

# Alternate Grade Level Expectations for Extended Learning

*Based on Maine's Accountability Standards, Chapter 131*

**Science**  
*Maine's 2007 Learning Results*

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# A Guide to the Alternate Grade Level Expectations (AGLEs) for Maine’s Personalized Alternate Assessment Portfolio (PAAP)

Maine’s state-level assessments – Maine Educational Assessment (MEA)-Mathematics and English Language Arts/Literacy and MEA-Science allow student participation through any of three avenues:

- Standard Administration, for those who can take the test as it is traditionally presented;
- Administration with Accommodations, for students who need changes in the way the test is presented, or the means by which their responses are communicated, to be on an equal footing with their peers who use standard administration. Such accommodations do not change what is being measured;
- Alternate Assessment, for those students who have significant or profound disabilities that prevent them from showing what they know or can do through the general assessment formats, even with accommodations.

If it appears that a student’s successful participation may require alternate assessment, a team must be convened to determine the avenue(s) that is appropriate for the student. In the case of students with an identified disability, the decision-making panel must be the same group responsible for determining the student’s Individual Education Program (the IEP Team).

Lists of approved accommodations for each of the assessments may be found in documents on the Maine Department of Education Web site. These accommodations may also be used for students who are participating in testing through the Personalized Alternate Assessment Portfolio (PAAP). The PAAP is intended for those students with an IEP who need a modified measure of performance – that is to say, students whose exceptionality is so significant that it does not allow access to the standard assessment, even with a combination of accommodations. The PAAP, like other Maine State Assessments, provides a snapshot in time of the individual student’s performance. A broader picture will emerge as the student results on the PAAP are viewed in conjunction with results on other assessments in and beyond the classroom. The results of the alternate assessment will serve as the basis for reporting under the *No Child Left Behind Act* for the student participants.

The student work included in a PAAP is based on Maine’s Alternate Grade Level Expectations (AGLEs) contained in this document, which are designed for planning and implementing the Maine’s alternate assessment and are developmentally backed down to a level considered appropriate for inclusion in the student’s instructional program.

Furthermore, the PAAP is a portfolio assessment, measuring progress toward the defined AGLEs by allowing students to produce evidence of their growth over the course of a school year. PAAP assesses students in the same grade levels as the other Maine State Assessment in Science. The administration window for the PAAP runs for five months of the academic year – from the first week of December through the last week of April. This extended administration window provides opportunities for instruction to be embedded in the student’s daily work throughout the school year, then assessed using PAAP tasks.

## Levels of Complexity (LoC)

Maine’s Alternate Grade Level Expectations (AGLEs) for the 2014–2015 PAAP are written on a continuum of eight Levels of Complexity (LoC). The AGLEs were developed by “backing down” the academic content standards (see Maine’s Accountability Standards, Chapter 131) from high school through elementary school. This approach ensured linkage to the content standards across grades K–12. The LoCs for Science are linked to Maine’s 2007 *Learning Results*.

Maine’s AGLEs provide a common basis for the planning and assessment of standards-based instruction and assessment in a system that allows students to work on the AGLEs/Indicators, LoC Descriptors, and tasks best suited to their individual needs. Each LoC is designated as appropriate for specified student grade levels. All tasks submitted in a student’s PAAP must be selected and downloaded from the PAAP Task Bank ([www.mecas.org/paap/taskbank](http://www.mecas.org/paap/taskbank)). In order to establish consistency, teachers may not develop their own tasks.

All Tasks within the Task Bank are aligned with Maine’s AGLEs/Indicators LoCs 1–8. Students working above the grade-appropriate LoC should participate in the standard Maine State Assessment for their grade-level placement with appropriate accommodations.

## Format of the AGLEs for the PAAP

Science AGLEs/Indicators are aligned to reflect the format and design of the Maine *Learning Results* under Maine’s Accountability Standards, Chapter 131. At the top of each page, the reader will find a header with Maine’s Accountability Standards, Chapter 131, AGLE/ Indicator, and title of each AGLE. The student expectations for that AGLE are written in italics below the AGLE.

Since *all* students must be involved in general curriculum, teachers are encouraged to plan instruction aligned to the PAAP LoC descriptor for each AGLE/Indicator selected as appropriate for inclusion in a student’s instructional program (i.e., IEP). Assessment of the student’s related knowledge and/or skills using downloaded PAAP tasks aligned to that LoC descriptor should be used following delivery of the planned instruction. The completed tasks, along with the required forms, will make up the student work that serves as the contents of the PAAP.

Maine’s Alternate Grade Level Expectations for the PAAP can be found online at <http://www.maine.gov/education/lsalt/paap/agles.html>.

### Required AGLE Indicators

The blueprint for alternate assessment requires that certain indicators in Maine’s *Alternate Grade Level Expectations* (AGLEs) be assessed at specific grade levels in order to ensure that all students have the opportunity to develop an understanding of concepts included in each AGLE/Indicator. As the blueprint was developed, the design team focused on each content area to make the developmental progression of tasks parallel to the developmental progression of the general assessment. The final blueprint was reviewed by personnel at the Maine Department of Education, Content Specialists at Measured Progress, Maine Stakeholders, the PAAP Advisory Committee, and the Technical Advisory Committee.

The blueprint can be viewed online at [www.maine.gov/education/lsalt/paap/materialstools/index.htm](http://www.maine.gov/education/lsalt/paap/materialstools/index.htm).

### Rationale for Science:

In developing the test blueprint for science, several sources were considered:

- *Alternate Grade Level Expectations* for Maine’s Personalized Alternate Assessment Portfolio (PAAP) 2009–2010;
- Maine Educational Assessment - MEA Science
- Maine Department of Education Regulation 131; and
- *National Science Education Standards* by the Center for Science, Mathematics, and Engineering Education.

The content assessed in the alternate assessment blueprint for science generally reflects the same areas assessed by the general education assessment instrument, which is currently the MEA Science. The science portion of the MEA assesses two AGLE/Indicators: D (The Physical Setting), spanning Indicators 1-4, and E (The Living Environment), spanning Indicators 1-5.

AGLE/Indicator D contains indicators that encompass the subject matter conventionally referred to as physical, earth, and space science, while E contains indicators related to life science.

Both D and E are assessed each year in grades 5 and 8 and in the third year of high school. In general, indicators are assessed at the grade level in which the topics and tasks are most likely to be developmentally appropriate, interesting and relevant to students. The focus at the elementary level is on concepts that the student can directly observe, such as the sun, the moon, rocks, plants, and animals. Force and Motion provide concrete observations at the middle school level; the more abstract concepts of Matter and Energy will be addressed in high school. Likewise Cells, and Heredity and Reproduction,

provide foundations for the more abstract concepts of Biodiversity and Evolution taught in high school. At the third year of high school, the level of abstraction increases: Matter and Energy, Biodiversity, and Evolution. These are all high school concepts that are more abstract than the concepts covered in elementary and middle school.

In *The Living Environment*, the progression from grade 5 to the third year of high school is from individual organisms, to populations, to an understanding of how organisms change over time. In *The Physical Setting*, the progression is from the macroscopic universe, solar system, and Earth to forces and motion in the everyday environment, ending in the third year of high school with Matter and Energy at the macroscopic and atomic levels. Each successive grade level assessment connects to and builds on the science concepts introduced at a lower level (as well as with concepts in other subject areas, such as mathematics).

The goal is to increase the level of scientific literacy among all students by exposing each student to the full spectrum of the science concepts included in Maine's Alternate Assessment Grade Level Expectations.

The blueprint can be viewed on page 8 of this document, or online at [www.maine.gov/education/lsalt/paap/materialstools/index.htm](http://www.maine.gov/education/lsalt/paap/materialstools/index.htm).

## Definitions and/or Acronyms

### Alternate Grade Level Expectations (AGLEs)

Maine's Personalized Alternate Assessment Portfolio with *Alternate Grade Level Expectations* in Science are designed to encourage the highest achievement of every student by defining the knowledge, concepts, and skills that students should acquire at each LoC. AGLEs are developmentally backed down to ensure access to curriculum and instruction for students with severe cognitive disabilities. Within the content area sections of the AGLE document, each AGLE is assigned a letter for organizational purposes (e.g., Reading Standard A).

### Grade Level Expectations (GLEs)

What all students should know and be able to do at the end of a given grade level.

### Indicator

For Maine's Personalized Alternate Assessment Portfolio, an Indicator is the number assigned within an AGLE (e.g., A1) for organizational purposes.

### Levels of Complexity (LoC)

Continuum of complexity descriptors, of which there are eight within each standard.

## Maine's Accountability Standards, Chapter 131

Identifies the knowledge and skills essential to prepare Maine students for work, for higher education, for citizenship, and for personal fulfillment. This document defines only the core elements of education that should apply to all students without regard to their specific career and academic plans.

## Maine Educational Assessment - MEA Science)

Science assessment required of students in grades 5, 8 and the third year of High School.

## MEA Mathematics and English Language Arts/Literacy (Smarter Balanced)

Assessment program required for students in grades 3 through 8 and the third year of High School.

## MEA Alternate Science - Personalized Alternate Assessment Portfolio (PAAP)

Maine's Alternate Assessment Program for students with significant cognitive disabilities who cannot participate in the general assessment for Science in Maine even with accommodations.

## MEA Alternate Mathematics and English Language Arts/Literacy (National Center and State Collaborative - NCSC)

Maine's Alternate Assessment Program for students with significant cognitive disabilities who cannot participate in the general assessment for Mathematics and ELA/Literacy in Maine even with accommodations.

## Maine's 2007 Learning Results

The Maine Department of Education Regulation 132 - *Learning Results: Parameters for Essential Instruction* describes the progression of learning and establishes parameters for essential teaching and learning in grades Pre-Kindergarten through Diploma across eight content areas.

# PAAP Science Blueprint

Required AGLE/Indicator by Grade Level 2014-15

Grade	Science
3	
4	
5	D1, D2, E2
6	
7	
8	D4, E3, E4
3 <sup>rd</sup> Yr High School	D3, E1, E5

# Alternate Grade Level Expectations

## EXTENDED LEARNING

# Science

Based on Maine's *Accountability Standards, Chapter 131*

**Maine’s Accountability Standards, Chapter 131  
The Physical Setting – Universe and Solar System**

**Science AGLE/Indicator — D1**

*Student understands the universal nature of matter, energy, force, and motion, and identifies how these relationships are exhibited in Earth Systems, in the solar system, and throughout the universe by:*

Level of Complexity 1 (Grades 5, 8, and 3rd Year HS)	Level of Complexity 2 (Grades 5, 8, and 3rd Year HS)	Level of Complexity 3 (Grades 5, 8, and 3rd Year HS)	Level of Complexity 4 (Grades 5, 8, and 3rd Year HS)
describing or otherwise demonstrating understanding of the positions or apparent motions of different objects in our solar system and what these objects look like from Earth by...			
<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>identifying night and day.</li> </ul>	<p><b>doing <u>both</u> of the following:</b></p> <ul style="list-style-type: none"> <li>identifying pictures of night and day,</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>identifying the Sun and Earth’s Moon.</li> </ul>	<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>identifying the position of the sun at different times by drawing or otherwise describing the movement of the Sun across the sky.</li> </ul>	<p><b>doing <u>both</u> of the following:</b></p> <ul style="list-style-type: none"> <li>identifying the position of the sun at different times by drawing or otherwise describing the movement of the Sun across the sky,</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>drawing or identifying different phases of the Moon.</li> </ul>
Level of Complexity 5 (Grade 8 and 3rd Year HS)	Level of Complexity 6 (Grade 8 and 3rd Year HS)	Level of Complexity 7 (3rd Year HS)	Level of Complexity 8 (3rd Year HS)
explaining the movements and describing the location, composition, and characteristics of our solar system and universe, including planets, the Sun, and galaxies, by...			
<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>identifying the Sun, Earth’s Moon, and planet(s) on a given diagram and listing some planets.</li> </ul>	<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>listing the four inner planets and placing them in order relative to the Sun.</li> </ul>	<p><b>doing <u>both</u> of the following:</b></p> <ul style="list-style-type: none"> <li>describing the relative locations of the Sun, Earth, Earth’s Moon, and planets and identifying their orbits;</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>identifying the role that gravity plays in forming stars, planets, and the solar system.</li> </ul>	<p><b>doing <u>both</u> of the following:</b></p> <ul style="list-style-type: none"> <li>identifying the role that gravity plays in forming stars, planets, and the solar system,</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>identifying the role that gravity plays in keeping moons in position around planets, and planets around stars.</li> </ul>



**Maine’s Accountability Standards, Chapter 131  
The Physical Setting – Earth**

**Science AGLE/Indicator — D2**

*Student understands the universal nature of matter, energy, force, and motion, and identifies how these relationships are exhibited in Earth Systems, in the solar system, and throughout the universe by:*

Level of Complexity 1 (Grades 5, 8, and 3rd Year HS)	Level of Complexity 2 (Grades 5, 8, and 3rd Year HS)	Level of Complexity 3 (Grades 5, 8, and 3rd Year HS)	Level of Complexity 4 (Grades 5, 8, and 3rd Year HS)
<b>describing the properties of Earth’s surface materials, the processes that change them, and cycles that affect Earth by...</b>			
<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>identifying sunny, rainy, snowy, and/or windy weather through observation.</li> </ul>	<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>matching pictures to the type of weather they depict.</li> </ul>	<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>identifying the different forms that water can take in the weather.</li> </ul>	<p><b>doing <u>one</u> of the following:</b></p> <ul style="list-style-type: none"> <li>matching weather to the effects it can have on the surface of Earth (erosion or weathering), and/or</li> <li>identifying factors that can influence temperature in the environment (day/night cycle, cloud cover, and presence of a star).</li> </ul>
Level of Complexity 5 (Grade 8 and 3rd Year HS)	Level of Complexity 6 (Grade 8 and 3rd Year HS)	Level of Complexity 7 (3rd Year HS)	Level of Complexity 8 (3rd Year HS)
<b>describing the various cycles, physical and biological forces and processes, positions in space, energy transformations, and human actions that affect the short-term and long-term changes to Earth by...</b>		<b>describing and analyzing the biological, physical, energy, and human influences that shape and alter Earth Systems by...</b>	
<p><b>doing <u>both</u> of the following:</b></p> <ul style="list-style-type: none"> <li>describing climates in different regions of the world,</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>describing seasonal changes for different locations on earth (polar regions, equator, northern hemisphere vs. southern hemisphere).</li> </ul>	<p><b>doing <u>one</u> or more of the following:</b></p> <ul style="list-style-type: none"> <li>identifying slow and abrupt changes to Earth (like volcanoes and earthquakes versus erosion and weathering) and/or</li> <li>describing what happens to objects on Earth when they are dropped.</li> </ul>	<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>identifying the Sun’s heat, ocean movement, or weather as things that can change the conditions of Earth.</li> </ul>	<p><b>doing <u>both</u> of the following:</b></p> <ul style="list-style-type: none"> <li>explaining how people can change Earth</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>explaining how plants and animals can change Earth.</li> </ul>

**Maine’s Accountability Standards, Chapter 131  
The Physical Setting – Matter and Energy**

**Science AGLE/Indicator — D3**

*Student understands the universal nature of matter, energy, force, and motion, and identifies how these relationships are exhibited in Earth Systems, in the solar system, and throughout the universe by:*

Level of Complexity 1 (Grades 5, 8, and 3rd Year HS)	Level of Complexity 2 (Grades 5, 8, and 3rd Year HS)	Level of Complexity 3 (Grades 5, 8, and 3rd Year HS)	Level of Complexity 4 (Grades 5, 8, and 3rd Year HS)
<b>describing properties of objects and materials before and after they undergo a change or interaction by...</b>			
<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>matching objects based on one physical property.</li> </ul>	<p><b>by doing the following:</b></p> <ul style="list-style-type: none"> <li>identifying which object in a group has a specific physical property.</li> </ul>	<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>sorting objects into groups using one or more physical properties.</li> </ul>	<p><b>doing <u>both</u> of the following:</b></p> <ul style="list-style-type: none"> <li>describing the physical properties of objects and materials</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>using observable characteristics to describe changes in the physical properties of materials when mixed, heated, frozen, or cut.</li> </ul>
Level of Complexity 5 (Grade 8 and 3rd Year HS)	Level of Complexity 6 (Grade 8 and 3rd Year HS)	Level of Complexity 7 (3rd Year HS)	Level of Complexity 8 (3rd Year HS)
<b>describing physical and chemical properties of matter, interactions and changes in matter, and transfer of energy through matter by...</b>		<b>describing the structure, behavior, and interactions of matter at the atomic level and the relationship between matter and energy by...</b>	
<p><b>doing <u>both</u> of the following:</b></p> <ul style="list-style-type: none"> <li>identifying chemical changes</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>identifying physical changes.</li> </ul>	<p><b>doing <u>both</u> of the following:</b></p> <ul style="list-style-type: none"> <li>comparing the properties of original materials and their properties after undergoing chemical or physical change</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>observing and drawing conclusions about how the weight of an object compares to the sum of the weights of its parts.</li> </ul>	<p><b>doing <u>both</u> of the following:</b></p> <ul style="list-style-type: none"> <li>explaining that all materials are made of small particles</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>identifying examples of chemical and physical changes.</li> </ul>	<p><b>doing <u>both</u> of the following:</b></p> <ul style="list-style-type: none"> <li>explaining that adding heat causes the small particles in matter to move faster</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>demonstrating understanding that the properties of a material may change but the total amount of material remains the same.</li> </ul>

**Maine’s Accountability Standards, Chapter 131  
The Physical Setting – Force and Motion**

**Science AGLE/Indicator — D4**

*Student understands the universal nature of matter, energy, force, and motion, and identifies how these relationships are exhibited in Earth Systems, in the solar system, and throughout the universe by:*

Level of Complexity 1 (Grades 5, 8, and 3rd Year HS)	Level of Complexity 2 (Grades 5, 8, and 3rd Year HS)	Level of Complexity 3 (Grades 5, 8, and 3rd Year HS)	Level of Complexity 4 (Grades 5, 8, and 3rd Year HS)
<b>summarizing how various forces affect the motion of objects by...</b>			
<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>identifying or demonstrating <b>one</b> way (e.g., forward, backward, straight, zigzag, up, down, fast, slow) an object can move.</li> </ul>	<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>identifying or demonstrating <b>two</b> ways (e.g., forward, backward, straight, zigzag, up, down, fast, slow) an object can move.</li> </ul>	<p><b>doing <u>both</u> of the following:</b></p> <ul style="list-style-type: none"> <li>describing or demonstrating <b>three</b> ways (e.g., forward, backward, straight, zigzag, up, down, fast, slow) an object can move</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>identifying that the way an object moves can be changed by pushing or pulling it.</li> </ul>	<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>demonstrating understanding of how given objects move.</li> </ul>
Level of Complexity 5 (Grade 8 and 3rd Year HS)	Level of Complexity 6 (Grade 8 and 3rd Year HS)	Level of Complexity 7 (3rd Year HS)	Level of Complexity 8 (3rd Year HS)
<b>describing the force of gravity, the motion of objects, the properties of waves, and the wavelike property of energy in light waves by...</b>		<b>showing understanding that the laws of force and motion are the same across the universe by...</b>	
<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>identifying or describing wave motions, earthquakes, vibrations, and/or water waves.</li> </ul>	<p><b>doing <u>one</u> or more of the following:</b></p> <ul style="list-style-type: none"> <li>giving examples of how gravity pulls objects,</li> <li>giving examples of how magnets pull and push objects, and/or</li> <li>describing similarities in motion of sound vibration and earthquakes, and water waves.</li> </ul>	<p><b>doing <u>one</u> or more the following:</b></p> <ul style="list-style-type: none"> <li>predicting the effect of a given force on the motion of objects and/or</li> <li>describing how waves can have different magnitudes, lengths, and frequencies.</li> </ul>	<p><b>doing <u>one</u> or more of the following:</b></p> <ul style="list-style-type: none"> <li>summarizing the effects of various forces on the motion of objects and/or</li> <li>describing how waves of water and other materials interact in similar ways.</li> </ul>

**Maine’s Accountability Standards, Chapter 131  
The Living Environment — Biodiversity**

**Science AGLE/Indicator — E1**

*Student understands that cells are the basic unit of life, that all life as we know it has evolved through genetic transfer and natural selection to create a great diversity of organisms, and that these organisms create interdependent webs through which matter and energy flow. Student understands the similarities and differences between humans and other organisms and the interconnections of these interdependent webs by:*

Level of Complexity 1 (Grades 5, 8, and 3rd Year HS)	Level of Complexity 2 (Grades 5, 8, and 3rd Year HS)	Level of Complexity 3 (Grades 5, 8, and 3rd Year HS)	Level of Complexity 4 (Grades 5, 8, and 3rd Year HS)
<b>comparing living things based on their behaviors, external features, and environmental needs by...</b>			
<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>identifying pictures or descriptions of given animals or plants.</li> </ul>	<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>identifying given organisms as plants or animals based on external features.</li> </ul>	<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>identifying organisms that are similar and different based on external features, behaviors, and/or needs.</li> </ul>	<p><b>doing <u>two</u> of the following:</b></p> <ul style="list-style-type: none"> <li>describing how plants and/or animals look, and/or</li> <li>describing the things that plants and/or animals do, and/or</li> <li>describing ways in which the needs of a plant and/or animal are met by its environment.</li> </ul>
Level of Complexity 5 (Grade 8 and 3rd Year HS)	Level of Complexity 6 (Grade 8 and 3rd Year HS)	Level of Complexity 7 (3rd Year HS)	Level of Complexity 8 (3rd Year HS)
<b>differentiating among organisms based on biological characteristics and identifying patterns of similarity by...</b>		<b>describing and analyzing the evidence for relatedness among and within diverse populations of organisms and the importance of biodiversity by...</b>	
<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>sorting living things based on external features or behaviors</li> </ul>	<p><b>doing <u>one</u> or more of the following:</b></p> <ul style="list-style-type: none"> <li>identifying how external (or internal) features can influence how an animal or plant gets food and/or</li> <li>differentiating among living things that make their food, living things that eat their food, and those that do not clearly belong in one group or the other.</li> </ul>	<p><b>doing <u>both</u> of the following:</b></p> <ul style="list-style-type: none"> <li>describing environments that have many different types of organisms and those that have fewer types of organisms,.</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>identifying ways that organisms are related using physical evidence, such as presence or absence of a backbone.</li> </ul>	<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>predicting possible changes that could result if the numbers of different types of organisms were to be drastically reduced.</li> </ul>

**Maine’s Accountability Standards, Chapter 131**  
**The Living Environment — Ecosystems**

**Science AGLE/Indicator — E2\*\***

*Student understands that cells are the basic unit of life, that all life as we know it has evolved through genetic transfer and natural selection to create a great diversity of organisms, and that these organisms create interdependent webs through which matter and energy flow. Student understands the similarities and differences between humans and other organisms and the interconnections of these interdependent webs by:*

Level of Complexity 1 (Grades 5, 8, and 3rd Year HS)	Level of Complexity 2 (Grades 5, 8, and 3rd Year HS)	Level of Complexity 3 (Grades 5, 8, and 3rd Year HS)	Level of Complexity 4 (Grades 5, 8, and 3rd Year HS)
<b>describing ways organisms depend upon, interact within, and change the living and nonliving environment as well as ways the environment affects organisms by...</b>			
<b>doing the following:</b> <ul style="list-style-type: none"> <li>identifying pictures or descriptions of given animals or plants.</li> </ul>	<b>doing the following:</b> <ul style="list-style-type: none"> <li>identifying animals or plants that live in given environments.</li> </ul>	<b>doing the following:</b> <ul style="list-style-type: none"> <li>identifying plants, animals, and/or components of their environments in which given animals depend on for food and shelter.</li> </ul>	<b>doing the following:</b> <ul style="list-style-type: none"> <li>comparing animals and plants that live in different environments to demonstrate understanding of how animals and plants depend on each other and the environments in which they live.</li> </ul>
Level of Complexity 5 (Grade 8 and 3rd Year HS)	Level of Complexity 6 (Grade 8 and 3rd Year HS)	Level of Complexity 7 (3rd Year HS)	Level of Complexity 8 (3rd Year HS)
<b>examining how the characteristics of the physical, nonliving environment, the types and behaviors of living organisms, and the flow of matter and energy affect organisms and the ecosystem of which they are part by...</b>		<b>describing and analyzing the interactions, cycles, and factors that affect short-term and long-term ecosystem stability and change by...</b>	
<b>doing <u>both</u> of the following:</b> <ul style="list-style-type: none"> <li>identifying particular organisms in given food chains</li> </ul> <b>AND</b> <ul style="list-style-type: none"> <li>placing organisms in a food chain in an appropriate sequence.</li> </ul>	<b>doing <u>two</u> of the following:</b> <ul style="list-style-type: none"> <li>identifying different things in an environment that organisms compete for in an environment,</li> <li>identifying organisms as those that eat other organisms, are eaten, or recycle material, and/or</li> <li>explaining how matter is transferred in an ecosystem.</li> </ul>	<b>doing the following:</b> <ul style="list-style-type: none"> <li>explaining ways in which organisms depend upon, interact within, and change the living and nonliving environment.</li> </ul>	<b>doing the following:</b> <ul style="list-style-type: none"> <li>explaining things that can limit how many plants and animals can survive in an area.</li> </ul>

**The Living Environment — Cells**

*Student understands that cells are the basic unit of life, that all life as we know it has evolved through genetic transfer and natural selection to create a great diversity of organisms, and that these organisms create interdependent webs through which matter and energy flow. Student understands the similarities and differences between humans and other organisms and the interconnections of these interdependent webs by:*

Level of Complexity 1 (Grades 5, 8, and 3rd Year HS)	Level of Complexity 2 (Grades 5, 8, and 3rd Year HS)	Level of Complexity 3 (Grades 5, 8, and 3rd Year HS)	Level of Complexity 4 (Grades 5, 8, and 3rd Year HS)
describing how living things are made up of one or more cells and the ways cells help organisms meet their basic needs by...			
<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>identifying given parts of the human body.</li> </ul>	<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>matching animals and/or plants to their parts.</li> </ul>	<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>identifying parts that allow living things to meet basic needs.</li> </ul>	<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>identifying structures and/or processes that help given organisms stay alive.</li> </ul>
Level of Complexity 5 (Grade 8 and 3rd Year HS)	Level of Complexity 6 (Grade 8 and 3rd Year HS)	Level of Complexity 7 (3rd Year HS)	Level of Complexity 8 (3rd Year HS)
describing the hierarchy of organization and function in organisms, and the similarities and differences in structure, function, and needs among and within organisms by...		describing structure and function of cells at the intracellular and molecular level including differentiation to form systems; interactions between cells and their environment; and the impact of cellular processes and changes on individuals by...	
<p><b>by doing one of the following:</b></p> <ul style="list-style-type: none"> <li>identifying that some living things are made of one cell and some living things are made of many cells, and/or</li> <li>identifying that all living things (single-celled and multi-celled) must have ways to get food and get rid of wastes.</li> </ul>	<p><b>doing both of the following:</b></p> <ul style="list-style-type: none"> <li>identifying that some living things are made of one cell and some living things are made of many cells</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>identifying that all living things (single-celled and multi-celled) must have ways to get food and get rid of wastes.</li> </ul>	<p><b>doing both of the following:</b></p> <ul style="list-style-type: none"> <li>explaining that living things produce new cells</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>explaining that cells produce complete copies of themselves when they divide.</li> </ul>	<p><b>doing both of the following:</b></p> <ul style="list-style-type: none"> <li>identifying that cells have parts in them that help them release energy, dispose of wastes, and build new parts</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>explaining how changes can occur in cells that can cause them to work incorrectly.</li> </ul>

**Maine’s Accountability Standards, Chapter 131**  
**The Living Environment — Heredity and Reproduction**

**Science AGLE/Indicator — E4**

*Student understands that cells are the basic unit of life, that all life as we know it has evolved through genetic transfer and natural selection to create a great diversity of organisms, and that these organisms create interdependent webs through which matter and energy flow. Student understands the similarities and differences between humans and other organisms and the interconnections of these interdependent webs by:*

Level of Complexity 1 (Grades 5, 8, and 3rd Year HS)	Level of Complexity 2 (Grades 5, 8, and 3rd Year HS)	Level of Complexity 3 (Grades 5, 8, and 3rd Year HS)	Level of Complexity 4 (Grades 5, 8, and 3rd Year HS)
<b>describing characteristics of organisms and the reason why organisms differ from or are similar to their parents by...</b>			
<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>identifying parents and their offspring by matching pictures of a baby organism to an adult of the same organism.</li> </ul>	<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>identifying things about offspring that are like and not like their parents.</li> </ul>	<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>demonstrating understanding of life cycles by explaining, drawing, or otherwise communicating knowledge of stages in given life cycles.</li> </ul>	<p><b>doing <u>both</u> of the following:</b></p> <ul style="list-style-type: none"> <li>naming similarities between the adults and offspring of varied organisms</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>identifying and describing, drawing, or otherwise communicating knowledge of stages in a life cycle.</li> </ul>
Level of Complexity 5 (Grade 8 and 3rd Year HS)	Level of Complexity 6 (Grade 8 and 3rd Year HS)	Level of Complexity 7 (3rd Year HS)	Level of Complexity 8 (3rd Year HS)
<b>describing the general characteristics and mechanisms of reproduction and heredity in organisms, including humans, and ways in which organisms are affected by their genetic traits by...</b>		<b>examining the role of DNA in transferring traits from generation to generation, in differentiating cells, and in evolving new species by...</b>	
<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>identifying the characteristics of offspring and parents based on similarities and differences.</li> </ul>	<p><b>doing <u>both</u> of the following:</b></p> <ul style="list-style-type: none"> <li>identifying living things that reproduce by getting all their inherited information from one parent</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>identifying living things that reproduce by getting all their inherited information from two parents.</li> </ul>	<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>identifying that cells contain information that makes living things look the way they do.</li> </ul>	<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>explaining that different living things contain some information in their cells that is similar to other living things and some that is different.</li> </ul>



**Maine’s Accountability Standards, Chapter 131**  
**The Living Environment — Evolution**

**Science AGLE/Indicator — E5**

*Student understands that cells are the basic unit of life, that all life as we know it has evolved through genetic transfer and natural selection to create a great diversity of organisms, and that these organisms create interdependent webs through which matter and energy flow. Student understands the similarities and differences between humans and other organisms and the interconnections of these interdependent webs by:*

Level of Complexity 1 (Grades 5, 8, and 3rd Year HS)	Level of Complexity 2 (Grades 5, 8, and 3rd Year HS)	Level of Complexity 3 (Grades 5, 8, and 3rd Year HS)	Level of Complexity 4 (Grades 5, 8, and 3rd Year HS)
describing fossil evidence and present explanations that help us understand why there are differences among and between present and past organisms by...			
<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>identifying organisms from the local environment.</li> </ul>	<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>matching pictures of organisms to the environment in which they live.</li> </ul>	<p><b>doing both of the following:</b></p> <ul style="list-style-type: none"> <li>identifying organisms that no longer live today</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>describing features that organisms no longer living today share with organisms now alive and features that differ from those of organisms now alive.</li> </ul>	<p><b>doing both of the following:</b></p> <ul style="list-style-type: none"> <li>describing features that allow or allowed present and past organisms to live in their environment</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>identifying organisms that once lived on Earth but no longer exist.</li> </ul>
Level of Complexity 5 (Grade 8 and 3rd Year HS)	Level of Complexity 6 (Grade 8 and 3rd Year HS)	Level of Complexity 7 (3rd Year HS)	Level of Complexity 8 (3rd Year HS)
describing the evidence that evolution occurs over many generations, allowing species to acquire many of their unique characteristics or adaptations, by...		describing the interactions between and among species, populations, and environments that lead to natural selection and evolution, by...	
<p><b>doing both of the following:</b></p> <ul style="list-style-type: none"> <li>identifying examples of fossils</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>demonstrating understanding of how fossils are formed.</li> </ul>	<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>explaining how fossils are used to help us understand the past.</li> </ul>	<p><b>doing the following:</b></p> <ul style="list-style-type: none"> <li>presenting explanations that help us understand similarities and differences among and between past and present organisms.</li> </ul>	<p><b>doing both of the following:</b></p> <ul style="list-style-type: none"> <li>explaining why some organisms survive to the next generation</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>explaining why some organisms have traits that provide no apparent survival advantage.</li> </ul>