

### Task Background

**Domain & Area:** Mathematics - Geometry

**Target CCR Standard(s)** (including level of standard, if needed) and/or adult diploma competency for Science or Social Studies:

Geometry (MN k-12 Academic Standards: ABE instruction in Levels D and E covering Geometry (Demonstrated competency mastery in all Level D standards and at least one Level E standard in the CCRS for Geometry).

#### CCRS Geometry Level D standards

1. Draw, construct, and describe geometrical figures and describe the relationships between them. Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale. (7.G.1) [Also see 7.RP.3]
2. Solve real-life and mathematical problems involving angle, measure, area, surface area, and volume. Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle. (7.G.4) Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure. (7.G.5) Solve real-world and mathematical problems involving area, volume and surface area of two- and three dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. (7.G.6) [Also see G.GMD.3]
3. Understand congruence and similarity using physical models, transparencies, or geometry software. Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them. (8.G.2) [Also see G.SRT.5] Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them. (8.G.4) [Also see G.SRT.5] Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so. (8.G.5)

4. Understand and apply the Pythagorean Theorem. Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. (8.G.7) Apply the Pythagorean Theorem to find the distance between two points in a coordinate system. (8.G.8)

**CCRS Geometry Level E standard**

1. Geometric Measurement and Dimension: Explain volume formulas and use them to solve problems. Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.\* (G.GMD.3) [Also see 7.G.6]

**Task Description:** The purpose of this task is for a student to demonstrate knowledge in geometry, exhibiting knowledge meeting level D and E standards.

**Information for the Teacher**

- All materials described below are found in a Google Folder here:  
[https://drive.google.com/drive/folders/18fdyTj-42wgHwws5pEDVPBKO1ZsX\\_Yi1?usp=sharing](https://drive.google.com/drive/folders/18fdyTj-42wgHwws5pEDVPBKO1ZsX_Yi1?usp=sharing)
- Student should complete capstone after completing ABE curriculum or achieving knowledge through other accepted means. The student should have already been introduced to the concepts of geometry and be able to complete problems at level D and level E.
- This task was designed to be completed independently by a learner in an appropriate, quiet testing environment. For learners needing more support, teachers can break up the task into sections, and have the student complete each section individually after providing review, practice and corrections.
- There is an answer key provided for the task. Criteria: Student will achieve a score of 80% or higher overall, and 80% or higher for Level E problems. If a student does not meet mastery scores, additional instruction and replacement problems in the specific standard will be provided.
- Include the following items when submitting this task as evidence for the diploma portfolio:
  - Completed Standard Adult High School Diploma Cover Sheet
  - Graded Student Capstone Assignment

**Activities**

**Title:** Geometry Capstone

**Materials:** This activity includes the capstone document and the capstone answer key.