**Maine Department of Education**
**Career and Technical Education**

**CTE Intersections with College and Career Readiness Standards-Mathematics**
**with**
**Carpentry-CIP: 46.0201**
**National Center for Construction Education Research (NCCER)**

| Carpentry Duties, Skills, and Tasks (NCCER) | Standards for Mathematical Content; Standards for Mathematical Practice (CCSS) | Criteria for Demonstration of Proficiency (possible; to be determined at the local level) |
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| **1) Orientation to the Trade** a. Describe the history of the carpentry trade. b. Identify the aptitudes, behaviors, and skills needed to be a successful carpenter. c. Identify the training opportunities within the carpentry trade. d. Identify the career and entrepreneurial opportunities within the carpentry trade. e. Identify the responsibilities of a person working in the construction industry. f. State the personal characteristics of a professional. g. Explain the importance of safety in the construction industry. | No Mathematical Standards or Practices identified | |
| **2) Building Materials, Fasteners and Adhesives** a. Identify various types of building materials and their uses. b. State the uses of various types of hardwoods and softwoods. c. Identify the different grades and markings of wood building materials. d. Identify the safety precautions associated with building materials. e. Describe the proper method of storing and handling building materials. f. State the uses of various types of engineered lumber. g. Calculate the quantities of lumber and wood products using industry-standard methods. | High School: Number and Quantity: Reason quantitatively and use units to solve problems **Standards for Mathematical Practice** 1) Make sense of problems and persevere in solving them. 2) Reason abstractly and quantitatively. 3) ~~Construct viable arguments and critique the reasoning of others.~~ 4) Model with mathematics. 5) Use appropriate tools strategically. 6) Attend to precision. 7) Look for and make use of structure. 8) Look for and express regularity in repeated | Make a materials list, with cost per item, quantity, and total. Example: Board Foot calculations |

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| h. Describe the fasteners, anchors, and adhesives used in construction work and explain their uses. | reasoning. | |
| **3) Hand and Power Tools**<br>a. Identify the hand tools commonly used by carpenters and describe their uses.<br>b. Use hand tools in a safe and appropriate manner.<br>c. State the general safety rules for operating all power tools, regardless of type.<br>d. State the general rules for properly maintaining all power tools, regardless of type.<br>e. Identify the portable power tools commonly used by carpenters and describe their uses.<br>f. Use portable power tools in a safe and appropriate manner. | No Mathematical Standards or Practices identified | |
| **4) Reading Plans and Elevations**<br>a. Describe the types of drawings usually included in a set of plans and list the information found on each type.<br>b. Identify the different types of lines used on construction drawings.<br>c. Identify selected architectural symbols commonly used to represent materials on plans.<br>d. Identify selected electrical, mechanical, and plumbing symbols commonly used on plans.<br>e. Identify selected abbreviations commonly used on plans.<br>f. Read and interpret plans, elevations, schedules, sections, and details contained in basic construction drawings.<br>g. State the purpose of written specifications.<br>h. Identify and describe the parts of a specification.<br>i. Demonstrate or describe how to perform a quantity takeoff for materials. | High School Functions-BF.A.1<br>Write a function that describes a relationship between two quantities.*<br><br>High School: Geometry.CO.D.12: Make formal geometric constructions<br>**Standards for Mathematical Practice**<br>1) Make sense of problems and persevere in solving them.<br>2) Reason abstractly and quantitatively.<br>3) ~~Construct viable arguments and critique the reasoning of others.~~<br>4) Model with mathematics.<br>5) Use appropriate tools strategically.<br>6) Attend to precision.<br>7) Look for and make use of structure.<br>8) Look for and express regularity in repeated reasoning. | Student makes a scaled blueprint, plan, or sketch for a building project on graph paper or with a computer-aided drafting or sketching program such as Google SketchUp. |

| **5) Floor Systems** | High School Functions-BF.A.1 | 1. Make a materials list, with cost per item, quantity, and total. |
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| a. Identify the different types of framing systems. | Write a function that describes a relationship between two quantities.[*] | |
| b. Read and interpret drawings and specifications to determine floor system requirements. | | 2. Level sills and beams using leveling devices |
| c. Identify floor and sill framing and support members. | High School:  Geometry-SRT.B.5: Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures | |
| d. Name the methods used to fasten sills to the foundation. | | 3. Identify floor joist sizes using load calculations |
| e. Given specific floor load and span data, select the proper girder/beam size from a list of available girders/ beams. | High School:  Geometry-SRT.C.8: Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems. | 4. Calculate proper spacing of floor joists |
| f. List and recognize different types of floor joists. | | 5. Ensure that all parts are perfectly square and plumb |
| g. Given specific floor load and span data, select the proper joist size from a list of available joists. | High School:  Geometry-GPE.B.6: Find the point on a directed line segment between two given points that partitions the segment into a given ratio | |
| h. List and recognize different types of bridging. | | Examples: Deck platforms, porches, mock-ups, house construction, sheds |
| i. List and recognize different types of flooring materials. | High School:  Number and Quantity:  Reason quantitatively and use units to solve problems | |
| j. Explain the purposes of subflooring and underlayment. | | |
| k. Match selected fasteners used in floor framing to their correct uses. | High School:  Geometry-C.A.4: Construct a tangent line from a point outside a given circle to the circle | |
| l. Estimate the amount of material needed to frame a floor assembly. | **Standards for Mathematical Practice** | |
| m. Demonstrate the ability to: | 1) Make sense of problems and persevere in solving them. | |
| -Lay out and construct a floor assembly | 2) Reason abstractly and quantitatively. | |
| -Install bridging | 3) ~~Construct viable arguments and critique the reasoning of others.~~ | |
| -Install joists for a cantilever floor | 4) Model with mathematics. | |
| -Install a subfloor using butt-joint plywood/OSB panels | 5) Use appropriate tools strategically. | |
| -Install a single floor system using tongue-and-groove plywood/OSB panels | 6) Attend to precision. | |
| | 7) Look for and make use of structure. | |
| | 8) Look for and express regularity in repeated reasoning. | |

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| **6) Wall and Ceiling Framing**<br>a. Identify the components of a wall and ceiling layout.<br>b. Describe the procedure for laying out a wood frame wall, including plates, corner posts, door and window openings, partition Ts, bracing, and fire stops.<br>c. Describe the correct procedure for assembling and erecting an exterior wall.<br>d. Identify the common materials and methods used for installing sheathing on walls.<br>e. Lay out, assemble, erect, and brace exterior walls for a frame building.<br>f. Describe wall framing techniques used in masonry construction.<br>g. Explain the use of metal studs in wall framing.<br>h. Describe the correct procedure for laying out ceiling joists.<br>i. Cut and install ceiling joists on a wood frame building.<br>j. Estimate the materials required to frame walls and ceilings. | High School Functions-BF.A.1<br>Write a function that describes a relationship between two quantities.[*]<br><br>High School: Geometry-SRT.B.5: Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures<br><br>High School: Geometry-SRT.C.8: Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.<br><br>High School: Geometry-GPE.B.6: Find the point on a directed line segment between two given points that partitions the segment into a given ratio<br><br>High School: Number and Quantity A: Reason quantitatively and use units to solve problems<br>**Standards for Mathematical Practice**<br>1) Make sense of problems and persevere in solving them.<br>2) Reason abstractly and quantitatively.<br>3) ~~Construct viable arguments and critique the reasoning of others.~~<br>4) Model with mathematics.<br>5) Use appropriate tools strategically.<br>6) Attend to precision.<br>7) Look for and make use of structure.<br>8) Look for and express regularity in repeated reasoning. | 1. Make a materials list, with cost per item, quantity, and total.<br><br>2. Figure out placement for windows, doors and partitions<br><br>3. Calculate proper spacing for wall studs and/or ceiling joists<br><br>4. Ensure that all parts are perfectly square and plumb<br><br>Examples: exterior walls, interior partitions, house construction |

| 7) Roof Framing | | |
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| **7) Roof Framing**<br>a. Understand the terms associated with roof framing.<br>b. Identify the roof framing members used in gable and hip roofs.<br>c. Identify the methods used to calculate the length of a rafter.<br>d. Identify the various types of trusses used in roof framing.<br>e. Use a rafter framing square, speed square, and calculator in laying out a roof.<br>f. Identify various types of sheathing used in roof construction.<br>g. Frame a gable roof with vent openings.<br>h. Frame a roof opening.<br>i. Erect a gable roof using trusses.<br>j. Estimate the materials used in framing and sheathing a roof. | High School Functions-BF.A.1<br>Write a function that describes a relationship between two quantities.[*]<br><br>High School:  Geometry-SRT.B.5: Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures<br><br>High School:  Geometry-SRT.C.8: Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.<br><br>High School:  Geometry-GPE.B.6: Find the point on a directed line segment between two given points that partitions the segment into a given ratio<br><br>High School:  Number and Quantity:  Reason quantitatively and use units to solve problems<br><br>High School:  Functions-IF.B.6: 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.<br>**Standards for Mathematical Practice**<br>1) Make sense of problems and persevere in solving them.<br>2) Reason abstractly and quantitatively.<br>3) ~~Construct viable arguments and critique the reasoning of others.~~<br>4) Model with mathematics.<br>5) Use appropriate tools strategically.<br>6) Attend to precision.<br>7) Look for and make use of structure.<br>8) Look for and express regularity in repeated reasoning. | 1. Make a materials list, with cost per item, quantity, and total.<br><br>2. Establish suitable slope of the roof using appropriate framing materials<br><br>3. Calculate proper spacing and lengths of roof rafters<br><br>4. Measure and cut sheathing to ensure that the rafters are on center<br><br>5. Ensure that all parts are perfectly square and plumb |

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| **8) Introduction to Concrete, Reinforcing Materials and Forms**<br>a. Identify the properties of cement.<br>b. Describe the composition of concrete.<br>c. Perform volume estimates for concrete quantity requirements.<br>d. Identify types of concrete reinforcement materials and describe their uses.<br>e. Identify various types of footings and explain their uses.<br>f. Identify the parts of various types of forms.<br>g. Explain the safety procedures associated with the construction and use of concrete forms.<br>h. Erect, plumb, and brace a simple concrete form with reinforcement. | High School Functions-BF.A.1<br>Write a function that describes a relationship between two quantities.[*]<br><br>High School:  Geometry-SRT.B.5: Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures<br><br>High School:  Geometry-SRT.C.8: Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.<br><br>High School:  Geometry-GPE.B.6: Find the point on a directed line segment between two given points that partitions the segment into a given ratio<br><br>High School:  Number and Quantity: Reason quantitatively and use units to solve problems<br><br>High School:  Geometry-C.A.4: Construct a tangent line from a point outside a given circle to the circle<br><br>High School:  Geometry-GMD.A.3: Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems<br><center>**Standards for Mathematical Practice**</center><br>1) Make sense of problems and persevere in solving them.<br>2) Reason abstractly and quantitatively.<br>3) ~~Construct viable arguments and critique the reasoning of others.~~<br>4) Model with mathematics.<br>5) Use appropriate tools strategically.<br>6) Attend to precision.<br>7) Look for and make use of structure.<br>8) Look for and express regularity in repeated reasoning. | 1. Make a materials list, with cost per item, quantity, and total.<br><br>2. Level perimeter<br><br>3. Create and place form<br><br>4. Ensure that all parts are perfectly square and plumb |

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| **9) Windows and Exterior Doors**<br>a. Identify various types of fixed, sliding, and swinging windows.<br>b. Identify the parts of a window installation.<br>c. State the requirements for a proper window installation.<br>d. Install a pre-hung window.<br>e. Identify the common types of exterior doors and explain how they are constructed.<br>f. Identify the parts of a door installation.<br>g. Identify the types of thresholds used with exterior doors.<br>h. Install a pre-hung exterior door.<br>i. Identify the various types of locksets used on exterior doors and explain how they are installed.<br>j. Install a lockset. | High School:  Geometry-SRT.B.5: Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures<br><br>High School:  Geometry-SRT.C.8: Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.<br><br>High School:  Geometry-GPE.B.6: Find the point on a directed line segment between two given points that partitions the segment into a given ratio<br><br>High School:  Number and Quantity: Reason quantitatively and use units to solve problems.<br>**Standards for Mathematical Practice**<br>1) Make sense of problems and persevere in solving them.<br>2) Reason abstractly and quantitatively.<br>3) ~~Construct viable arguments and critique the reasoning of others.~~<br>4) Model with mathematics.<br>5) Use appropriate tools strategically.<br>6) Attend to precision.<br>7) Look for and make use of structure.<br>8) Look for and express regularity in repeated reasoning. | 1. Make a materials list, with cost per item, quantity, and total.<br><br>2. Level outside of window, check diagonals |

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| **10) Basic Stair Lay out**<br>a. Identify the various types of stairs.<br>b. Identify the various parts of stairs.<br>c. Identify the materials used in the construction of stairs.<br>d. Interpret construction drawings of stairs.<br>e. Calculate the total rise, number and size of risers, and number and size of treads required for a stairway.<br>f. Lay out and cut stringers, risers, and treads.<br>g. Build a small stair unit with a temporary handrail. | High School:  Geometry-SRT.B.5: Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures<br><br>High School:  Geometry-SRT.C.8: Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.<br><br>High School:  Geometry-GPE.B.6: Find the point on a directed line segment between two given points that partitions the segment into a given ratio<br><br>High School:  Number and Quantity Reason quantitatively and use units to solve problems<br><br>High School Functions-BF.A.1<br>Write a function that describes a relationship between two quantities.[*]<br><br>High School:  Functions-IF.B.6: 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.<br><br>**Standards for Mathematical Practice**<br>1) Make sense of problems and persevere in solving them.<br>2) Reason abstractly and quantitatively.<br>3) ~~Construct viable arguments and critique the reasoning of others.~~<br>4) Model with mathematics.<br>5) Use appropriate tools strategically.<br>6) Attend to precision.<br>7) Look for and make use of structure.<br>8) Look for and express regularity in repeated reasoning. | 1. Make a materials list, with cost per item, quantity, and total.<br><br>2. Determine proper slope using building codes<br><br>3. Determine spacing of treads and risers, balusters, newel posts and railings, according to building codes<br><br>5. Layout to ensure that all parts are perfectly square and plumb, angles and ratios correct |

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| **11) Commercial Drawings**<br>a. Recognize the difference between commercial and residential construction drawings.<br>b. Identify the basic keys, abbreviations, and other references contained in a set of commercial drawings.<br>c. Accurately read a set of commercial drawings.<br>d. Identify and document specific items from a door and window schedule.<br>e. Explain basic construction details and concepts employed in commercial construction.<br>f. Calculate the floor area of each room in a floor plan. | High School Functions-BF.A.1<br>Write a function that describes a relationship between two quantities.[*]<br><br>High School:  Geometry-GPE.B.7: Use coordinates to compute perimeters of polygons and areas of triangles and rectangles. Ex: Using the distance formula.<br>**Standards for Mathematical Practice**<br>1)  Make sense of problems and persevere in solving them.<br>2)  Reason abstractly and quantitatively.<br>3)  ~~Construct viable arguments and critique the reasoning of others.~~<br>4)  Model with mathematics.<br>5)  Use appropriate tools strategically.<br>6)  Attend to precision.<br>7)  Look for and make use of structure.<br>8)  Look for and express regularity in repeated reasoning. | |
| **12) Roofing Applications**<br>a. Identify the materials and methods used in roofing.<br>b. Explain the safety requirements for roof jobs.<br>c. Install fiberglass shingles on gable and hip roofs.<br>d. Close up a valley using fiberglass shingles.<br>e. Explain how to make various roof projections watertight when using fiberglass shingles.<br>f. Complete the proper cuts and install the main and hip ridge caps using fiberglass shingles.<br>g. Lay out, cut, and install a cricket or saddle.<br>h. Install wood shingles and shakes on roofs.<br>i. Describe how to close up a valley using wood shingles and shakes.<br>j. Explain how to make roof projections watertight when using wood shakes and shingles.<br>k. Complete the cuts and install the main and hip ridge caps using wood shakes/shingles.<br>l. Demonstrate the techniques for installing other selected types of roofing materials. | High School:  Functions-IF.B.6: 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.<br><br>High School:  Functions-BF.A.1: Write a function that describes a relationship between two quantities (a, b)<br><br>High School:  Number and Quantity:  Reason quantitatively and use units to solve problems<br>**Standards for Mathematical Practice**<br>1)  Make sense of problems and persevere in solving them.<br>2)  Reason abstractly and quantitatively.<br>3)  ~~Construct viable arguments and critique the reasoning of others.~~<br>4)  Model with mathematics.<br>5)  Use appropriate tools strategically.<br>6)  Attend to precision.<br>7)  Look for and make use of structure.<br>8)  Look for and express regularity in repeated reasoning. | |

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| **13) Thermal and Moisture Protection**<br>a. Describe the requirements for insulation.<br>b. Describe the characteristics of various types of insulation material.<br>c. Calculate the required amounts of insulation for a structure.<br>d. Install selected insulation materials.<br>e. Describe the requirements for moisture control and ventilation.<br>f. Install selected vapor barriers.<br>g. Describe various methods of waterproofing.<br>h. Describe air infiltration control requirements.<br>i. Install selected building wraps. | High School:  Number and Quantity:  Reason quantitatively and use units to solve problems<br><br>High School Functions-BF.A.1<br>Write a function that describes a relationship between two quantities.<br><br>High School:  Geometry-GPE.B.7: Use coordinates to compute perimeters of polygons and areas of triangles and rectangles. Ex: Using the distance formula.<br>**Standards for Mathematical Practice**<br>1)  Make sense of problems and persevere in solving them.<br>2)  Reason abstractly and quantitatively.<br>3)  ~~Construct viable arguments and critique the reasoning of others.~~<br>4)  Model with mathematics.<br>5)  Use appropriate tools strategically.<br>6)  Attend to precision.<br>7)  Look for and make use of structure.<br>8)  Look for and express regularity in repeated reasoning. | |
| **14) Exterior Finishing**<br>a. Describe the purpose of wall insulation and flashing.<br>b. Install selected common cornices.<br>c. Demonstrate lap and panel siding estimating methods.<br>d. Describe the types and applications of common wood siding.<br>e. Describe fiber-cement siding and its uses.<br>f. Describe the types and styles of vinyl and metal siding.<br>g. Describe the types and applications of stucco and masonry veneer finishes.<br>h. Describe the types and applications of special exterior finish systems.<br>i. Install three types of siding commonly used in your area. | High School:  Number and Quantity<br>Reason quantitatively and use units to solve problems<br><br>High School Functions-BF.A.1<br>Write a function that describes a relationship between two quantities.*<br><br>High School:  Geometry-GPE.B.7: Use coordinates to compute perimeters of polygons and areas of triangles and rectangles. Ex: Using the distance formula.<br><br>High School:  Geometry-GPE.B.6: Find the point on a directed line segment between two given points that partitions the segment into a given ratio<br><br>**Standards for Mathematical Practice**<br>1)  Make sense of problems and persevere in solving them.<br>2)  Reason abstractly and quantitatively.<br>3)  ~~Construct viable arguments and critique the~~ | |

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| | 4) Model with mathematics.<br>5) Use appropriate tools strategically.<br>6) Attend to precision.<br>7) Look for and make use of structure.<br>8) Look for and express regularity in repeated reasoning. | |
| **15) Cold-Formed Steel Framing\***<br>a. Identify the components of a steel framing system.<br>b. Identify and select the tools and fasteners used in a steel framing system.<br>c. Identify applications for steel framing systems.<br>d. Demonstrate the ability to build back-to-back, box, and L-headers.<br>e. Lay out and install a steel stud structural wall with openings to include bracing and blocking.<br>f. Lay out and install a steel stud non-structural wall with openings to include blocking and bracing. | *\*Not usually covered at the secondary Carpentry level but required for SkillsUSA competition at the State and National levels.* | |
| **16) Drywall Installation**<br>a. Identify the different types of drywall and their uses.<br>b. Select the type and thickness of drywall required for specific installations.<br>c. Select fasteners for drywall installation.<br>d. Explain the fastener schedules for different types of drywall installations.<br>e. Perform single-layer and multi-layer drywall installations using different types of fastening systems, including:<br>-Nails<br>-Drywall screws<br>-Adhesives<br>f. Install gypsum drywall on steel studs.<br>g. Explain how soundproofing is achieved in drywall installations.<br>h. Estimate material quantities for a drywall installation. | High School:  Number and Quantity:  Reason quantitatively and use units to solve problems<br><br>High School Functions-BF.A.1<br>Write a function that describes a relationship between two quantities.<br><br>High School:  Geometry-GPE.B.7: Use coordinates to compute perimeters of polygons and areas of triangles and rectangles. Ex: Using the distance formula.<br>**Standards for Mathematical Practice**<br>1) Make sense of problems and persevere in solving them.<br>2) Reason abstractly and quantitatively.<br>3) ~~Construct viable arguments and critique the reasoning of others.~~<br>4) Model with mathematics.<br>5) Use appropriate tools strategically.<br>6) Attend to precision.<br>7) Look for and make use of structure. | |

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| | 8) Look for and express regularity in repeated reasoning. | |
| **17) Drywall Finishing**<br>a. State the differences between the six levels of finish established by industry standards and distinguish a finish level by observation.<br>b. Identify the hand tools used in drywall finishing and demonstrate the ability to use these tools.<br>c. Identify the automatic tools used in drywall finishing.<br>d. Identify the materials used in drywall finishing and state the purpose and use of each type of material, including:<br>-Compounds<br>-Joint reinforcing tapes<br>-Trim material<br>-Textures and coatings<br>e. Properly finish drywall using hand tools.<br>f. Recognize various types of problems that occur in drywall finishes; identify the causes and correct methods for solving each type of problem.<br>g. Patch damaged drywall. | No Mathematics Standards or Practices identified | |
| **18) Doors and Hardware**<br>a. Identify various types of door jambs and frames and demonstrate the installation procedures for placing selected door jambs and frames in different types of interior partitions.<br>b. Identify different types of interior doors.<br>c. Identify different types of interior door hardware and demonstrate the installation procedures for selected types.<br>d. Demonstrate the correct and safe use of the hand and power tools described in this module.<br>e. List and identify specific items included on a typical door schedule.<br>f. Demonstrate the procedure for placing and hanging a selected door. | High School Functions-BF.A.1<br>Write a function that describes a relationship between two quantities.<br><br>High School: Geometry-SRT.C.8: Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.<br><br>High School: Geometry-GPE.B.6: Find the point on a directed line segment between two given points that partitions the segment into a given ratio<br>**Standards for Mathematical Practice**<br>1) Make sense of problems and persevere in solving them.<br>2) Reason abstractly and quantitatively.<br>3) ~~Construct viable arguments and critique the reasoning of others.~~<br>4) Model with mathematics.<br>5) Use appropriate tools strategically.<br>6) Attend to precision. | |

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| | 7) Look for and make use of structure.<br>8) Look for and express regularity in repeated reasoning. | |
| **19) Suspended Ceilings**<br>a. Establish a level line.<br>b. Explain the common terms related to sound waves and acoustical ceiling materials.<br>c. Identify the different types of suspended ceilings.<br>d. Interpret plans related to ceiling layout.<br>e. Sketch the ceiling layout for a basic suspended ceiling.<br>f. Perform a material takeoff for a suspended ceiling.<br>g. Install selected suspended ceilings. | High School Functions-BF.A.1<br>Write a function that describes a relationship between two quantities.<br><br>High School:  Geometry-GPE.B.6: Find the point on a directed line segment between two given points that partitions the segment into a given ratio<br><br>High School:  Number and Quantity Reason quantitatively and use units to solve problems<br><br>High School:  Geometry-GPE.B.7: Use coordinates to compute perimeters of polygons and areas of triangles and rectangles. Ex: Using the distance formula.<br>**Standards for Mathematical Practice**<br>1) Make sense of problems and persevere in solving them.<br>2) Reason abstractly and quantitatively.<br>3) ~~Construct viable arguments and critique the reasoning of others.~~<br>4) Model with mathematics.<br>5) Use appropriate tools strategically.<br>6) Attend to precision.<br>7) Look for and make use of structure.<br>8) Look for and express regularity in repeated reasoning. | |
| **20) Window, Door, Floor and Ceiling trim**<br>a. Identify the different types of standard moldings and describe their uses.<br>b. Make square and miter cuts using a miter box or power miter saw.<br>c. Make coped joint cuts using a coping saw.<br>d. Select and properly use fasteners to install trim.<br>e. Install interior trim, including:<br>-Door trim<br>- Window trim<br>-Base trim<br>-Ceiling trim | High School Functions-BF.A.1<br>Write a function that describes a relationship between two quantities.[*]<br><br>High School:  Number and Quantity Reason quantitatively and use units to solve problems<br>**Standards for Mathematical Practice**<br>1) Make sense of problems and persevere in solving them.<br>2) Reason abstractly and quantitatively.<br>3) ~~Construct viable arguments and critique the reasoning of others.~~ | |

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| f. Estimate the quantities of different trim materials required for selected rooms | 4) Model with mathematics.<br>5) Use appropriate tools strategically.<br>6) Attend to precision.<br>7) Look for and make use of structure.<br>8) Look for and express regularity in repeated reasoning. | |
| **21) Cabinet Installation**<br>a. State the classes and sizes of typical base and wall kitchen cabinets.<br>b. Identify the cabinet components and hardware and describe their purposes.<br>c. Lay out factory-made cabinets, countertops, and backsplashes.<br>d. Explain the installation of an island base. | High School Functions-BF.A.1<br>Write a function that describes a relationship between two quantities.[*]<br><br>High School: Number and Quantity Reason quantitatively and use units to solve problems<br><br>High School: Geometry-GPE.B.6: Find the point on a directed line segment between two given points that partitions the segment into a given ratio<br><br>High School: Geometry-GPE.B.7: Use coordinates to compute perimeters of polygons and areas of triangles and rectangles. Ex: Using the distance formula.<br>**Standards for Mathematical Practice**<br>1) Make sense of problems and persevere in solving them.<br>2) Reason abstractly and quantitatively.<br>3) ~~Construct viable arguments and critique the reasoning of others.~~<br>4) Model with mathematics.<br>5) Use appropriate tools strategically.<br>6) Attend to precision.<br>7) Look for and make use of structure.<br>8) Look for and express regularity in repeated reasoning. | |

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| **22) Cabinet Fabrication**<br>a. Recognize the common types of woods used to make cabinets.<br>b. Correctly and safely use stationary power tools.<br>c. Identify and cut the various types of joints used in cabinetmaking.<br>d. Build a cabinet from a set of drawings.<br>e. Install plastic laminate on a countertop core. | High School Functions-BF.A.1<br>Write a function that describes a relationship between two quantities.[*]<br><br>High School: Geometry-GPE.B.6: Find the point on a directed line segment between two given points that partitions the segment into a given ratio<br><br>High School: Geometry-SRT.C.8: Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.<br><br>High School: Number and Quantity Reason quantitatively and use units to solve problems<br><br>High School: Geometry-GPE.B.7: Use coordinates to compute perimeters of polygons and areas of triangles and rectangles. Ex: Using the distance formula.<br>**Standards for Mathematical Practice**<br>1) Make sense of problems and persevere in solving them.<br>2) Reason abstractly and quantitatively.<br>3) ~~Construct viable arguments and critique the reasoning of others.~~<br>4) Model with mathematics.<br>5) Use appropriate tools strategically.<br>6) Attend to precision.<br>7) Look for and make use of structure.<br>8) Look for and express regularity in repeated reasoning. | *Note: no longer considered a required standard according to NCCER* |

***Overarching Standards:*** *as determined by a team CTE Carpentry instructors and Math teachers.*
High School Functions-BF.A.1
Write a function that describes a relationship between two quantities.[*]
High School: FUNCTIONS-BF.A.1a: Determine an explicit expression, a recursive process, or steps for calculation from a context

High School: Geometry.CO.D.12: Make formal geometric constructions (applies any time a student makes a blueprint/plan)