Unit 4-Solve Problem Involving Surface Area and Volume

Content Area: **Math**
Course(s): **Math 8 Gen Ed**
Time Period: **Marking Period 4**
Length: **Wk 1-6 Envisions Mathematics Topic 8**
Status: **Published**

Essential Questions

- How are the formulas for volume of a cylinder, cone, and sphere related to one another?

Big Ideas

- How are the formulas for volume of a cylinder, cone, and sphere related to one another?

CSDT Technology Integration

8.1.8.DA.1: Organize and transform data collected using computational tools to make it usable for a specific purpose.

8.1.8.AP.2: Create clearly named variables that represent different data types and perform operations on their values.

8.1.8.AP.6: Refine a solution that meets users' needs by incorporating feedback from team members and users.

Activity: The Algebra College Slope Project encourages students to learn about college choices and decisions. Students have the opportunity to research colleges and universities, and select one based on possible majors they would be interested in, as well as a budget. Students then research possible high school jobs in an effort to earn money to use for college tuition. Students create electronic descriptions of their research, spreadsheets on the computer, and develop linear functions electronically.

Cross-Curricular Integration

Integration Area: Language Arts

LA.W.IW.8.2.A Introduce a topic clearly, previewing what is to follow and organize ideas, concepts, and information, using text structures (e.g., definition, classification, comparison/contrast, cause/effect, etc.) and

text features (e.g., headings, graphics, and multimedia) when useful to aid in comprehension.

LA.W.IW.8.2.B Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples.

LA.W.IW.8.2.C Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts.

LA.W.IW.8.2.D Use precise language and domain/grade level -specific vocabulary to inform about or explain the topic.

LA.W.IW.8.2.E Establish and maintain a formal style/academic style, approach, and form.

LA.W.IW.8.2.F Provide a concluding statement or section (e.g. sentence, part of a paragraph, paragraph, or multiple paragraphs) that follows from the flow of ideas, reflects back on the topic, and supports the information or explanation presented.

LA.W.WP.8.4 With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, sustaining effort to complete complex writing tasks; seeking out assistance, models, sources or feedback to improve understanding or refine final products; and focusing on how well the purpose and audience have been addressed.

LA.W.WR.8.5 Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.

LA.W.SE.6 Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation. Students may determine the credibility of multiple digital and print data sources that can be used as supporting evidence in constructing a model for describing the cycling of water through Earth's systems driven by energy from the sun and the force of gravity

LA.W.RW.7 Write routinely over extended time frames (time for research, reflection, metacognition/self correction, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline specific tasks, purposes, and audiences.

A.REI.C.6 Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

Activity: Slope/College/Savings project. Students will research various colleges and their tuition costs. Students will search for a job that will be able to assist in paying for a portion of the college tuition. Students will create tables and linear representations of the collected data and then discuss the data in an explanatory essay.

CSDT Technology Connection

8.1.8.DA.1: Organize and transform data collected using computational tools to make it usable for a specific

purpose

Enduring Understandings

8.G.9 Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems. Students may solve real-world mathematical problems involving the physical properties of the principle gasses that cause climate change molecules.

Mathematical Practices Focus

1. Make sense of problems and persevere in solving them. Lesson 3 and page 459
2. Reason abstractly and quantitatively. Lesson 2, 3, 4, and page 459
3. Construct viable arguments and critique the reasoning of others. Lesson 1, 2, 4, and page 459
4. Model with mathematics. Lesson 1 and page 459
7. Look for and make use of structure. Lesson 1, 2, 3, 4, and page 459
8. Look for and express regularity in repeated reasoning. Lesson 1, 4, and page 459