Geometry – Unit 8: Area and Volume

Phoenixville Area School District

Stage 1 Desired Results

PA Core Standards:

CC.2.3.HS.A.13 Analyze relationships between two-dimensional and three-dimensional objects.

CC.2.3.HS.A.14 Apply geometric concepts to model and solve real-world problems.

CC.2.3.8.A.1 Apply the concepts of volume of cylinders, cones, and spheres to solve real-world and mathematical problems.

CC.2.3.HS.A.12 Explain volume formulas and use them to solve problems.

Transfer

TRANSFER GOALS

Students will be able to independently use their learning to…

- *Problem-Solving:* Persistently apply various problem-solving strategies and organized approaches to accurately understand and solve problems and provide evidence to support response.
- *Mathematical Vocabulary:* Interpret mathematical vocabulary and apply proper terminology to engage in meaningful oral and written expression that communicates mathematical thinking, problem-solving methods, and rationale.
- *Reasoning:* Demonstrate mathematical resilience and conceptual understanding through the use of vocabulary, written expression, graphical representation, and alternate strategies.

Meaning

UNDERSTANDINGS

Students will understand that…

- Mathematics is used to make informed decisions about problems in everyday life.
- Mathematical ideas interconnect and build on one another to produce a coherent whole.
- One-, two-, and three-dimensional objects are described, classified, and analyzed by their critical attributes.
- Postulates, theorems, definitions, and properties are used to justify reasoning in a direct proof and establish relationships involving two and three-dimensional figures.

ESSENTIAL QUESTIONS

Students will keep considering...

- What do effective problem solvers do, and what do they do when they get stuck?
- What counts as an adequate solution? Does my answer make sense?
- How are spatial relationships, including shape and dimension, used to draw, construct, model and represent real situations or solve problems?
- What does this quantity/number/ expression/value mean? What are the ways to represent it? Is there a best way?

	Knowledge and Skills Acquisition	
	KNOWLEDGE *Students will know…* • How to find the area of polygons and sectors of circles • How to find lateral areas, surface areas, and volumes of various solid figures VOCABULARY • Composite Figure • Height • Base • Sector • Altitude • Slant Height • Area • Volume	SKILLS *Students will be skilled at…* • Finding the area of the sector of a circle through open-ended questions. • Identifying and using the properties of a sphere, cylinder, prism, and pyramid as demonstrated in a graphic organizer. • Finding the measurement of a missing length given the circumference, area, or perimeter through open-ended questions. • Calculating the surface area and volume of prisms, cylinders, cones, pyramids, and spheres as demonstrated through a performance task.

Stage 2 – Evidence

Code A/M/T	**Evaluative Criteria**	**Assessment Evidence**	
Acquisition Meaning Making Transfer	Valid conclusions are made based on given/ implied/ found information. Chooses effective strategy/strategies for solving the problem. All necessary work is shown with no missing information/skipped steps. All representations are clear and labeled accurately.	PERFORMANCE TASK(S) *Students will demonstrate understanding (meaning making and transfer) through complex performance by...* **Surface Area and Volume Project** https://www.teacherspayteachers.com/Product/Volume-and-Surface-Area-of-Prisms-and-Pyramids-Discovery-Worksheet-3257962	Differentiation Considerations:

Acquisition Meaning Making Transfer	Uses mathematics vocabulary and notation concisely and correctly. Chooses effective strategy/strategies for solving the problem. All necessary work is shown with no missing information/skipped steps. Explains one's reasoning efficiently using mathematics, words, or both. All representations are clear and labeled accurately. Solution is clearly identified; appropriate units are provided *(if applicable)*.	THER EVIDENCE **it Test A** • Multiple Choice • Open-Ended Response • Extended Response **it Test B** • Multiple Choice • Open-Ended Response • Extended Response	Differentiation Considerations: