

## Standards Alignment: Common Core / Masonry

| Construction Standards   | Common Core Standards  | Explanation   |
|--|--|---|
| <b>Module 28101-04 - Introduction To Masonry</b>   |  |   |
| 1. Discuss the history of masonry.   |  |   |
| 2. Describe modern masonry materials and methods.  |  |   |
| 3. Explain career ladders and advancement possibilities in masonry work.   |  |   |
| 4. Describe the skills, attitudes, and abilities needed to work as a mason.  |  |   |
| 5. State the safety precautions that must be practiced at a work site, including the following: <ul style="list-style-type: none"> <li>• Safety practices</li> <li>• Fall-protection procedures</li> <li>• Forklift-safety operations</li> </ul> | WHST 11-12.2,<br>L 11-12.1, L 11-12.2  | Write safety procedures for operating a mortar mixer.   |
| 6. Perform the following basic bricklaying procedures: <ul style="list-style-type: none"> <li>• Mixing of mortar*</li> <li>• Laying a mortar bed</li> <li>• Laying bricks</li> </ul>   | *N-Q 1, N-Q 2, N-Q 3, A-SSE 1, A-CED 1, A-CED 2, A-CED 4, A-REI 1, A-REI 2, A-REI 3, F-IF 4, F-BF 1, F-LE 1b, F-LE 5 | Stress all the relationships between rates, ratios, percents, unit conversions in adding water, admixtures, and other components to mortar mix. (Many students have a great deal of trouble with these concepts in math and science classes, but grasp it more easily in a context such as this.) |
| 7. Put on eye protection, respiratory protection, and a safety harness.  |  |   |
| 8. Use the correct procedures for fueling and starting a gasoline-powered tool.  |  |   |
| <b>Performance Tasks</b>   |  |   |
| 1. Put on eye protection, respiratory protection, and a safety harness.  |  |   |
| 2. Demonstrate the ability to properly use a trowel to spread and furrow bed joints and butter head joints.  |  |   |

| Construction Standards   | Common Core Standards  | Explanation  |
|--|--|--|
| <b>Module 28102-04 - Masonry Tools and Equipment</b>   | <b>RST 11-12.4</b>   |  |
| 1. Identify and name the tools used in performing masonry work.  | L 11-12.6  |  |
| 2. Identify and name the equipment used in performing masonry work.  | L 11-12.6  |  |
| 3. Describe how each tool is used.   |  |  |
| 4. Describe how the equipment is used.   | S-ID 9   |  |
| 5. Associate trade terms with the appropriate tools and equipment.   |  |  |
| 6. Demonstrate the correct procedures for assembling and disassembling scaffolding according to federal safety regulations, under the supervision of a competent person. | S-MD 7   |  |
| <b>Performance Tasks</b>   |  |  |
| 1. Identify masonry hand and power tools.  | L 11-12.6  |  |
| 2. Assemble and disassemble scaffolding under the supervision of a competent person, according to federal safety regulations.  | S-IC 6   |  |
| <b>Module 28103-04 - Measurements, Drawings, and Specifications</b>  | <b>RST 11-12.4</b>   | Read a blueprint for an outdoor restroom; room addition. |
| 1. Work with denominate numbers.   | N-Q 1, N-Q 2, N-Q 3  |  |
| 2. Read a mason's measure.   | N-Q 1, N-Q 2, N-Q 3  |  |
| 3. Convert measurements in the U.S. Customary (English) system into their metric equivalents.  | N-Q 1, N-Q 2, N-Q 3, F-IF 4, F-IF 8, F-BF 1, F-BF 3, F-LE 1b, A-SSE 3, A-CED 2, A-CED 4, A-REI 1, A-REI 2, A-REI 3 |  |
| 4. Recognize, identify, and calculate areas, circumferences, and volumes of basic geometric shapes.  | G-GMD 3, G-MG 1, G-MG 2, G-MG 3  | Estimate material to construct chimney.                  |
| 5. Identify the basic parts of a set of drawings.  | G-GMD 4  |  |
| 6. Discuss the different types of specifications used in the building industry and the sections that pertain to masonry.   | S-IC 6   |  |

| Construction Standards  | Common Core Standards   | Explanation  |
|---|---|--|
| <b>Performance Tasks</b>  |   |  |
| 1. Use a mason's rule to measure a space and calculate its volume.                                    | G-MG 3  | Estimate material to construct a concrete footing.   |
| 2. Use a mason's rule to measure a space and estimate the number of bricks to build a wall across it. | G-MG 1, G-MG 2, G-MG 3  | Estimate material to construct a brick wall.   |
| 3. Interpret information on blueprints.   | G-GMD 4   |  |
| <b>Module 28104-04 – Mortar</b>   | RST 11-12.3, SL 11-12.1   | <b>Troubleshoot mortar problems.</b>   |
| 1. Name and describe the primary ingredients in mortar and their properties.                          |   |  |
| 2. Identify the various types of mortar used in masonry work.   |   |  |
| 3. Describe the common admixtures and their uses.   |   |  |
| 4. Identify the common problems found in mortar application and their solutions.                      | S-ID 9, S-IC 6, S-MD 7  |  |
| 5. Properly set up the mortar mixing area.  |   |  |
| 6. Properly mix mortar by hand.   | N-Q 1, N-Q 2, N-Q 3, A-SSE 1, A-CED 1, A-CED 2, A-CED 4, A-REI 1, A-REI 2, A-REI 3, F-IF 4, F-BF 1, F-LE 1b, F-LE 5 | Mix mortar for inside of a fireplace requires adding fireclay; use different categories (strength) of mortar for different applications. |
| 7. Properly mix mortar with a mechanical mixer.   |   |  |
| <b>Performance Tasks</b>  |   |  |
| 1. Properly set up the mortar mixing area.  |   |  |
| 2. Properly mix mortar by hand  |   |  |
| 3. Properly mix mortar with a mechanical mixer.   |   |  |

| Construction Standards  | Common Core Standards                                   | Explanation                                     |
|---|---|---|
| <b>Module 28105-04 - Masonry Units and Installation Techniques</b>  | RST 11-12.3, SL 11-12.1                                 | <b>Build an outdoor restroom; build a sign.</b> |
| 1. Describe the most common types of masonry units.   |   |   |
| 2. Describe and demonstrate how to set up a wall.   | G-CO 12   |   |
| 3. Lay a dry bond.  | G-CO 12   |   |
| 4. Spread and furrow a bed joint, and butter masonry units.   |   |   |
| 5. Describe the different types of masonry bonds.   | N-Q 1, N-Q 2, N-Q 3, A-SSE 1,<br>G-MG 1, G-MG 2, G-MG 3 |   |
| 6. Cut brick and block accurately.  | N-Q 1, N-Q 2, N-Q 3                                     |   |
| 7. Lay masonry units in a true course.  | N-Q 1, N-Q 2, N-Q 3, G-CO 12                            |   |
| <b>Performance Tasks</b>  |   |   |
| 1. Lay a dry bond.  |   |   |
| 2. Accurately cut masonry units with a brick set and masonry hammer, a block set and mash, and a masonry hammer, power saw, and splitter. | N-Q 1, N-Q 2, N-Q 3                                     |   |
| 3. Spread, edge, and furrow bed joints.   |   |   |
| 4. Butter bricks and blocks and place them on a bed joint.  |   |   |
| 5. Lay masonry units in courses that are true for height, level, plumb, and straightness.   | N-Q 1, N-Q 2, N-Q 3, G-CO 12                            |   |
| 6. Build a rackback corner lead.  | G-CO 12   |   |
| 7. Lay masonry units to the line.   |   |   |
| <b>Module 28201-05 – Residential Plans and Drawing Interpretation</b>   |   |   |
| 1. Explain the organization of residential plans and drawings.  |   |   |
| 2. Interpret dimensions and scales on drawings.   | F-LE 1b, N-Q 1  |   |
| 3. Interpret information on residential plans.  | N-Q 1, G-GMD 4, G-MG 1, G-MG 3                          |   |
| 4. Estimate material quantities from plans and drawings.  | N-Q 1, N-Q 2, N-Q 3, G-GMD 4,<br>G-MG 1, G-MG 2, G-MG 3 |   |

| Construction Standards  | Common Core Standards  | Explanation  |
|---|--|--|
| <b>Performance Tasks</b>  |  |  |
| 1. From a plan, calculate the square footage of one elevation, including openings.                    | N-Q 1, N-Q 3, G-GPE 7, G-GMD 4, G-MG 1, G-MG 3                       |  |
| 2. Estimate the amount of brick and mortar from that same elevation.                                  | N-Q 1, N-Q 2, N-Q 3, G-GMD 4, G-MG 1, G-MG 2, G-MG 3, F-IF 4, F-IF 5 |  |
| 3. Estimate the size and number of lintel block for that same elevation.                              | N-Q 1, N-Q 2, N-Q 3, G-GMD 4, G-MG 1, G-MG 2, G-MG 3                 |  |
| <b>Module 28202-05 – Residential Masonry</b>  |  |  |
| 2. Identify and explain the characteristics, uses, and installation techniques for brick pavers.      |  |  |
| 3. Lay out and build steps, patios, and decks made from masonry units.                                | N-Q 1, N-Q 2, N-Q 3, G-GMD 4, G-MG 1, G-MG 2, G-MG 3                 |  |
| 4. Lay out and build chimneys and fireplaces.   | N-Q 1, N-Q 2, N-Q 3, G-GMD 4, G-MG 1, G-MG 2, G-MG 3                 |  |
| <b>Module 28203-05 – Grout and Other Reinforcement</b>  |  |  |
| 1. Name and describe the primary ingredients in grout and their properties.                           | S-ID 9, S-IC 6   | Give some information about how standards developed (materials testing, etc.). |
| 2. Identify the different types of grout used in masonry work.  | S-ID 9, S-IC 6   |  |
| 3. Describe the common admixtures and their uses.   | S-ID 9, S-IC 6   |  |
| 4. Describe the use of steel bar reinforcement in masonry construction.                               | S-ID 9, S-IC 6   |  |
| 5. Apply grout in low and high lifts using the proper techniques.                                     | S-ID 9, S-IC 6, S-MD 7   |  |
| 6. Place grout in a hollow block wall and rod it into place.  |  |  |
| <b>Performance Tasks</b>  |  |  |
| 1. Place grout in a hollow block wall and rod in place.   |  |  |
| <b>Module 28204-05 – Metal Work in Masonry</b>  |  |  |
| 1. Describe the uses and installation of vertical reinforcement.                                      | S-ID 9, S-IC 6, S-MD 7   |  |
| 2. Describe the uses and installation of different types of horizontal joint reinforcements and ties. | S-ID 9, S-IC 6, S-MD 7   |  |

| Construction Standards   | Common Core Standards  | Explanation                 |
|--|--|-----------------------------|
| 3. Describe the uses and installation of different anchors, fasteners, and embedded items.                         | S-ID 9, S-IC 6, S-MD 7   |                             |
| 4. Install hollow metal frames.  |  |                             |
| 5. Describe the functions of sills and lintels.  | S-ID 9, S-IC 6, S-MD 7   |                             |
| 6. Install sills and lintels.  |  |                             |
| 7. Install metal hardware.   |  |                             |
| <b>Performance Tasks</b>   |  |                             |
| 3. Lay one wythe of brick against one side of the frame.   |  |                             |
| 4. Install hardware cloth unit ties in every other course.   |  |                             |
| <b>Module 28205-05 – Advanced Laying Techniques</b>  | RST 11-12.3, SL 11-12.1  | Build an arch entrance way. |
| 1. Recognize the structural principles and fundamental uses of basic types of walls.                               | S-ID 9, S-IC 6, S-MD 7   |                             |
| 2. Recognize the requirement for, and function of, control joints and expansion joints.                            | S-ID 9, S-IC 6, S-MD 7   |                             |
| 3. Build various types of walls using proper reinforcement, jointing, and bonding techniques.                      |  |                             |
| 5. Identify and explain the different types of masonry arches used today.  |  |                             |
| 6. Lay out a semicircular arch and a jack arch.  | G-CO 12, G-C 2, G-C 4, G-C 5, G-GMD 1, G-GMD 4, G-MG 1, G-MG 3                                 |                             |
| <b>Performance Tasks</b>   |  |                             |
| 1. Lay a wythe of brick against a block wythe or wood frame to make a composite wall. Use ties and a collar joint. | N-Q 1, N-Q 2, N-Q 3, G-CO 6, G-CO 12, G-GMD 4, G-MG 1-3  |                             |
| 2. Lay out specialty structures and arches.  | N-Q 1, N-Q 2, N-Q 3, G-CO 6, 12, G-C 2, G-C 4, G-C 5, G-GMD 1, G-GMD 4, G-MG 1, G-MG 2, G-MG 3 |                             |

| Construction Standards  | Common Core Standards  | Explanation  |
|---|------------------------|--|
| <b>Module 28206-05 – Construction Techniques and Moisture Control</b>   |                        | Evaluate a project under construction against specifications.                  |
| 1. Explain and demonstrate techniques for constructing masonry around windows, doors, and other openings.   |                        | Give some information about how standards developed (materials testing, etc.). |
| 2. Explain the requirements for wall bracing, and demonstrate the techniques used to construct pilasters and other types of bracing.                    |                        |  |
| 3. Identify the various types of insulation used in conjunction with masonry construction, and explain installation techniques.                         |                        |  |
| 4. Identify the need for moisture control in various types of masonry construction, and demonstrate the techniques used to eliminate moisture problems. |                        |  |
| 5. Construct corbeling in a double-wythe wall.  |                        |  |
| 6. Join intersecting walls.   |                        |  |
| 7. Install flashing.  |                        |  |
| <b>Performance Tasks</b>  |                        |  |
| 1. Construct a four-course corbel starting at the fifth course of a double-wythe wall.  |                        |  |
| 2. Construct an intersecting block wall joined with wire mesh or metal lath.  |                        |  |
| 3. Install a row of flashing in an anchored veneered wall.  |                        |  |
| <b>Module 28207-05 – Construction Inspection and Quality Control</b>  | SL 11-12.1             |  |
| 1. Describe industry standards for quality control.   | S-ID 9, S-IC 6, S-MD 7 |  |
| 2. Describe how to build masonry sample panels and prisms.  |                        |  |

| Construction Standards   | Common Core Standards  | Explanation  |
|--|------------------------|--|
| <b>Module 28301-05 – Masonry in High-Rise Construction</b>   |                        |  |
| 1. Recognize and explain the use of high-rise construction equipment.  |                        |  |
| 2. Identify construction sequence in high-rise construction.   |                        |  |
| 3. State the safety procedures in high-rise construction.  |                        |  |
| 5. Properly put on a safety harness, lanyard, and lifeline.  |                        |  |
| 6. Demonstrate hand signals used for lifting materials.  |                        |  |
| <b>Module 28302-05 – Specialized Materials and Techniques</b>  |                        |  |
| 1. Explain the various techniques used to provide adequate protection during hot- and cold-weather masonry construction. | S-ID 9, S-IC 6, S-MD 7 | Give some information about how standards developed (materials testing, etc.). |
| 2. Describe all-weather construction techniques.   | S-ID 9, S-IC 6, S-MD 7 | Give some information about how standards developed (materials testing, etc.). |
| 3. Describe techniques for surface-bonding mortar.   | S-ID 9, S-IC 6, S-MD 7 | Give some information about how standards developed (materials testing, etc.). |
| 4. Demonstrate techniques for construction of stone walls and other stone building surfaces.                             | N-Q 1, N-Q 3           |  |
| 5. Demonstrate basic knowledge of various building materials such as glass block and refractory brick.                   |                        |  |

| Construction Standards  | Common Core Standards                          | Explanation  |
|---|--|--|
| <b>Module 28303-05 – Repair and Restoration</b>   | RST 11-12.3                                    | Repair a chimney.  |
| 1. Recognize signs of deterioration in masonry structures.  | S-ID 9, S-IC 6, S-MD 7                         | Give some information about how standards developed (materials testing, etc.). |
| 2. Describe the causes of efflorescence, cracking, and faulty mortar joints.                                | S-ID 9, S-IC 6, S-MD 7                         | Give some information about how standards developed (materials testing, etc.). |
| 3. Describe the procedures for preventing and correcting efflorescence, cracking, and faulty mortar joints. | S-ID 9, S-IC 6, S-MD 7                         | Give some information about how standards developed (materials testing, etc.). |
| 4. Describe the procedures for preventing and correcting water damage in basements.                         | S-ID 9, S-IC 6, S-MD 7                         | Give some information about how standards developed (materials testing, etc.). |
| 5. Describe the procedures for rebuilding fireplaces.   | S-ID 9, S-IC 6, S-MD 7                         | Give some information about how standards developed (materials testing, etc.). |
| 6. Replace a damaged brick in a wall.   |  |  |
| 7. Repair mortar joints.  |  |  |
| <b>Performance Tasks</b>  |  |  |
| 1. Replace a damaged brick in a wall.   |  |  |
| 2. Repair mortar joints in a brick wall by tuckpointing.  |  |  |
| <b>Module 28304-05 – Commercial Drawings</b>  | RST 11-12.4                                    | Build a commercial sign from a drawing.  |
| 1. Recognize the difference between commercial and residential construction drawings.                       | N-Q 1  |  |
| 2. Identify the basic keys, abbreviations, and other references contained in a set of commercial drawings.  | N-Q 1  |  |
| 3. Accurately read a set of commercial drawings.  | N-Q 1, G-GMD 4, G-MG 1, G-MG 3                 |  |
| 4. Explain basic construction details and concepts employed in commercial construction.                     | G-GMD 4, G-MG 1, G-MG 3                        |  |
| <b>Performance Tasks</b>  |  |  |
| 2. Calculate the floor area of each room in a floor plan.   | N-Q 1, N-Q 3, G-GPE 7, G-GMD 4, G-MG 1, G-MG 3 |  |

| Construction Standards   | Common Core Standards  | Explanation   |
|--|--|---|
| <b>Module 28305-05 – Estimating</b>  |  | Build an outdoor restroom.  |
| 1. Explain and apply basic materials estimating procedures for concrete block and brick construction.                    | N-Q 1, N-Q 2, N-Q 3, G-GMD 4, G-MG 1, G-MG 2, G-MG 3, F-IF 3, F-IF 4, F-IF 5, F-IF 8, F-BF 1, F-LE 1, F-LE 5 |   |
| 2. Explain and apply basic estimating procedures for reinforcements, ties, and other materials.                          | N-Q 1, N-Q 2, N-Q 3, G-GMD 4, G-MG 1, G-MG 2, G-MG 3, F-IF 3, F-IF 4, F-IF 5, F-IF 8, F-BF 1, F-LE 1, F-LE 5 |   |
| 3. Explain and apply procedures for estimating quantities of mortar and mortar materials.                                | N-Q 1, N-Q 2, N-Q 3, G-GMD 4, G-MG 1, G-MG 2, G-MG 3, F-IF 3, F-IF 4, F-IF 5, F-IF 8, F-BF 1, F-LE 1, F-LE 5 |   |
| <b>Performance Tasks</b>   |  |   |
| 2. Complete a set of estimating worksheets.  |  |   |
| <b>Module 28306-05 – Site Layout—Distance Measurement and Leveling</b>   |  |   |
| 2. Convert measurements stated in feet and inches to equivalent measurements stated in decimal feet, and vice versa.     | N-Q 1, N-Q 2, N-Q 3  |   |
| 6. Recognize, use, and properly care for tools and equipment associated with differential leveling.                      |  |   |
| 7. Use a builder’s level or transit and differential leveling procedures to determine site and building elevations.      | N-Q 1, N-Q 2, N-Q 3, G-CO 6, G-CO 12, G-GMD 4, G-MG 1, G-MG 2, G-MG 3  |   |
| 9. Check and/or establish 90-degree angles using the 3–4–5 rule.   | N-Q 1, N-Q 2, N-Q 3, G-CO 5, G-CO 6, G-CO 12, G-SRT 5, G-SRT 8, G-GMD 4, G-MG 1, G-MG 3                      | Build an outdoor restroom (or any building with a square corner). |
| <b>Performance Tasks</b>   |  |   |
| 6. Use a builder’s level, leveling rods, and differential leveling procedures to determine site and building elevations. | N-Q 1, N-Q 2, N-Q 3, G-CO 6, G-CO 12, G-GMD 4, G-MG 1, G-MG 2, G-MG 3  |   |
| 9. Check and/or establish 90-degree angles using the 3–4–5 rule.   | N-Q 1, N-Q 2, N-Q 3, G-CO 5, G-CO 6, G-CO 12, G-SRT 5, G-SRT 8, G-GMD 4, G-MG 1, G-MG 3                      | Build an outdoor restroom (or any building with a square corner). |

| Construction Standards   | Common Core Standards   | Explanation               |
|--|---|---------------------------|
| <b>Module 28307-05 – Introductory Skills for the Crew Leader</b>   |   |                           |
| 1. Discuss current issues and organizational structure in the construction industry today.   |   |                           |
| 2. Understand and incorporate leadership skills into work habits, including communication, motivation, team building, problem solving, and decision-making skills. | SL 11-12.1  |                           |
| 3. Demonstrate an awareness of safety issues, including the cost of accidents and safety regulations.  | W 11-12.3, W 11-12.4  | Write an accident report. |
| 5. Show a basic understanding of the planning process, scheduling, and cost and resource control.  | A-CED 1, A-CED 2, A-CED 3, N-Q 1, N-Q 2, N-Q 3, F-IF 4, F-IF 5, F-IF 6, F-LE 1, S-IC 6              |                           |
| <b>Performance Tasks</b>   |   |                           |
| 1. Lay a wythe of brick against a block wythe or wood frame to make a composite wall. Use ties and a collar joint.   | N-Q 1, N-Q 2, N-Q 3, G-CO 6, G-CO 12, G-GMD 4, G-MG 1, G-MG 2, G-MG 3                               |                           |
| 2. Lay out specialty structures and arches.  | N-Q 1, N-Q 2, N-Q 3, G-CO 6, G-CO 12, G-C 2, G-C 4, G-C 5, G-GMD 1, G-GMD 4, G-MG 1, G-MG 2, G-MG 3 |                           |

**Codes for Common Core English Language Arts and Literacy are:**

L = Language

RST = Reading for Literacy in Science and Technical Subjects

SL = Speaking and Listening

WHST = Writing for Literacy in History/Social Studies,  
Science, and Technical Subjects

**Codes for Common Core Mathematics are:**

A-SSE = Algebra: Seeing Structure in Expressions

A-CED = Algebra: Creating Equations

A-REI = Algebra: Reasoning with Equations and Inequalities

F-IF = Functions: Interpreting Functions

F-BF = Functions: Building Functions

F-LE = Functions: Linear, Quadratic, and Exponential Models

G-CO = Geometry: Congruence

G-SRT = Similarity, right Triangles, and Trigonometry

G-C = Geometry: Circles

G-GMD = Geometry: Geometric Measurement and Dimension

G-MG = Geometry: Modeling with Geometry

N-Q = Number and Quantity: Quantities

S-ID = Statistics and Probability: Interpreting Categorical and  
Quantitative Data

S-IC = Statistics and Probability: Making Inferences and Justifying  
Conclusions

S-MD = Statistics and Probability: Using Probability to Make  
Decisions