generate a collection of ideas reflecting community issues that could be investigated in artistic work.
<b>Early Adolescence</b>			
	<b>Grades 6-8 Proficient</b>	<b>Grades 6-8 Accomplished</b>	<b>Grades 6-8 Advanced</b>
<b>Performance Expectations</b>	Apply concepts of art and design to view surroundings in new ways.	Individually or collaboratively document places and times in which people gather to make and experience art or design in the community.	Make art individually or collaboratively to reflect on aspects of group identity.
<b>Adolescence</b>			
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Accomplished</b>	<b>Grades 9-Diploma Advanced</b>
<b>Performance Expectations</b>	Document the process of developing ideas from early stages to fully elaborated ideas.	Utilize inquiry methods of observation, research, and experimentation to explore unfamiliar subjects through artmaking.	Synthesize knowledge of social, cultural, historical, and personal life with art-making approaches to create meaningful works of art or design.

<b>Strand</b>	<b>D. VISUAL ARTS</b>		
<b>Standard</b>	<b>D2 – Relate artistic ideas and works with societal, cultural, and historical contexts to deepen understanding.</b>		
<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	Identify the purpose of an artwork.	Understand that people from different places and times have made art for a variety of reasons.	Compare and contrast cultural uses of artwork from different times and places.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	Recognize that responses to art change depending on knowledge of the time and place in which it was made.	Through observation, infer information about time, place, and culture in which a work of art was created.	Identify how art is used to inform or change beliefs, values, or behaviors of an individual or society.
<b>Early Adolescence</b>			
	<b>Grades 6-8 Proficient</b>	<b>Grades 6-8 Accomplished</b>	<b>Grades 6-8 Advanced</b>
<b>Performance Expectations</b>	Analyze how art reflects changing times, traditions, resources, and cultural uses.	Analyze how response to art is influenced by understanding the time and place in which it was created, the available resources, and cultural uses.	Distinguish different ways art is used to represent, establish, reinforce, and reflect group identity.
<b>Adolescence</b>			
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Accomplished</b>	<b>Grades 9-Diploma Advanced</b>
<b>Performance Expectations</b>	Describe how knowledge of culture, traditions, and history may influence personal responses to art.	Compare uses of art in a variety of societal, cultural, and historical contexts and make connections to uses of art in contemporary and local contexts.	Assess the impact of an artist or a group of artists on the beliefs, values, and behaviors of a society.

### **The Theatre Standards**

The visual & performing/fine arts are a core subject area, critical to the education and health of every student. A theatre arts education, in particular, contributes to a child's understanding of their social and emotional development and ensures they develop valuable skills necessary for them to become critical thinkers, creative problem solvers, and productive collaborators. Participation in theatre instills confidence, fosters effective communication, promotes empathetic understanding, and encourages self-expression in students; these transferable skills lead to greater well-being and to higher achievement in other core disciplines. It is vital that students learn to recognize and appreciate how profoundly the arts impact their world outside of the classroom.

Articulated through the four artistic processes of creating, performing, responding, and connecting, the theatre standards are rooted in a creative approach to teaching and learning. These artistic processes define the link between art and learner, and they reflect the fundamental ways that the brain and body make art. When students are CREATING, they are “conceiving and developing new artistic ideas and work”; by PERFORMING, they are “realizing artistic ideas and work through interpretation and presentation.” When RESPONDING, students are “understanding and evaluating how the arts convey meaning,” and CONNECTING occurs when students are “relating artistic ideas and work with personal meaning and external context.”

The standards provide a scaffolded approach to theatre instruction, outlining expected learning goals and grade-appropriate demonstrations of knowledge and skills. Arranged by grade level (K-8) and by proficiency level (high school), the standards define how students learn as they progress through arts education, with the goals of achieving proficiency and developing artistic literacy. The performance expectations describe the skills that artist-learners must achieve to demonstrate proficiency. Teachers can use these expectations to implement standards-based learning through authentic assessments within their curricula.

Maine schools vary in their resources and in their approaches to theatre studies; therefore, these standards, along with their enduring understandings, essential questions, and performance expectations, are meant to be a guide and not a set curriculum. Additionally, they are designed to be applicable to the various aspects of theatre, and to provide flexibility in use. The performance expectations allow students to meet standards in multiple ways, demonstrating their proficiency through a variety of theatrical experiences, including acting, directing, playwriting, dramaturgy, analysis, design, and all aspects of technical theatre. The language is intentionally consistent, inclusive, and broad. The glossary, included among the resource documents, offers clarity and specificity.

### **MAINE'S THEATRE HERITAGE**

Maine's long and rich theatrical history has made significant contributions to the collaborative art form — locally, nationally, and even internationally — and award-winning playwrights, directors, designers, performers, and technicians from Maine have been recognized in their respective fields. There is an abundance and variety of theatrical activity in virtually every region of the state: from summer stock to year-round companies; from Shakespeare presented outdoors in Maine's natural landscapes to experimental fringe festivals produced in more urban areas. The student theatre organization at the University of Maine is the oldest academic theatrical organization in the country. Each year, thousands of students from the state participate in theatre festivals, conferences, and productions. And many of those students have chosen to remain in or return to Maine to become theatre educators, administrators, advocates, and patrons. Though not all of Maine's theatre students continue direct participation in the performing arts, many attribute their future successes to having studied and participated in theatre. The quality and excellence of theatre education in Maine schools is a major contributing factor to their overall success and well-being.

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Strand	E. THEATRE			
Standard	A1 – Generate and conceptualize artistic ideas and work.			
	<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>	
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Recall the ideas and details used in the development of a story, including the development of its characters and/or environment.</li> <li>b. Recall the ways in which tools and techniques may be used to create or tell a story.</li> </ul>	<ul style="list-style-type: none"> <li>a. List the ideas and details used in the development of a story, including the development of its characters and/or environment.</li> <li>b. List the ways in which tools and techniques may be used to create or tell a story.</li> </ul>	<ul style="list-style-type: none"> <li>a. Define the ideas and details used in the development of a story, including the development of its characters and/or environment.</li> <li>b. Define the ways in which tools and techniques may be used to create or tell a story.</li> </ul>	
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>	
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Describe the ideas and details used in the development of a story or theatrical work, including the development of its characters and/or environment.</li> <li>b. Describe the ways in which tools and techniques may be used to create or tell a story or theatrical work.</li> </ul>	<ul style="list-style-type: none"> <li>a. Explain the ideas and details used in the development of a story or theatrical work, including the development of its characters and/or environment.</li> <li>b. Explain the ways in which tools and techniques may be used to create or tell a story or theatrical work.</li> </ul>	<ul style="list-style-type: none"> <li>a. Compare the ideas and details used in the development of a story or theatrical work, including the development of its characters and/or environment.</li> <li>b. Compare the ways in which tools and techniques may be used to create or tell a story or theatrical work.</li> </ul>	
	<b>Early Adolescence</b>			
	<b>Grades 6-8</b>			
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Examine and experiment with the ideas and details used in the development of a theatrical work, including the development of its characters and/or environment.</li> <li>b. Examine and experiment with the tools and techniques that may be used to create or retell a theatrical work.</li> </ul>			

Strand	E. THEATRE		
Standard	A1 – Generate and conceptualize artistic ideas and work.		
<b>Adolescence</b>			
	Grades 9-Diploma Proficient	Grades 9-Diploma Accomplished	Grades 9-Diploma Advanced
<b>Performance Expectations</b>	a. Analyze the ideas and details used in the development of a theatrical work, including the development of its characters and/or environment. b. Analyze the ways in which tools and techniques may be used to create or retell a theatrical work.	a. Interpret and support the ideas and details used in the development of a theatrical work, including the development of its characters and/or environment. b. Interpret and support tools and techniques that may be used to create or retell a theatrical work.	a. Develop and justify part of a theatrical work, including its characters and/or environment, based upon the selection of ideas and details. b. Design, develop, and justify part of a theatrical work, using a variety of tools and techniques.

Strand	E. THEATRE		
Standard	A2 – Organize and develop artistic ideas and work.		
<b>Childhood</b>			
	Kindergarten	Grade 1	Grade 2
Performance Expectations	<ul style="list-style-type: none"> <li>a. Recall the collaborative and interdependent roles involved in the creation or retelling of a story.</li> <li>b. Recall the original ideas used in the creation and development of a story.</li> </ul>	<ul style="list-style-type: none"> <li>a. Identify the collaborative and interdependent roles involved in the creation or retelling of a story.</li> <li>b. Identify the original ideas used in the creation and development of a story.</li> </ul>	<ul style="list-style-type: none"> <li>a. Define the collaborative and interdependent roles involved in the creation or retelling of a story.</li> <li>b. Define the original ideas used in the creation and development of a story.</li> </ul>
	Grade 3	Grade 4	Grade 5
Performance Expectations	<ul style="list-style-type: none"> <li>a. Describe the collaborative and interdependent roles involved in the creation or retelling of a story or theatrical work.</li> <li>b. Describe the original ideas used in the creation and development of a story or theatrical work.</li> </ul>	<ul style="list-style-type: none"> <li>a. Explain the collaborative and interdependent roles involved in the creation or retelling of a story or theatrical work.</li> <li>b. Explain the original ideas used in the creation and development of a story or theatrical work.</li> </ul>	<ul style="list-style-type: none"> <li>a. Compare the collaborative and interdependent roles involved in the creation or retelling of a story or theatrical work.</li> <li>b. Compare the original ideas used in the creation and development of a story or theatrical work.</li> </ul>
<b>Early Adolescence</b>			
	Grades 6-8		
Performance Expectations	<ul style="list-style-type: none"> <li>a. Examine and experiment with the collaborative and interdependent roles involved in the creation or retelling of a theatrical work.</li> <li>b. Examine and experiment with the original ideas used in the creation and development of a theatrical work.</li> </ul>		

Strand	E. THEATRE		
Standard	A2 – Organize and develop artistic ideas and work.		
	Adolescence		
	Grades 9-Diploma Proficient	Grades 9-Diploma Accomplished	Grades 9-Diploma Advanced
<b>Performance Expectations</b>	a. Analyze the collaborative and interdependent roles involved in the creation or retelling of a theatrical work. b. Analyze the original ideas used in the creation and development of a theatrical work - elements, choreographic devices, and dance structures serve to communicate the artistic statement.	a. Interpret and justify the collaborative and interdependent roles involved in the creation or retelling of a theatrical work. b. Interpret and justify revisions to the original ideas used in the creation and development of a theatrical work in order to improve and evolve it.	a. Create a theatrical work and justify choices while participating in one of the collaborative and interdependent roles. b. Develop, synthesize, refine, and justify original ideas in the creation and development of a theatrical work.

<b>Strand</b>	<b>E. THEATRE</b>		
<b>Standard</b>	<b>A3 – Refine and complete artistic work.</b>		
	<b>Childhood</b>		
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Recall ways to revise, refine, and adapt ideas to fit the given parameters of a story.</li> <li>b. Recall the ways that stories may be changed or revised.</li> </ul>	<ul style="list-style-type: none"> <li>a. Identify ways to revise, refine, and adapt ideas to fit the given parameters of a story.</li> <li>b. Identify the ways that stories may be changed or revised.</li> </ul>	<ul style="list-style-type: none"> <li>a. Define ways to revise, refine, and adapt ideas to fit the given parameters of a story.</li> <li>b. Define the ways that stories may be changed or revised.</li> </ul>
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Describe ways to revise, refine, and adapt ideas to fit the given parameters of a story or theatrical work.</li> <li>b. Describe the ways that choices may be revised during the course of writing, designing, or rehearsing to support a story or theatrical work.</li> </ul>	<ul style="list-style-type: none"> <li>a. Explain ways to revise, refine, and adapt ideas to fit the given parameters of a story or theatrical work.</li> <li>b. Explain the ways that choices may be revised during the course of writing, designing, or rehearsing to support a story or theatrical work.</li> </ul>	<ul style="list-style-type: none"> <li>a. Compare ways to revise, refine, and adapt ideas to fit the given parameters of a story or theatrical work.</li> <li>b. Compare the ways that choices may be revised during the course of writing, designing, or rehearsing to support a story or theatrical work.</li> </ul>
	<b>Early Adolescence</b>		
	<b>Grades 6-8</b>		
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Examine and experiment with ways to revise, refine, and adapt ideas and choices in a devised or scripted theatrical work.</li> <li>b. Examine and experiment with the ways that character, design, and/or technical choices may be revised during the course of a rehearsal process to enhance the story and emotional impact of a devised or scripted theatrical work.</li> </ul>		

Strand	E. THEATRE		
Standard	A3 – Refine and complete artistic work.		
	Adolescence		
	Grades 9-Diploma Proficient	Grades 9-Diploma Accomplished	Grades 9-Diploma Advanced
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Analyze ways to revise, refine, and adapt ideas and choices in a devised or scripted theatrical work.</li> <li>b. Analyze the ways that character, design, and/or technical choices may be revised during the course of a rehearsal process to enhance the story and emotional impact of a devised or scripted theatrical work.</li> </ul>	<ul style="list-style-type: none"> <li>a. Interpret and support ways to revise, refine, and adapt ideas and choices in a devised or scripted theatrical work.</li> <li>b. Interpret and support the ways that character, design, and/or technical choices may be revised during the course of a rehearsal process to enhance the story and emotional impact of a devised or scripted theatrical work.</li> </ul>	<ul style="list-style-type: none"> <li>a. Reimagine, redesign, refine, and justify choices in a devised or scripted theatrical work.</li> <li>b. Reimagine, redesign, refine, and justify character, design, and/or technical choices during the course of a rehearsal process to enhance the story and emotional impact of a devised or scripted theatrical work.</li> </ul>

<b>Strand</b>	<b>E. THEATRE</b>		
<b>Standard</b>	<b>B1 – Select, analyze, and interpret artistic work for presentation.</b>		
<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	Identify storytelling elements.	<ul style="list-style-type: none"> <li>a. Describe elements in a storytelling experience.</li> <li>b. Use tools and techniques to communicate meaning in a storytelling experience.</li> </ul>	<ul style="list-style-type: none"> <li>a. Interpret elements in a storytelling experience.</li> <li>b. Use tools and techniques to communicate meaning in a storytelling experience.</li> </ul>
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Identify elements of a story.</li> <li>b. Use tools and techniques to create a storytelling or theatrical work.</li> </ul>	<ul style="list-style-type: none"> <li>a. Interpret dialogue in a storytelling or theatrical work.</li> <li>b. Develop a character in a storytelling or theatrical work.</li> </ul>	<ul style="list-style-type: none"> <li>a. Describe the subtext in dialogue and action in a storytelling or theatrical work.</li> <li>b. Use tools and techniques to create meaning in a storytelling or theatrical work.</li> </ul>
<b>Early Adolescence</b>			
	<b>Grades 6-8</b>		
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Identify elements of theatrical storytelling.</li> <li>b. Create, adapt, or interpret a piece of theatrical work.</li> </ul>		
<b>Adolescence</b>			
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Accomplished</b>	<b>Grades 9-Diploma Advanced</b>
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Identify essential elements that influence artistic choices in a theatrical work.</li> <li>b. Choose appropriate tools, techniques, and processes to communicate meaning in a theatrical work.</li> </ul>	<ul style="list-style-type: none"> <li>a. Design, adapt, or interpret a theatrical piece of work.</li> <li>b. Apply artistic choices in a theatrical work.</li> </ul>	<ul style="list-style-type: none"> <li>a. Illustrate the central message of the theatrical piece of work.</li> <li>b. Justify choices that may impact the audience's experience.</li> </ul>

<b>Strand</b>	<b>E. THEATRE</b>		
<b>Standard</b>	<b>B2 – Develop and refine artistic techniques and work for presentation.</b>		
<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	Explore and experiment with various elements of storytelling.	<ul style="list-style-type: none"> <li>a. Identify tools artists use to tell stories.</li> <li>b. Use tools to express various elements of storytelling.</li> </ul>	<ul style="list-style-type: none"> <li>a. Identify tools and techniques artists use to tell stories.</li> <li>b. Use tools and techniques that enhance the storytelling experience.</li> </ul>
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Identify tools, techniques and processes artists use to tell stories.</li> <li>b. Use tools, techniques and processes that enhance the storytelling experience</li> </ul>	<ul style="list-style-type: none"> <li>a. Apply appropriate tools and techniques to a theatrical work to communicate ideas, feelings and meaning.</li> <li>b. Explain how an artist's choices to communicate ideas, feelings and meaning.</li> </ul>	<ul style="list-style-type: none"> <li>a. Apply appropriate tools and techniques to a theatrical work.</li> <li>b. Analyze tools, techniques, and processes in a theatrical piece of work.</li> </ul>
<b>Early Adolescence</b>			
	<b>Grades 6-8</b>		
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Identify appropriate elements that impact a theatrical work.</li> <li>b. Apply tools, techniques, and processes to communicate meaning in a theatrical work.</li> <li>c. Justify choices that impact the theatrical work.</li> </ul>		
<b>Adolescence</b>			
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Accomplished</b>	<b>Grades 9-Diploma Advanced</b>
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Choose tools, techniques, and processes for a piece of theatrical work.</li> <li>b. Apply tools, techniques, and processes to a piece of theatrical work.</li> </ul>	Evaluate the impact of the artist's unique choices in a theatrical work.	Defend choices made in developing a piece of theatrical work.

<b>Strand</b>	<b>E. THEATRE</b>		
<b>Standard</b>	<b>B3 – Convey meaning through the performance/presentation of artistic work.</b>		
<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	Explore tools and techniques in storytelling.	Use tools and techniques to communicate meaning in storytelling experiences.	Collaborate in storytelling experiences.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Collaborate in storytelling experiences.</li> <li>b. Identify artistic choices that impact storytelling and theatrical work.</li> </ul>	<ul style="list-style-type: none"> <li>a. Collaborate in guided storytelling experiences.</li> <li>b. Explain how artistic choices impact storytelling and theatrical work.</li> </ul>	<ul style="list-style-type: none"> <li>a. Share or present an artistic work to an audience.</li> <li>b. Explain how the creator's choices impact the artistic work.</li> </ul>
<b>Early Adolescence</b>			
	<b>Grades 6-8</b>		
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Share or present an artistic work to an audience.</li> <li>b. Evaluate how choices impact the artistic work.</li> </ul>		
<b>Adolescence</b>			
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Accomplished</b>	<b>Grades 9-Diploma Advanced</b>
<b>Performance Expectations</b>	Present or perform an artistic work to an audience.	Employ tools and techniques to present or perform an artistic work to an audience.	<ul style="list-style-type: none"> <li>a. Communicate meaning through an artistic work.</li> <li>b. Defend choices that impact the artistic work.</li> </ul>

<b>Strand</b>	<b>E. THEATRE</b>		
<b>Standard</b>	<b>C1 – Perceive and analyze artistic work.</b>		
	<b>Childhood</b>		
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	Express an emotional response to characters in storytelling.	Recall and identify choices made by characters in storytelling.	Recognize and identify when artistic choices are made in storytelling.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	Describe artistic choices made in storytelling/theatrical work.	Demonstrate understanding of why artistic choices are made in storytelling/theatrical work.	Explain personal reactions to artistic choices made in storytelling/theatrical work.
	<b>Early Adolescence</b>		
	<b>Grades 6-8</b>		
<b>Performance Expectations</b>	a. Compare personal reactions to artistic choices made in a theatrical work with the personal reactions of peers. b. Apply criteria to the evaluation of artistic choices in theatrical work.		
	<b>Adolescence</b>		
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Accomplished</b>	<b>Grades 9-Diploma Advanced</b>
<b>Performance Expectations</b>	Develop criteria for artistic choices by responding to what is seen, felt, and heard in theatrical work.	Explain how multiple interpretations of artistic criteria may be used to influence future artistic choices in a theatrical work.	Justify personal responses to a theatrical work using historical and cultural context.

Strand	E. THEATRE		
Standard	C2 – Interpret intent and meaning in artistic work.		
<b>Childhood</b>			
	Kindergarten	Grade 1	Grade 2
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Identify preferences in storytelling.</li> <li>b. Identify and describe settings in storytelling.</li> </ul>	<ul style="list-style-type: none"> <li>a. Explain preferences and emotions in storytelling.</li> <li>b. Identify causes of character actions in storytelling.</li> <li>c. Describe how personal emotions and choices compare to the emotions of characters in storytelling.</li> </ul>	<ul style="list-style-type: none"> <li>a. Explain how personal preferences and emotions affect an observer’s response in storytelling.</li> <li>b. Identify causes and consequences of character actions in storytelling.</li> <li>c. Describe how other’s emotions and choices may compare to the emotions of characters in storytelling.</li> </ul>
	Grade 3	Grade 4	Grade 5
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Describe multiple personal experiences when participating in or observing storytelling or theatrical work.</li> <li>b. Describe multiple ways to develop a character using physical characteristics and design choices that reflect cultural perspectives in storytelling/theatrical work.</li> <li>c. Examine how connections are made between oneself and a character’s emotions in storytelling or theatrical work.</li> </ul>	<ul style="list-style-type: none"> <li>a. Compare and contrast multiple personal experiences when participating in or observing storytelling or theatrical work.</li> <li>b. Compare and contrast the qualities of characters that reflect cultural perspectives in storytelling/theatrical work.</li> <li>c. Identify and discuss physiological changes connected to emotions in storytelling or theatrical work.</li> </ul>	<ul style="list-style-type: none"> <li>a. Justify responses to storytelling/theatrical work based on personal experiences.</li> <li>b. Explain responses to storytelling or theatrical elements based on cultural perspectives.</li> <li>c. Investigate the effects of emotions on physical responses in storytelling/theatrical work.</li> </ul>

<b>Strand</b>	<b>E. THEATRE</b>		
<b>Standard</b>	C2 – Interpret intent and meaning in artistic work.		
<b>Early Adolescence</b>			
<b>Grades 6-8</b>			
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Identify, explain, and share how artists make choices based on personal experience.</li> <li>b. Identify, analyze, and describe how cultural perspectives can influence the evaluation of a theatrical work.</li> <li>c. Identify and apply personal aesthetics, preferences, and beliefs to evaluate a theatrical work.</li> </ul>		
<b>Adolescence</b>			
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Accomplished</b>	<b>Grades 9-Diploma Advanced</b>
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Analyze and compare artistic choices developed from personal experiences in theatrical work.</li> <li>b. Identify and compare cultural perspectives and contexts that influence the evaluation of theatrical work.</li> <li>c. Apply personal aesthetics, preferences, and beliefs to evaluate theatrical work.</li> </ul>	<ul style="list-style-type: none"> <li>a. Document detailed supporting evidence to support artistic choices in a theatrical work.</li> <li>b. Apply concepts from a theatre work for personal realization about cultural perspectives and understanding.</li> <li>c. Debate and describe multiple aesthetics, preferences, and beliefs related to theatrical work.</li> </ul>	<ul style="list-style-type: none"> <li>a. Revise personal work and interpret the work of others by providing detailed supporting evidence in theatre work.</li> <li>b. Shape personal responses to theatre work through the use of new understandings of cultures and contexts.</li> <li>c. Create a context for critical research through the use of aesthetics, preferences, and beliefs that inform artistic decisions in a theatrical work.</li> </ul>

Strand	E. THEATRE			
Standard	C3 – Apply criteria to evaluate artistic work.			
<b>Childhood</b>				
	Kindergarten	Grade 1	Grade 2	
<b>Performance Expectations</b>	Engage with others in a storytelling experience.	<ul style="list-style-type: none"> <li>a. Build on others' ideas in a storytelling experience.</li> <li>b. Identify elements in a storytelling experience.</li> <li>c. Compare and contrast characters' experiences in a storytelling experience.</li> </ul>	<ul style="list-style-type: none"> <li>a. Collaborate with peers in storytelling.</li> <li>b. Identify and use technical elements in storytelling.</li> <li>c. Describe how characters respond to challenges in storytelling.</li> </ul>	
	Grade 3	Grade 4	Grade 5	
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Recognize how and why groups evaluate storytelling or theatrical work.</li> <li>b. Describe theatrical elements from multiple storytelling or theatrical works.</li> <li>c. Identify problems and situations in a storytelling or theatrical work from an audience's perspective.</li> </ul>	<ul style="list-style-type: none"> <li>a. Develop a plan to evaluate a storytelling or theatrical work.</li> <li>b. Investigate how technical elements may support a theme or idea in storytelling or theatrical work.</li> <li>c. Explain how a character's choices may impact an audience's perspective.</li> </ul>	<ul style="list-style-type: none"> <li>a. Select criteria with which to evaluate a storytelling or theatrical work.</li> <li>b. Assess and explain how technical elements represent the theme of a story or theatrical work.</li> <li>c. Recognize and describe how a character's circumstances impact an audience's perspective.</li> </ul>	
<b>Early Adolescence</b>				
<b>Grades 6-8</b>				
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Evaluate and respond to a theatre work using supporting evidence, personal aesthetics, and artistic criteria.</li> <li>b. Describe the aesthetics of production elements used in a theatrical work.</li> <li>c. Identify the audience and purpose of a theatrical work.</li> </ul>			

Strand	E. THEATRE		
Standard	C3 – Apply criteria to evaluate artistic work.		
	Adolescence		
	Grades 9-Diploma Proficient	Grades 9-Diploma Accomplished	Grades 9-Diploma Advanced
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Examine a theatre work using criteria related to art forms, history, culture, and other disciplines.</li> <li>b. Describe the aesthetics of production elements in a theatrical work.</li> <li>c. Identify the audience and purpose of a theatrical work to formulate a deeper understanding and appreciation.</li> </ul>	<ul style="list-style-type: none"> <li>a. Evaluate a theatrical work using criteria related to art forms, history, culture, and other disciplines.</li> <li>b. Interpret meaning in a theatrical work, while considering personal aesthetics and knowledge of production elements.</li> <li>c. Describe what and how a theatrical work communicates for a specific audience and purpose.</li> </ul>	<ul style="list-style-type: none"> <li>a. Evaluate cultural and historical information related to a theatrical work in order to support or evaluate artistic choices.</li> <li>b. Analyze and evaluate varied aesthetic interpretations of production elements for theatrical work.</li> <li>c. Identify and explain the connection between a theatrical work and contemporary issues that may impact audiences.</li> </ul>

<b>Strand</b>	<b>E. THEATRE</b>		
<b>Standard</b>	<b>D1 – Synthesize and relate knowledge and personal experiences to create art.</b>		
<b>Childhood</b>			
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	Recall similarities between a story and personal experience in dramatic play or a guided storytelling experience.	Explain how character emotions in a guided storytelling experience relate to personal experience.	Explain how character experiences relate to personal experiences in a guided storytelling experience.
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	Identify personal experiences and knowledge to make connections to community and culture in a theatrical work.	Identify ways theatrical work reflects the perspectives of a community or culture.	Explain how theatre connects to a community or culture.
<b>Early Adolescence</b>			
	<b>Grades 6-8</b>		
<b>Performance Expectations</b>	Explore or examine a community issue through multiple perspectives in a theatrical work.		
<b>Adolescence</b>			
	<b>Grades 9-Diploma Proficient</b>	<b>Grades 9-Diploma Accomplished</b>	<b>Grades 9-Diploma Advanced</b>
<b>Performance Expectations</b>	Analyze and explain how cultural perspectives, community ideas and personal beliefs impact a theatrical work.	Interpret how a theatrical work reflects or questions personal beliefs.	Devise a theatrical work that examines a critical global issue using multiple perspectives.

Strand	E. THEATRE		
Standard	D2 – Relate artistic ideas and works with societal, cultural, and historical contexts to deepen understanding.		
Childhood			
	Kindergarten	Grade 1	Grade 2
Performance Expectations	<ul style="list-style-type: none"> <li>a. Identify stories that are different from one another in dramatic play or a guided drama experience.</li> <li>b. Tell a short story in dramatic play or a guided drama experience.</li> </ul>	<ul style="list-style-type: none"> <li>a. Identify similarities and differences in stories from one's own community in a guided drama experience.</li> <li>b. Dramatize a short scene based on a fictional literary source in a guided drama experience.</li> </ul>	<ul style="list-style-type: none"> <li>a. Identify similarities and differences in stories from multiple cultures in a guided drama experience.</li> <li>b. Dramatize a short scene based on a non-fiction literary source in a guided drama experience.</li> </ul>
	Grade 3	Grade 4	Grade 5
Performance Expectations	<ul style="list-style-type: none"> <li>a. Explore how stories are adapted from literature to theatrical work.</li> <li>b. Examine how artists have historically presented the same stories using a variety of art forms, genres, tools, and techniques.</li> </ul>	<ul style="list-style-type: none"> <li>a. Identify cross-cultural approaches used in storytelling.</li> <li>b. Compare theatre tools and techniques of two different time periods.</li> </ul>	<ul style="list-style-type: none"> <li>a. Identify similarities and differences between stories set in different cultures.</li> <li>b. Identify sources of theatre terminology, tools, and techniques.</li> </ul>
Early Adolescence			
	Grades 6-8		
Performance Expectations	<ul style="list-style-type: none"> <li>a. Research and analyze ways similar theatrical works have been produced.</li> <li>b. Research a theatre work to better understand how design choices affect a production.</li> </ul>		

Strand	E. THEATRE		
Standard	D2 – Relate artistic ideas and works with societal, cultural, and historical contexts to deepen understanding.		
<b>Adolescence</b>			
	Grades 9-Diploma Proficient	Grades 9-Diploma Accomplished	Grades 9-Diploma Advanced
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Compare ways other artists apply creative processes in a devised or scripted drama or theatre work.</li> <li>b. Analyze social and cultural aspects of a variety of theatrical works.</li> </ul>	<ul style="list-style-type: none"> <li>a. Formulate creative choices for a devised or scripted theatrical work using a researched topic.</li> <li>b. Explore how personal beliefs and biases can affect the interpretation of theatrical works.</li> </ul>	<ul style="list-style-type: none"> <li>a. Justify creative choices made in a devised or scripted theatre work, based on the interpretation of critical research.</li> <li>b. Present and support an opinion about the social, cultural, and historical understandings of a theatre work, based on critical research.</li> </ul>

<b>Strand</b>	<b>E. THEATRE</b>		
<b>Standard</b>	<b>E1 – Develop and demonstrate disciplinary literacy.</b>		
	<b>Childhood</b>		
	<b>Kindergarten</b>	<b>Grade 1</b>	<b>Grade 2</b>
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Identify areas and elements of storytelling and theatre.</li> <li>b. Illustrate and interact with dramatic elements.</li> </ul>	<ul style="list-style-type: none"> <li>a. Recognize a variety of dramatic devices used to create an existing story or piece of theatrical work.</li> <li>b. Use dramatic devices to Imagine a new story or piece of theatrical work.</li> </ul>	<ul style="list-style-type: none"> <li>a. Summarize a story piece of theatrical work.</li> <li>b. Relate, compare, and contrast a summarized piece to another existing piece of theatrical work.</li> </ul>
	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Discover individual, societal, and/or cultural aspects that influence a story or piece of theatrical work.</li> <li>b. Choose an individual, societal, or cultural aspect to Use as an inspiration for a new story or piece of theatrical work.</li> </ul>	<ul style="list-style-type: none"> <li>a. Extract essential components of dramatic elements and appraise a piece of theatrical work.</li> <li>b. Invent a modification to an existing piece of theatrical work.</li> </ul>	<ul style="list-style-type: none"> <li>a. examine a piece of theatrical work and distinguish ways in which dramatic elements correlate to create a unified production.</li> <li>b. Collaborate and integrate a variety of dramatic elements to create a piece of unified, theatrical work.</li> </ul>
	<b>Early Adolescence</b>		
	<b>Grades 6-8</b>		
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Explain, analyze, and interpret various pieces of theatrical work.</li> <li>b. Devise original pieces of theatrical work using improvisation, experimentation, and research.</li> </ul>		

Strand	E. THEATRE		
Standard	E1 – Develop and demonstrate disciplinary literacy.		
<b>Adolescence</b>			
	Grades 9-Diploma Proficient	Grades 9-Diploma Accomplished	Grades 9-Diploma Advanced
<b>Performance Expectations</b>	<ul style="list-style-type: none"> <li>a. Understand and demonstrate skills, concepts, and terminology to show disciplinary literacy.</li> <li>b. Develop and refine artistic techniques for work.</li> </ul>	<ul style="list-style-type: none"> <li>a. Demonstrate an understanding of the required knowledge by providing evidence of evaluation.</li> <li>b. Apply the required knowledge to multiple scenarios with the ability to articulate reasoning for choices made.</li> </ul>	<ul style="list-style-type: none"> <li>a. Illustrate knowledge and skills of a wide variety providing substantial evidence of synthesis.</li> <li>b. Employ a variety of appropriate techniques to refine existing work and defend artistic choices.</li> </ul>

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## WORLD LANGUAGES

### Introduction

#### Languages are Essential for Success in a Global Community

Learning another language is a lifelong process that not only enhances a student's understanding of their first language, but also allows access to the rich culture and perspectives of the community members of the target language. The Maine Learning Results (MLRs) will thus reflect the interconnectedness and richness of human language and weave curricular elements, emphasizing that no one goal can be achieved in isolation or separated from the others, nor is any one goal more important. Therefore, some performance expectations will appear within multiple strands given the nature of intercultural communication. These MLRs define what students should know and be able to do with the target language and place content and skill integration as the central focus of instruction. This document is a framework that describes the standards to be met by Maine district language programs and is designed to prepare all students for success upon graduation. The MLRs serve as a road map on the path to the Seal of Biliteracy. Language programs invite, include, support, and benefit all students while empowering them to act as global citizens.

#### The Maine Learning Results for World Languages Framework

These standards are adapted from the national ACTFL World-Readiness Standards and the NCSSFL-ACTFL Can-Do Statements to meet the MLR framework guidelines. They are purposefully designed to be broad in order to apply to all taught languages - modern, classical and signed - and to leave space for teachers and districts to interpret and design curriculum in order to meet the expectations of their programs. MLRs address what students can independently and consistently do over time in numerous learning situations. They are a framework, not a curriculum or checklist or tool to determine a student's proficiency level.

The MLRs continue to use the 5 ACTFL goal areas:

- **Communication:** communicate effectively in more than one language in order to function in a variety of situations and for multiple purposes.
- **Cultures:** Interact with cultural competence and understanding.
- **Connections:** Connect with other disciplines and acquire information and diverse perspectives in order to use the language to function in academic and career related situations.
- **Comparisons:** Develop insight into the nature of language and culture in order to interact with cultural competence.
- **Communities:** Communicate and interact with cultural competence in order to participate in multilingual communities at home and around the world.

For more in-depth information on the 5 Cs, please see ACTFL's World-Readiness Standards for Learning Languages. To view ACTFL's original guidelines and more specific examples for application, see ACTFL's website: [actfl.org](http://actfl.org). More specific ideas for differentiation of language type and proficiency level are outlined in supplemental resources. The MLRs are broken down into Performance Expectations. Grade levels from K-5 have distinct Performance Expectations, while in grades 6-8 and grades 9-diploma Performance Expectations are consolidated. The Performance Expectations define skills and establish measurable articulations of what the student understands and can do. Sample performance indicators define student progress in meeting standards within the 5 C goal areas using the benchmarks of language development (Novice, Intermediate, Advanced). The Maine Learning Results represent the ideal of a comprehensive K-12 program. At this time, the majority of school districts in Maine are offering world languages beginning in middle or high school. For this reason, the framework is also organized by linguistic proficiency. In order to access the most appropriate guidelines for students, regardless of their grade level, world language programs should use the Novice Low proficiency guidelines (K/1) as a point of entry for students new to the language of study or to determine placement for performance expectations. Students will move through the proficiency levels more or less quickly depending on factors like age, amount of instruction/exposure, motivation, and family and community support. In a comprehensive K-12 program, the ultimate goal for students would be to communicate in all areas at the Advanced Low

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proficiency level. However, later entry points lead to various levels of proficiency based on hours/years of study, as well as individual differences in programs and learners. The following expectations are a general guideline and based on daily study in a full-year program:

- Two years of study: Novice High
- Four years of study: Intermediate Low
- Six years of study: Intermediate Mid
- Nine years of study: Intermediate High
- Thirteen years of study: Advanced Low

Please visit ACTFL's website for more specific information.

### **Fundamental Practices for Effective Implementation of the Maine Learning Results**

Learning to use a second language in meaningful, authentic, and appropriate ways, is the ultimate goal of world language instruction. Instructing in the target language 90% of the time, as recommended by ACTFL, may be achieved nearly all of the time, through age-appropriate linguistic scaffolding. However, in limited cases, and for certain languages, it may be appropriate to leverage students' primary languages judiciously in order to achieve the standard.

Maine language classrooms foster risk-taking and mistake-making in order for students to grow in linguistic competence and cultural awareness through relevant, cross-disciplinary, and motivational themes. Students are to see themselves in the curriculum, as well as have a window to view others. Instruction is differentiated according to instructional context, target language, program design, and student profile, so that it is appropriate and rigorous for all students. Because learners' lives and experiences are woven into our proficiency guidelines, World Language classrooms are a center of Social Emotional Learning and Social Justice explorations and connect students to their peers and to their communities.

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### Communication

Today’s world language learners need to know how to communicate effectively in order to thrive in an ever-changing and challenging global society. The communication standards for World Languages are broken down into three modes of communication: interpersonal, interpretive, and presentational. Interpersonal communication encompasses spontaneous spoken, signed, or written conversations in which learners interact and negotiate meaning. With interpretive communication, learners listen, read, or view resources in order to understand, interpret, and analyze information. It should be noted that ACTFL guidelines are designed with the assumption that resources are authentic, which accounts for a lower performance expectation than with teacher-created materials. In the presentational mode of communication, learners share information, concepts, and ideas to an audience of listeners, readers, or viewers.

Interpersonal Communication	Interpretive Communication	Presentational Communication
Students engage in conversations, provide and obtain information, express feelings and emotions, and exchange opinions.	Learners understand, interpret, and analyze what is heard, read, or viewed on a variety of topics.	Learners present information, concepts, and ideas to inform, explain, persuade, and narrate on a variety of topics using appropriate media and adapting to various audiences of listeners, readers, or viewers.

Strand	Communication: Communicate effectively in more than one language in order to function in a variety of situations and for multiple purposes		
Standard	Interpersonal Communication: Students engage in conversations, provide and obtain information, express feelings and emotions, and exchange opinions.		
Performance Expectations	Childhood		
	K - Novice Low	1 - Novice Low	2 - Novice Mid
	I can communicate in spontaneous spoken, written, or signed conversations, on both very familiar and everyday topics using a variety of practiced or memorized words, phrases, simple sentences, and questions. <ul style="list-style-type: none"> <li>I can provide information by answering a few simple questions on very familiar topics using practiced or memorized words or phrases with the help of gestures or phrases.</li> </ul>	I can communicate in spontaneous spoken, written, or signed conversations, on both very familiar and everyday topics using a variety of practiced or memorized words, phrases, simple sentences, and questions. <ul style="list-style-type: none"> <li>I can provide information by answering a few simple questions on very familiar topics using practiced or memorized words or phrases with the help of gestures or phrases.</li> </ul>	I can communicate in spontaneous spoken, written, or signed conversations, on both very familiar and everyday topics using a variety of practiced or memorized words, phrases, simple sentences, and questions. <ul style="list-style-type: none"> <li>I can request and provide information by asking and answering a few simple questions on very familiar and everyday topics using a mixture of practiced or memorized words, phrases, and simple sentences.</li> </ul>

	<ul style="list-style-type: none"> <li>• I can express some basic needs using practiced or memorized words or phrases with the help of gestures or visuals.</li> <li>• I can express basic preferences or feelings using practiced or memorized words and phrases with the help of gestures or visuals.</li> </ul>	<ul style="list-style-type: none"> <li>• I can express some basic needs using practiced or memorized words or phrases with the help of gestures or visuals.</li> <li>• I can express basic preferences or feelings using practiced or memorized words and phrases with the help of gestures or visuals.</li> </ul>	<ul style="list-style-type: none"> <li>• I can express basic needs related to familiar and everyday activities using a mixture of practiced or memorized words, phrases, simple sentences and questions.</li> <li>• I can express my own preferences and feelings and react to those of others using a mixture of practiced or memorized words, phrases, simple sentences, and questions.</li> </ul>
	3 - Novice Mid	4 - Novice High	5 - Novice High
	<p>I can communicate in spontaneous spoken, written, or signed conversations, on both very familiar and everyday topics using a variety of practiced or memorized words, phrases, simple sentences, and questions.</p> <ul style="list-style-type: none"> <li>• I can request and provide information by asking and answering a few simple questions on very familiar and everyday topics using a mixture of practiced or memorized words, phrases, and simple sentences.</li> <li>• I can express basic needs related to familiar and everyday activities using a mixture of practiced or memorized words, phrases, simple sentences, and questions.</li> <li>• I can express my own preferences and feelings and react to those of others using a mixture of practiced or memorized words, phrases, simple sentences, and questions.</li> </ul>	<p>I can communicate in spontaneous spoken, written, or signed conversations, on both very familiar and everyday topics using a variety of practiced or memorized and some original phrases, simple sentences, and questions.</p> <ul style="list-style-type: none"> <li>• I can request and provide information by asking and answering practiced and some original questions on familiar and everyday topics using simple sentences most of the time.</li> <li>• I can interact with others to meet my basic needs related to routine, everyday activities using simple sentences and questions most of the time.</li> <li>• I can express, ask about, and react to preferences, feelings, or opinions on familiar topics using simple sentences most of the time and asking questions to keep the conversation on topic.</li> </ul>	<p>I can communicate in spontaneous spoken, written, or signed conversations, on both very familiar and everyday topics using a variety of practiced or memorized and some original phrases, simple sentences, and questions.</p> <ul style="list-style-type: none"> <li>• I can request and provide information by asking and answering practiced and some original questions on familiar and everyday topics using simple sentences most of the time.</li> <li>• I can interact with others to meet my basic needs related to routine, everyday activities using simple sentences and questions most of the time.</li> <li>• I can express, ask about, and react to preferences, feelings, or opinions on familiar topics using simple sentences most of the time and asking questions to keep the conversation on topic.</li> </ul>

Early Adolescence		Adolescence	
6-8 - Intermediate Low/Intermediate Mid		9-diploma - Intermediate High/Advanced Low	
Intermediate Low	Intermediate Mid	Intermediate High	Advanced Low
<p>I can participate in spontaneous spoken, written or signed conversations on familiar topics, creating simple sentences to ask and answer a variety of questions.</p> <ul style="list-style-type: none"> <li>I can request and provide information in conversations on familiar topics by creating simple sentences and asking appropriate follow-up questions.</li> <li>I can interact with others to meet my basic needs in familiar situations by creating simple sentences and asking appropriate follow-up questions.</li> <li>I can express, ask about and react, with some details to preferences, feelings, or opinions on familiar topics by creating simple sentences and asking appropriate follow-up questions.</li> </ul>	<p>I can participate in spontaneous spoken, written or signed conversations on familiar topics, creating sentences and series of sentences to ask and answer a variety of questions.</p> <ul style="list-style-type: none"> <li>I can exchange information in conversations on familiar topics and some researched topics, creating sentences and series of sentences and asking a variety of follow-up questions.</li> <li>I can interact with others to meet my needs in a variety of familiar situations, creating sentences and series of sentences and asking a variety of follow-up questions.</li> <li>I can exchange preferences, feelings and opinions and provide basic advice on a variety of familiar topics, creating sentences and series of sentences, and asking a variety of follow-up questions.</li> </ul>	<p>I can participate in spontaneous spoken, written or signed conversations on familiar topics and some concrete topics that I have researched, creating a series of connected sentences, and asking a variety of questions, often across various time frames.</p> <ul style="list-style-type: none"> <li>I can exchange information in conversations and some discussions on a variety of familiar and some concrete topics that I have researched using connected sentences that may combine to form paragraphs and asking a variety of questions, often across various time frames.</li> <li>I can interact with others to meet my needs in a variety of situations - sometimes involving a complication - using connected sentences that may combine to form paragraphs, and asking a variety of questions, often across various time frames.</li> <li>I can explain preferences, opinions and emotions, and provide advice on a variety of familiar and some concrete topics that I have researched using connected sentences that may combine to form paragraphs, and asking a</li> </ul>	<p>I can maintain spontaneous spoken, written or signed conversations and discussions across various time frames on familiar and concrete topics using a series of connected sentences.</p> <ul style="list-style-type: none"> <li>I can exchange information and ideas in discussions on a variety of familiar and concrete academic and social topics using a few simple paragraphs across major time frames.</li> <li>I can interact and negotiate to resolve an unexpected complication that arises in a familiar situation using a few simple paragraphs across major time frames.</li> <li>I can maintain conversations by providing explanations and comparisons of preferences, opinions and advice on familiar and concrete academic and social topics using a few simple paragraphs across major time frames.</li> </ul>

			variety of questions, often across various time frames.	
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<b>Strand</b>	<b>Communication: Communicate effectively in more than one language in order to function in a variety of situations and for multiple purposes</b>			
<b>Standard</b>	<b>Interpretive Communication: Learners understand, interpret, and analyze what is heard, read, or viewed on a variety of topics.</b>			
<b>Performance Expectations</b>	Childhood			
	K - Novice Low	1 - Novice Low	2 - Novice Mid	
	I can identify practiced or memorized words in very familiar contexts in texts that are spoken, written, or signed.  <ul style="list-style-type: none"> <li>• I can identify memorized or familiar words when they are supported by gestures or visuals in informational texts.</li> <li>• I can identify memorized or familiar words when they are supported by gestures or visuals in fictional texts.</li> <li>• I can understand memorized or familiar words when they are supported by gestures or visuals in conversations.</li> </ul>	I can identify practiced or memorized words in very familiar contexts in texts that are spoken, written, or signed.  <ul style="list-style-type: none"> <li>• I can identify memorized or familiar words when they are supported by gestures or visuals in informational texts.</li> <li>• I can identify memorized or familiar words when they are supported by gestures or visuals in fictional texts.</li> <li>• I can understand memorized or familiar words when they are supported by gestures or visuals in conversations.</li> </ul>	I can identify some basic information in both very familiar and everyday contexts by recognizing practiced or memorized words and phrases in texts that are spoken, written, or signed.  <ul style="list-style-type: none"> <li>• I can identify some basic facts from memorized or familiar words and phrases when they are supported by gestures or visuals in informational texts.</li> <li>• I can identify some basic facts from memorized or familiar words and phrases when they are supported by gestures or visuals in fictional texts.</li> <li>• I can identify some basic facts from memorized or familiar words and phrases when they are supported by gestures or visuals in conversations.</li> </ul>	
	3 - Novice Mid	4 - Novice High	5 - Novice High	
	I can identify some basic information in both very familiar and everyday contexts by recognizing practiced or memorized words and	I can identify the general topic and some basic information in both very familiar and everyday contexts by recognizing practiced or memorized	I can identify the general topic and some basic information in both very familiar and everyday contexts by recognizing practiced or memorized	

	<p>phrases in texts that are spoken, written, or signed.</p> <ul style="list-style-type: none"> <li>• I can identify some basic facts from memorized or familiar words and phrases when they are supported by gestures or visuals in informational texts.</li> <li>• I can identify some basic facts from memorized or familiar words and phrases when they are supported by gestures or visuals in fictional texts.</li> <li>• I can identify some basic facts from memorized or familiar words and phrases when they are supported by gestures or visuals in conversations.</li> </ul>	<p>simple sentences in texts that are spoken, written, or signed.</p> <ul style="list-style-type: none"> <li>• I can identify the topic and some isolated facts from simple sentences in informational texts.</li> <li>• I can identify the topic and some isolated elements from simple sentences in short fictional texts.</li> <li>• I can understand familiar questions and statements from simple sentences in conversations.</li> </ul>	<p>simple sentences in texts that are spoken, written, or signed.</p> <ul style="list-style-type: none"> <li>• I can identify the topic and some isolated facts from simple sentences in informational texts.</li> <li>• I can identify the topic and some isolated elements from simple sentences in short fictional texts</li> <li>• I can understand familiar questions and statements from simple sentences in conversations.</li> </ul>
Early Adolescence		Adolescence	
6-8 - Intermediate Low/Intermediate Mid		9-diploma - Intermediate High/Advanced Low	
<p style="text-align: center;">Intermediate Low</p> <p>I can understand the topic and some pieces of information on familiar topics from sentences within texts that are spoken, written, or signed.</p> <ul style="list-style-type: none"> <li>• I can identify the topic and related information from simple sentences in short informational texts.</li> </ul>	<p style="text-align: center;">Intermediate Mid</p> <p>I can understand the main idea and some pieces of information on familiar topics from sentences and series of connected sentences within texts that are spoken, written, or signed.</p> <ul style="list-style-type: none"> <li>• I can understand the main idea and key information in short straightforward informational texts.</li> </ul>	<p style="text-align: center;">Intermediate High</p> <p>I can usually follow the main message and most pieces of information on familiar topics from sentences and series of connected sentences in various time frames within texts that are spoken, written, or signed.</p> <ul style="list-style-type: none"> <li>• I can usually follow the main message in various time</li> </ul>	<p style="text-align: center;">Advanced Low</p> <p>I can understand the main message and some supporting details on familiar and general interest topics across major time frames from complex, organized texts that are spoken, written, or signed.</p> <ul style="list-style-type: none"> <li>• I can identify the underlying message and some supporting details across major</li> </ul>

<ul style="list-style-type: none"> <li>I can identify the topic and related information from simple sentences in short fictional texts.</li> <li>I can identify the main idea in short conversations.</li> </ul>	<ul style="list-style-type: none"> <li>I can understand the main idea and key information in short straightforward fictional texts.</li> <li>I can identify the main idea and key information in short straightforward conversations.</li> </ul>	<p>frames in straightforward, and sometimes descriptive, paragraph length informational texts.</p> <ul style="list-style-type: none"> <li>I can usually follow the main story and actions expressed in various time frames in paragraph-length fictional texts.</li> <li>I can usually understand the main idea and flow of events expressed in various time frames in conversations and discussions.</li> </ul>	<p>time frames in descriptive informational texts.</p> <ul style="list-style-type: none"> <li>I can follow the main story and some supporting detail across major time frames in fictional texts.</li> <li>I can understand the main message and some supporting details across major time frames in conversations and discussions.</li> </ul>
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<b>Strand</b>	<b>Communication: Communicate effectively in more than one language in order to function in a variety of situations and for multiple purposes</b>		
<b>Standard</b>	<b>Presentational Communication: Learners present information, concepts, and ideas to inform, explain, persuade, and narrate on a variety of topics using appropriate media and adapting to various audiences of listeners, readers, or viewers.</b>		
<b>Performance Expectations</b>	Childhood		
	K - Novice Low	1 - Novice Low	2 - Novice Mid
	<p>I can present information on both very familiar and everyday topics using a variety of practiced or memorized words, phrases, and simple sentences through spoken, written, or signed language.</p> <ul style="list-style-type: none"> <li>I can introduce myself using practiced or memorized words and phrases, with the help of gestures or visuals.</li> <li>I can express my likes and dislikes using practiced or memorized words and phrases, with the help of gestures or visuals.</li> <li>I can name very familiar people, places, and objects using practiced or memorized words and phrases, with the help of gestures or visuals.</li> </ul>	<p>I can present information on both very familiar and everyday topics using a variety of practiced or memorized words, phrases, and simple sentences through spoken, written, or signed language.</p> <ul style="list-style-type: none"> <li>I can introduce myself using practiced or memorized words and phrases, with the help of gestures or visuals.</li> <li>I can express my likes and dislikes using practiced or memorized words and phrases, with the help of gestures or visuals.</li> <li>I can name very familiar people, places, and objects using practiced or memorized words and phrases, with the help of gestures or visuals.</li> </ul>	<p>I can present information on both very familiar and everyday topics using a variety of practiced or memorized words, phrases, and simple sentences through spoken, written, or signed language.</p> <ul style="list-style-type: none"> <li>I can present information about myself, my interests and my activities using a mixture of practiced or memorized words, phrases and simple sentences.</li> <li>I can express my likes and dislikes on very familiar and everyday topics of interest, using a mixture of practiced or memorized words, phrases and simple sentences.</li> <li>I can present on very familiar and everyday topics using a mixture of practiced or memorized words, phrases, and simple sentences.</li> </ul>

	3 - Novice Mid	4 - Novice High	5 - Novice High
	<p>I can present information on both very familiar and everyday topics using a variety of practiced or memorized words, phrases, and simple sentences through spoken, written, or signed language.</p> <ul style="list-style-type: none"> <li>• I can present information about myself, my interests and my activities using a mixture of practiced or memorized words, phrases, and simple sentences.</li> <li>• I can express my likes and dislikes on very familiar and everyday topics of interest, using a mixture of practiced or memorized words, phrases and simple sentences.</li> <li>• I can present on very familiar and everyday topics using a mixture of practiced or memorized words, phrases, and simple sentences.</li> </ul>	<p>I can present information on both very familiar and everyday topics using simple sentences most of the time.</p> <ul style="list-style-type: none"> <li>• I can present personal information about my life and activities, using simple sentences most of the time.</li> <li>• I can express my preferences on familiar and everyday topics of interest, using simple sentences most of the time.</li> <li>• I can present on familiar and everyday topics, using simple sentences most of the time.</li> </ul>	<p>I can present information on both very familiar and everyday topics using simple sentences most of the time.</p> <ul style="list-style-type: none"> <li>• I can present personal information about my life and activities, using simple sentences most of the time.</li> <li>• I can express my preferences on familiar and everyday topics of interest, using simple sentences most of the time.</li> <li>• I can present on familiar and everyday topics, using simple sentences most of the time.</li> </ul>
	Early Adolescence	Adolescence	

6-8 - Intermediate Low/Intermediate Mid		9-diploma - Intermediate High/Advanced Low	
Intermediate Low	Intermediate Mid	Intermediate High	Advanced Low
<p>I can communicate information, make presentations, and express my thoughts about familiar topics, using simple sentences through spoken, written, or signed language.</p> <ul style="list-style-type: none"> <li>• I can present personal information about my life, activities and events, using simple sentences.</li> <li>• I can express my preferences on familiar and everyday topics of interest and explain why I feel that way, using simple sentences.</li> <li>• I can present on familiar and everyday topics, using simple sentences.</li> </ul>	<p>I can communicate information, make presentations, and express my thoughts about familiar topics, using sentences and series of connected sentences through spoken, written, or signed language.</p> <ul style="list-style-type: none"> <li>• I can tell a story about my life, activities, events and other social experiences, using sentences and series of connected sentences.</li> <li>• I can state my viewpoint about familiar topics and give some reasons to support it, using sentences and series of connected sentences.</li> <li>• I can give straightforward presentations on a variety of familiar topics and some concrete topics I have researched, using sentences and series of connected sentences.</li> </ul>	<p>I can communicate information, make presentations, and express my thoughts about familiar or researched topics, using a few short paragraphs often across various time frames through spoken, written, or signed language.</p> <ul style="list-style-type: none"> <li>• I can tell stories about school and community events and personal experiences, using a few short paragraphs, often across various time frames.</li> <li>• I can state my viewpoint on familiar or researched topics and provide reasons to support it, using a few short paragraphs, often across various time frames.</li> <li>• I can give detailed presentations on a variety of familiar topics and some concrete topics I have researched, using a few short paragraphs, often across various time frames.</li> </ul>	<p>I can deliver presentations on familiar as well as unfamiliar concrete topics, in paragraphs and using various time frames through spoken, written, or signed language.</p> <ul style="list-style-type: none"> <li>• I can tell stories about school and community events and personal experiences, using paragraphs across major time frames.</li> <li>• I can state a viewpoint with supporting evidence on some concrete academic, social and professional topics of interest using paragraphs across major time frames.</li> <li>• I can deliver presentations on some concrete academic, social and professional topics of interest, using paragraphs across major time frames.</li> </ul>

### Cultures

Culture, the products, practices, and achievements of a particular nation, people, or social group, is intricately woven throughout the world’s languages. Using a target language to explore one’s own culture and the cultures that the target language embodies is an experience that creates learners who are aware of and engage with a variety of different perspectives in local and global society, and who are, ultimately, responsible and involved citizens of Maine and the world. Through interacting with global cultures in the World Language classroom, virtually and in various settings and communities, using the target language exclusively or almost exclusively, with appropriate linguistic scaffolding, and by identifying, comparing, investigating and reflecting on cultural products (e.g., arts, tools, media) and practices (e.g., customs, laws, family rituals), learners will be equipped to interact with others with competence and understanding.

Relating Cultural Practices to Perspectives	Relating Cultural Products to Perspectives
Learners use the language to investigate, explain, and reflect on the relationship between the practices and perspectives of the cultures studied.	Learners use the language to investigate, explain, and reflect on the relationship between the products and perspectives of the cultures studied.

Strand	Cultures: Interact with cultural competence and understanding		
Standard	<b>Relating Cultural Practices to Perspectives: Learners use the language to investigate, explain, and reflect on the relationship between the practices and perspectives of the cultures studied.</b>		
<b>Performance Expectations</b>	Childhood		
	K - Novice Low	1 - Novice Low	2 - Novice Mid
	In my own and other cultures, I can identify practices to help me understand perspectives.  • In my own and other cultures, I can identify typical practices related to familiar everyday life.	In my own and other cultures, I can identify practices to help me understand perspectives.  • In my own and other cultures, I can identify typical practices related to familiar everyday life.	In my own and other cultures, I can identify practices to help me understand perspectives.  • In my own and other cultures, I can identify typical practices related to familiar everyday life.
	3 - Novice Mid	4 - Novice High	5 - Novice High
	In my own and other cultures, I can identify practices to help me understand perspectives.	In my own and other cultures, I can identify practices to help me understand perspectives.	In my own and other cultures, I can identify practices to help me understand perspectives.

<ul style="list-style-type: none"> <li>In my own and other cultures, I can identify typical practices related to familiar everyday life.</li> </ul>	<ul style="list-style-type: none"> <li>In my own and other cultures, I can identify typical practices related to familiar everyday life.</li> </ul>	<ul style="list-style-type: none"> <li>In my own and other cultures, I can identify typical practices related to familiar everyday life.</li> <li>In my own and other cultures, I can demonstrate typical cultural practices related to familiar everyday life.</li> </ul>
<p>Early Adolescence</p>		<p>Adolescence</p>
<p>6-8 - Intermediate Low/Intermediate Mid</p>		<p>9-diploma - Intermediate High/Advanced Low</p>
<p>In my own and other cultures, I can make comparisons among cultural practices to help me understand perspectives.</p> <ul style="list-style-type: none"> <li>In my own and other cultures, I can demonstrate and engage in typical cultural practices related to everyday life and personal interests or studies.</li> <li>In my own and other cultures, I can compare practices related to everyday life and personal interests or studies.</li> <li>In my own and other cultures, I can identify and compare historical eras.</li> </ul>	<p>In my own and other cultures, I can analyze and explain some diversity among cultural practices and how they relate to perspectives.</p> <ul style="list-style-type: none"> <li>In my own and other cultures, I can engage in or analyze some authentic cultural practices related to everyday life and personal interests or studies.</li> <li>In my own and other cultures, I can analyze and explain how a variety of practices within familiar and social situations are related to perspectives.</li> <li>In my own and other cultures, I can analyze and explain how cultural practices have changed through historical eras.</li> <li>In my own and other cultures, I can analyze and explain how cultural perspectives have changed or remained the same through historical eras in relation to cultural practices.</li> </ul>	

Strand	Cultures: Interact with cultural competence and understanding		
Standard	Relating Cultural Products to Perspectives: Learners use the language to investigate, explain, and reflect on the relationship between the products and perspectives of the cultures studied.		
Performance Expectations	Childhood		
	K - Novice Low	1 - Novice Low	2 - Novice Mid
	<p>In my own and other cultures, I can identify products to help me understand perspectives.</p> <ul style="list-style-type: none"> <li>In my own and other cultures, I can identify some typical products related to familiar everyday life.</li> </ul>	<p>In my own and other cultures, I can identify products to help me understand perspectives.</p> <ul style="list-style-type: none"> <li>In my own and other cultures, I can identify some typical products related to familiar everyday life.</li> </ul>	<p>In my own and other cultures, I can identify products to help me understand perspectives.</p> <ul style="list-style-type: none"> <li>In my own and other cultures, I can identify some typical products related to familiar everyday life.</li> </ul>
	3 - Novice Mid	4 - Novice High	5 - Novice High
	<p>In my own and other cultures, I can identify products to help me understand perspectives.</p> <ul style="list-style-type: none"> <li>In my own and other cultures, I can identify some typical products related to familiar everyday life.</li> </ul>	<p>In my own and other cultures, I can identify products to help me understand perspectives.</p> <ul style="list-style-type: none"> <li>In my own and other cultures, I can identify some typical products related to familiar everyday life.</li> </ul>	<p>In my own and other cultures, I can identify products to help me understand perspectives.</p> <ul style="list-style-type: none"> <li>In my own and other cultures, I can identify some typical products related to familiar everyday life.</li> </ul>
	Early Adolescence		Adolescence
	6-8 - Intermediate Low/Intermediate Mid		9-diploma - Intermediate High/Advanced Low
	<p>In my own and other cultures, I can make comparisons among cultural products to help me understand perspectives.</p> <ul style="list-style-type: none"> <li>In my own and other cultures, I can compare products related to everyday life and personal interests or studies.</li> </ul>	<p>In my own and other cultures, I can analyze and explain diversity among cultural products and how they relate to perspectives.</p> <ul style="list-style-type: none"> <li>In my own and other cultures, I can analyze and explain how a variety of products of public and personal interest are related to perspectives.</li> </ul>	

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	<ul style="list-style-type: none"><li>• In my own and other cultures, I can identify and compare historical eras.</li></ul>	<ul style="list-style-type: none"><li>• In my own and other cultures, I can analyze and explain how cultural products have changed through historical eras.</li><li>• In my own and other cultures, I can analyze and explain how cultural perspectives have changed or remained the same through historical eras in relation to cultural products.</li></ul>
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### Connections

In order for students to become self-directed lifelong learners, integrated and informed thinkers and responsible citizens, they will begin to make connections between the target language and other content areas starting at the novice level. Through their study of another language, students will investigate a variety of products and practices that make them aware of cultural differences in perspective and tap into their prior knowledge. As their abilities in the language grow, students will be able to effectively communicate those connections and explain the differences in cultural perspectives in their own language(s) and the target language in a variety of topics. This depth of experience through a variety of activities in all content areas will serve to assist students as they make decisions about their post-graduate work. The connections that students make between the language and particular areas of interest will allow them to apply that knowledge in the workforce and navigate more successfully with other cultures in a global community.

Making Connections	Acquiring Information and Diverse Perspectives
Connect with other disciplines and acquire information and diverse perspectives in order to use the language to function in academic and career-related situations	Learners access and evaluate information and diverse perspectives that are available through the target language and its cultures.

Strand	Connections: Connect with other disciplines and acquire information and diverse perspectives in order to use the language to function in academic and career-related situations		
Standard	Making Connections: Learners build, reinforce, and expand their knowledge of other disciplines while using the language to develop critical thinking and to solve problems creatively.		
Performance Expectations	Childhood		
	K - Novice Low	1 - Novice Low	2 - Novice Mid
	I can identify basic language connections to other Maine Learning Results content areas and the target language and associated culture(s).  • I can use information that I've learned in other content areas to make connections between the language and culture(s) being studied and my own.	I can identify basic language connections to other Maine Learning Results content areas and the target language and associated culture(s).  • I can use information that I've learned in other content areas to make connections between the language and culture(s) being studied and my own.	I can identify basic language connections to other Maine Learning Results content areas and the target language and associated culture(s).  • I can use information that I've learned in other content areas to make connections between the language and culture(s) being studied and my own.
	3 - Novice Mid	4 - Novice High	5 - Novice High

	<p>I can identify connections between other Maine Learning Results content areas and the target language and associated culture(s).</p> <ul style="list-style-type: none"> <li>I can use information that I've learned in other content areas to make connections between the language and culture(s) being studied and my own.</li> </ul>	<p>I can identify connections between other Maine Learning Results content areas and the target language and associated culture(s).</p> <ul style="list-style-type: none"> <li>I can use information that I've learned in other content areas to make connections between the language and culture(s) being studied and my own.</li> </ul>	<p>I can identify connections between other Maine Learning Results content areas and the target language and associated culture(s).</p> <ul style="list-style-type: none"> <li>I can use information that I've learned in other content areas to make connections between the language and culture(s) being studied and my own.</li> </ul>
Early Adolescence		Adolescence	
6-8 - Intermediate Low/Intermediate Mid		9-diploma - Intermediate High/Advanced Low	
	<p>I can apply information acquired in other MLR content areas to further my knowledge and skills in the target language and associated culture(s).</p> <ul style="list-style-type: none"> <li>I can apply information and/or skills from other MLR content areas including literature, social studies, science and technology, and/or the visual and performing arts to topics discussed in the world language classroom.</li> </ul>		<p>I can use resources in the target language to enhance my knowledge of other MLR content areas and associated culture(s).</p> <ul style="list-style-type: none"> <li>I can make connections to other content areas by assessing, interpreting, and reviewing information gathered through target language resources.</li> </ul>

<b>Strand</b>	<b>Connections: Connect with other disciplines and acquire information and diverse perspectives in order to use the language to function in academic and career-related situations</b>		
<b>Standard</b>	<b>Acquiring Information and Diverse Perspectives: Learners access and evaluate information and diverse perspectives that are available through the target language and its cultures.</b>		
<b>Performance Expectations</b>	Childhood		
	K - Novice Low	1 - Novice Low	2 - Novice Mid
	I can recognize some similarities and differences in how information is organized in the target culture(s) and in my own culture(s).	I can recognize some similarities and differences in how information is organized in the target culture(s) and in my own culture(s).	I can recognize some similarities and differences in how information is organized in the target culture(s) and in my own culture(s).

	<ul style="list-style-type: none"> <li>I can connect knowledge of simple structures and practices from my own language(s) and culture(s) to another.</li> </ul>	<ul style="list-style-type: none"> <li>I can connect knowledge of simple structures and practices from my own language(s) and culture(s) to another.</li> </ul>	<ul style="list-style-type: none"> <li>I can connect knowledge of simple structures from my own language(s) and culture(s) to another.</li> </ul>
	3 - Novice Mid	4 - Novice High	5 - Novice High
	<p>I can recognize some distinctive viewpoints available only through authentic target language resources.</p> <ul style="list-style-type: none"> <li>I can connect knowledge of structures and practices from my own language(s) and culture(s) to another.</li> <li>I can identify information about the target culture(s) through culturally authentic communication.</li> </ul>	<p>I can recognize some distinctive viewpoints available only through sources from the target language.</p> <ul style="list-style-type: none"> <li>I can connect knowledge of structures and practices from my own language(s) and culture(s) to another.</li> <li>I can identify information about the target culture(s) through culturally authentic communication.</li> </ul>	<p>I can recognize some distinctive viewpoints available only through sources from the target language.</p> <ul style="list-style-type: none"> <li>I can connect knowledge of structures and practices from my own language(s) and culture(s) to another.</li> <li>I can identify information about the target culture(s) through culturally authentic communication.</li> </ul>
	Early Adolescence		Adolescence
	6-8 - Intermediate Low/Intermediate Mid		9-diploma - Intermediate High/Advanced Low
	<p>I can locate authentic resources and identify ideas about the language and associated culture(s) that are available only through resources in the target language.</p> <ul style="list-style-type: none"> <li>I can locate media or other authentic sources from the target language and the culture(s) in which the target language is the primary form of communication.</li> <li>I can compare and contrast a perspective and/or practice of a culture(s) with my own culture(s).</li> </ul>		<p>I can locate authentic resources and describe ideas about the language and associated culture(s) that are available only through resources in the target language.</p> <ul style="list-style-type: none"> <li>I can interpret short samples of discourse in the target language that reflect the culture(s) in which the target language is the primary form of communication and make connections to the viewpoints of the culture(s) associated with the target language(s).</li> <li>I can locate selected magazines, newspapers, authentic entertainment media and/or electronic media in the target language and use these media as the basis for describing the viewpoints of the culture(s) associated with the target language(s).</li> </ul>

### Comparisons

Through the study of language, students are invited to engage with the multilingual and multicultural world within and beyond their communities. By exploring diverse linguistic and cultural contexts, students make comparisons that enable them to better understand their own and other environments, to function in a global society, and to become informed thinkers and responsible, involved citizens. Developing insight into the nature of language and culture through comparisons involves investigating and reflecting upon the structure and function of language as well as the products and practices of culture. Comparing cultures leads to complex discussions on community connectedness and the role of the individual within various cultures. Throughout the strand, teachers and students are encouraged to employ a variety of media and technology to explore diverse linguistic and cultural contexts.

<b>Language Comparisons</b>	<b>Cultural Comparisons</b>
Learners use the language to investigate, explain, and reflect on the nature of language through comparisons of the language studied and their own.	Learners use the language to investigate, explain, and reflect on the concept of culture through comparisons of the cultures studied and their own.

<b>Strand</b>	<b>Comparisons: Develop insight into the nature of language and culture in order to interact with cultural competence</b>		
<b>Standard</b>	<b>Language Comparisons: Learners use the language to investigate, explain, and reflect on the nature of language through comparisons of the language studied and their own.</b>		
<b>Performance Expectations</b>	Childhood		
	K - Novice Low	1 - Novice Low	2 - Novice Mid
	I can recognize a variety of similarities and differences between the target language and my own language. <ul style="list-style-type: none"> <li>• I can identify discrete sounds, symbols, or signs.</li> </ul>	I can recognize a variety of similarities and differences between the target language and my own language. <ul style="list-style-type: none"> <li>• I can identify discrete sounds, symbols, or signs.</li> </ul>	I can recognize a variety of similarities and differences between the target language and my own language. <ul style="list-style-type: none"> <li>• I can identify similarities and differences in the sound, writing, or signing systems.</li> </ul>
	3 - Novice Mid	4 - Novice High	5 - Novice High
	I can recognize a variety of similarities and differences between the target language and my own language. <ul style="list-style-type: none"> <li>• I can identify similarities and differences in the sound, writing, or signing systems.</li> <li>• I can recognize cognates among languages.</li> </ul>	I can recognize a variety of similarities and differences between the target language and my own language. <ul style="list-style-type: none"> <li>• I can make simple comparisons of basic language forms.</li> <li>• I can recognize word borrowings and cognates among languages.</li> <li>• I can recognize basic idiomatic expressions among languages.</li> </ul>	I can recognize a variety of similarities and differences between the target language and my own language. <ul style="list-style-type: none"> <li>• I can make simple comparisons of basic language forms.</li> <li>• I can recognize word borrowings and cognates among languages.</li> <li>• I can recognize basic idiomatic expressions among languages.</li> </ul>

	Early Adolescence		Adolescence
	6-8 - Intermediate Low/Intermediate Mid		9-diploma - Intermediate High/Advanced Low
	<p>I can compare the target language with my own language in order to better understand language systems.</p> <ul style="list-style-type: none"> <li>I can compare basic grammatical structures and syntax between languages.</li> <li>I can compare idiomatic expressions, pronunciation, or nonverbal features between languages.</li> <li>I can recognize that there are geographical, sociolinguistic, and/or historical variations in languages.</li> </ul>	<p>I can use my understanding of language comparisons to enhance my communication in the target language.</p> <ul style="list-style-type: none"> <li>I can compare a variety of grammatical structures and syntax between languages including how time frames are expressed.</li> <li>I can compare and analyze cognates and idiomatic expressions including their evolutions and origins.</li> <li>I can analyze language comparisons and explain connections and differences between languages.</li> </ul>	

<b>Strand</b>	<b>Comparisons: Develop insight into the nature of language and culture in order to interact with cultural competence</b>		
<b>Standard</b>	<b>Cultural Comparisons: Learners use the language to investigate, explain, and reflect on the concept of culture through comparisons of the cultures studied and their own.</b>		
<b>Performance Expectations</b>	Childhood		
	K - Novice Low	1 - Novice Low	2 - Novice Mid
	<p>In my own and other cultures, I can identify products and practices to help me understand perspectives.</p> <ul style="list-style-type: none"> <li>I can identify products and practices in the target culture.</li> </ul>	<p>In my own and other cultures, I can identify products and practices to help me understand perspectives.</p> <ul style="list-style-type: none"> <li>I can identify products and practices in the target culture.</li> </ul>	<p>In my own and other cultures, I can identify products and practices to help me understand perspectives.</p> <ul style="list-style-type: none"> <li>I can identify products and practices in the target culture.</li> <li>I can compare simple patterns of behavior.</li> </ul>
	3 - Novice Mid	4 - Novice High	5 - Novice High

	<p>In my own and other cultures, I can identify products and practices to help me understand perspectives.</p> <ul style="list-style-type: none"> <li>• I can identify products and practices in the target culture.</li> <li>• I can compare simple patterns of behavior.</li> </ul>	<p>In my own and other cultures, I can identify products and practices to help me understand perspectives.</p> <ul style="list-style-type: none"> <li>• I can identify products and practices in the target culture.</li> <li>• I can compare patterns of behavior.</li> <li>• I can recognize stereotypes and/or generalizations in my own and other cultures.</li> </ul>	<p>In my own and other cultures, I can identify products and practices to help me understand perspectives.</p> <ul style="list-style-type: none"> <li>• I can identify products and practices in the target culture.</li> <li>• I can compare patterns of behavior.</li> <li>• I can recognize stereotypes and/or generalizations in my own and other cultures.</li> </ul>
<p>Early Adolescence</p>		<p>Adolescence</p>	
<p>6-8 - Intermediate Low/Intermediate Mid</p>		<p>9-diploma - Intermediate High/Advanced Low</p>	
	<p>In my own and other cultures, I can make comparisons between products and practices to help me understand perspectives.</p> <ul style="list-style-type: none"> <li>• In my own and other cultures, I can compare products and practices related to everyday life and personal interests or studies.</li> <li>• In my own and other cultures, I can identify stereotypes and their role in the past and present treatment of groups and people.</li> <li>• In my own and other cultures, I can recognize the perspectives of those from different cultures to build empathy.</li> <li>• In my own and other cultures, I can communicate using some culturally appropriate behaviors and make basic comparisons among them.</li> </ul>	<p>In my own and other cultures, I can explain some diversity among products and practices and how it relates to perspectives.</p> <ul style="list-style-type: none"> <li>• In my own and other cultures, I can explain how a variety of products and practices of public and personal interest are related to perspectives.</li> <li>• In my own and other cultures, I can explain how group identities have been formed by stereotypes and their role in the past and present treatment of groups and people.</li> <li>• In my own and other cultures, I can take the perspectives of those from different cultures to build empathy.</li> <li>• In my own and other cultures, I can communicate using culturally appropriate behaviors and make comparisons among them.</li> </ul>	

### Communities

When students are learning a new language, they are doing so in the context of others who use this language. Learning a new language is a bridge to cultures, past, present, and future, and creates a personal connection for students and places them in a community. A community is a group of people who share in a common experience. Community may refer to the school community, to a student’s home or family, or to digital connections that are geographically close or throughout the world. Whether students are learning a modern, classical, or signed language, and regardless of rural or urban setting, meaningful community connections enrich their lives and encourage lifelong learning. When students’ language study is connected to a community, they are motivated to learn because they can see the real-life application of their learning.

<b>School and Global Communities</b>	<b>Lifelong Learning</b>
Learners use the language both within and beyond the classroom to interact and collaborate in their community and the globalized world.	Learners set goals and reflect on their progress in using languages for enjoyment, enrichment, and advancement.

<b>Strand</b>	<b>Communities: Communicate and interact with cultural competence in order to participate in multilingual communities at home and around the world</b>		
<b>Standard</b>	<b>School and Global Communities: Learners use the language both within and beyond the classroom to interact and collaborate in their community and the globalized world.</b>		
<b>Performance Expectations</b>	Childhood		
	K - Novice Low	1 - Novice Low	2 - Novice Mid
	I can interact with the community by identifying or describing the target language outside the classroom. <ul style="list-style-type: none"> <li>• I can identify the target language in the community.</li> <li>• I can share what I have learned about my target language and culture(s) outside the classroom.</li> </ul>	I can interact with the community by identifying or describing the target language outside the classroom. <ul style="list-style-type: none"> <li>• I can identify the target language in the community.</li> <li>• I can share what I have learned about my target language and culture(s) outside the classroom.</li> </ul>	I can interact with the community by identifying or describing the target language outside the classroom. <ul style="list-style-type: none"> <li>• I can identify the target language in the community.</li> <li>• I can share what I have learned about my target language and culture(s) outside the classroom.</li> </ul>
	3 - Novice Mid	4 - Novice High	5 - Novice High
	I can interact with the community by identifying or describing the target language outside the classroom.	I can interact at a functional level in the community using cultural and linguistic skills from the target language and cultures.	I can interact at a functional level in the community using cultural and linguistic skills from the target language and cultures.

	<ul style="list-style-type: none"> <li>I can identify the target language in the community.</li> <li>I can share what I have learned about my target language and culture outside the classroom.</li> </ul>	<ul style="list-style-type: none"> <li>I can engage with resources to share or interact with the community.</li> <li>I can contribute to the community using cultural or linguistic skills.</li> </ul>	<ul style="list-style-type: none"> <li>I can engage with resources to share or interact with the community.</li> <li>I can contribute to the community using cultural or linguistic skills.</li> </ul>
Early Adolescence		Adolescence	
6-8 - Intermediate Low/Intermediate Mid		9-diploma - Intermediate High/Advanced Low	
	<p>I can interact at a functional level in the community using cultural and linguistic skills from the target language and cultures.</p> <ul style="list-style-type: none"> <li>I can engage with resources to share or interact with the community.</li> <li>I can contribute to the community using cultural or linguistic skills.</li> </ul>		<p>I can interact and collaborate with the community with cultural competence and linguistic skills.</p> <ul style="list-style-type: none"> <li>I can contribute to resources used in the community.</li> <li>I can contribute to the community using cultural or linguistic skills while demonstrating awareness and understanding of cultural differences and adjusting my behavior accordingly.</li> </ul>

<b>Strand</b>	<b>Communities: Communicate and interact with cultural competence in order to participate in multilingual communities at home and around the world</b>		
<b>Standard</b>	<b>Lifelong Learning: Learners set goals and reflect on their progress in using languages for enjoyment, enrichment, and advancement.</b>		
<b>Performance Expectations</b>	Childhood		
	K - Novice Low	1 - Novice Low	2 - Novice Mid
	<p>I can choose goals for growth and reflect on my progress in using and enjoying the target language.</p> <ul style="list-style-type: none"> <li>I can choose a goal and describe or record my progress.</li> </ul>	<p>I can choose goals for growth and reflect on my progress in using and enjoying the target language.</p> <ul style="list-style-type: none"> <li>I can choose a goal and describe or record my progress.</li> </ul>	<p>I can choose goals for growth and reflect on my progress in using and enjoying the target language.</p> <ul style="list-style-type: none"> <li>I can choose a goal and describe or record my progress.</li> </ul>
	3 - Novice Mid	4 - Novice High	5 - Novice High
	<p>I can choose goals for growth and reflect on my progress in using and enjoying the target language.</p>	<p>I can create goals for myself and reflect on my progress in using and enjoying the target language within both the classroom and the larger community.</p>	<p>I can create goals for myself and reflect on my progress in using and enjoying the target language within both the classroom and the larger community.</p>

<ul style="list-style-type: none"> <li>I can choose a goal and describe or record my progress.</li> </ul>	<ul style="list-style-type: none"> <li>I can create goals for myself and record and reflect on my progress</li> </ul>	<ul style="list-style-type: none"> <li>I can create goals for myself and record and reflect on my progress.</li> </ul>
Early Adolescence		Adolescence
6-8 - Intermediate Low/Intermediate Mid		9-diploma - Intermediate High/Advanced Low
<p>I can create goals for myself and reflect on my progress in using and enjoying the target language within both the classroom and the larger community.</p> <ul style="list-style-type: none"> <li>I can create goals for myself and record and reflect on my progress.</li> <li>I can reflect on and explain how language experiences enrich my life.</li> </ul>	<p>I can set goals for myself that facilitate my engagement with the community and reflect on my experiences.</p> <ul style="list-style-type: none"> <li>I can create goals for myself and record and reflect on my progress.</li> <li>I can reflect on and explain how language experiences enrich my life and provide me with advanced opportunities.</li> </ul>	

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