

Dates	This unit consists of approximately 11 days of instruction, review, and assessment.	Course/Grade	7 th Grade Math
Unit	Volume and Surface Area Unit 4 Part 3	Teacher	Mrs. Radomski

Essential Questions (Maximum 2):

How can we use surface area and volume in real-world situations?

Pennsylvania State Standards: (Mathematics)

M07.B-E.2.2.1 Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers.

M07.B-E.2.3.1 Determine the reasonableness of an answer(s), or interpret the solution(s) in the context of the problem.

M07.C-G.1.1.4 Describe the two-dimensional figures that result from slicing three-dimensional figures.

M07.C-G.2.2.2 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. **Formulas will be provided.**

Pennsylvania State Common Core Standards: (Mathematics)**2.2 Algebraic Concepts**

CC.2.2.7.B.3 Model and solve real-world and mathematical problems by using and connecting numerical, algebraic, and/or graphical representations.

2.3 Geometry

CC.2.3.7.A.1 Solve real-world and mathematical problems involving angle measure, area, surface area, circumference, and volume.

CC.2.3.7.A.2 Visualize and represent geometric figures and describe the relationships between them

Pennsylvania State Common Core Standards: (English Language Arts)

1.2 Reading Informational Text

Students read, understand, and respond to informational text—with an emphasis on comprehension, vocabulary acquisition, and making connections among ideas and between texts with focus on textual evidence.

CC.1.2.7.A

Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text.

CC.1.2.7.B

Cite several pieces of textual evidence to support analysis of what the text says explicitly, as well as inferences, conclusions, and/or generalizations drawn from the text.

CC.1.2.7.F

Determine the meaning of words and phrases as they are used in grade-level reading and content, including interpretation of figurative, connotative, and technical meanings.

CC.1.2.7.J

Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

CC.1.2.7.K

Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content, choosing flexibly from a range of strategies and tools.

CC.1.2.7.L

Read and comprehend literary nonfiction and informational text on grade level, reading independently and proficiently.

1.3 Reading Literature

Students read and respond to works of literature—with an emphasis on comprehension, vocabulary acquisition, and making connections among ideas and between texts with a focus on textual evidence.

CC.1.3.7.B

Cite several pieces of textual evidence to support analysis of what the text says explicitly, as well as inferences, conclusions, and/or generalizations drawn from the text.

CC.1.3.7.F

Determine the meaning of words and phrases as they are used in grade-level reading and content, including interpretation of figurative, connotative meanings.

CC.1.3.7.I

Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content, choosing flexibly from a range of strategies and tools.

1.4 Writing

Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.

CC.1.4.7.A

Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information clearly.

CC.1.4.7.C

Develop and analyze the topic with relevant facts, definitions, concrete details, quotations, or other information and examples; include graphics and multimedia when useful to aiding comprehension.

CC.1.4.7.D

Organize ideas, concepts, and information using strategies such as definition, classification, comparison/contrast, and cause/effect; use appropriate transitions to create cohesion and clarify the relationships among ideas and concepts; provide a concluding statement or section; include formatting when useful to aiding comprehension.

CC.1.4.7.F

Demonstrate a grade appropriate command of the conventions of Standard English grammar, usage, capitalization, punctuation, and spelling.

CC.1.4.7G

Write arguments to support claims.

CC.1.4.7.I

Acknowledge alternate or opposing claims and support claim with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic.

CC.1.4.7.J

Organize the claim(s) with clear reasons and evidence clearly; clarify relationships among claim(s) and reasons by using words, phrases, and clauses to create cohesion; provide a concluding statement or section that follows from and supports the argument presented.

CC.1.4.7.L

Demonstrate a grade appropriate command of the conventions of Standard English grammar, usage, capitalization, punctuation, and spelling.

1.5 Speaking and Listening

Students present appropriately in formal speaking situations, listen critically, and respond intelligently as individuals or in group discussions.

CC.1.5.7.A

Engage effectively in a range of collaborative discussions, on grade-level topics, texts, and issues, building on others' ideas and expressing their own clearly.

CC.1.5.7.D

Present claims and findings, emphasizing salient points in a focused, coherent manner with pertinent descriptions, facts, details, and examples; use appropriate eye contact, adequate volume, and clear pronunciation.

CC.1.5.7.G

Demonstrate command of the conventions of Standard English when speaking based on Grade 7 level and content.

Skills

- Identify 3-Dimensional Figures & How Their Nets Form the Lateral Faces or Lateral Surfaces
- Find the Volume & Surface Area of Similar 3-Dimensional Figures
- Find the Surface Area of Prisms & Pyramids
- Find the Volume of Prisms & Composite Figures

Assessments

- | | |
|---------------------------------------------------------------------------|-------------------------------------------------|
| <input checked="" type="checkbox"/> Tests | <input type="checkbox"/> Peer Evaluation |
| <input checked="" type="checkbox"/> Quizzes | <input type="checkbox"/> Rubric Scoring |
| <input checked="" type="checkbox"/> Worksheets | <input checked="" type="checkbox"/> Group Grade |
| <input checked="" type="checkbox"/> Homework | <input type="checkbox"/> Other |
| <input checked="" type="checkbox"/> Teacher Observation | |
| <input checked="" type="checkbox"/> Student Writing | |
| <input type="checkbox"/> Student Presentations | |
| <input type="checkbox"/> Student Projects | |
| <input checked="" type="checkbox"/> Student Written Response (reflection) | |

Resources

Textbook
Go Math Accelerated Grade 7 Workbook
Scholastic Math Magazine

Supplementary Materials
Materials listed on Unit Lesson Plans

Workbook/Worksheets

Teacher-prepared materials

Individual Title

Technology

Go Math Online Textbook

Chromebooks

Google Classroom

Khan Academy

Other

Modified homework and assessments

Intervention and Enrichment worksheets to help reinforce difficult concepts presented or to engage in higher-level applications of concepts.

Special Education Adaptations/Modifications:

- Adapted/modified assignments and/or assessments for gifted / enriched students
- Follow IEP / 504 / GIEP / SDI accommodations as documented

Differentiated Instruction / SGI Activities:

- Critical Thinking – Open-ended class discussion
- Cooperative learning
- Peer lead grouping
- Problem-solving activities

Reading & Writing:

- Non-fiction reading excerpts that include writing prompts and multiple choice questions – monthly Scholastic Math Magazines and unit related articles

Math 7
Mrs. Radomski
Unit 4 Part 3– Volume and Surface Area (11 days)

Unit Order Date	Lessons and Objectives Bell Ringer	Activities / Materials / Assessments / <u>Homework</u>
<p>1 of 11 1/15/19</p>	<p>Identifying 3-Dimensional Figures Drawing Three-Dimensional Figures <i>Students draw, name, and identify parts of three-dimensional figures.</i></p> <p>Volume of Prisms <i>Students will be able to calculate the volume of rectangular prisms.</i></p> <p>Warm-up Question: What does it mean if a figure is 3-D? {it is 3 dimensional-height, width, and depth}</p>	<ul style="list-style-type: none"> • Pass back and go over the Unit 4 Part 2 Test • Go over the What is a Cross Section? Notes • As a class, we will complete the Cross Section-Card Sort Activity (each group will get 2-3 cards and explain their answers to the cards to the class) • Go over the How Do You Find the Volume of Rectangular Prisms? Notes • The students should work with their partners on the Volume of Rectangular Prisms WS and we will go over it when they finish <p style="text-align: center;">HW: Complete the What is a Cross Section and How Do You Find the Volume of Rectangular Prisms WS</p>
<p>2 of 11 1/16/19</p>	<p>Volume of Prisms <i>Students will be able to calculate the volume of rectangular and triangular prisms.</i></p> <p>Warm-up Question: Using your formula sheet, find the equation for volume of a rectangular prism? {$V= lwh$}</p>	<ul style="list-style-type: none"> • Check and go over the homework (What is a Cross Section and How Do You Find the Volume of Rectangular Prisms WS) • Go over the How Do You Find the Volume of a Triangular Prism? Notes • The students should work with their partners on the Volume of Triangular Prisms WS and we will go over it when they finish • Have the students begin the SGI activities that will also carry into tomorrow <ul style="list-style-type: none"> ○ SGI Group 1: Volume of Rectangular Prisms Task Cards Activity (Student Led) ○ SGI Group 2: Volume of Rectangular Prisms Mazes Activity (Student Led) ○ SGI Group 3: Volume of Triangular Prisms Cut and Paste Activity (Student Led) <p style="text-align: center;">HW: None</p>
<p>3 of 11 1/17/19</p>	<p>Volume Quiz <i>Students will be able to discuss and demonstrate understanding of previous lessons by working on a graded assessment.</i></p> <p>Warm-up Question: Are there any questions before the quiz? {Answers will vary}</p>	<ul style="list-style-type: none"> • Have the students finish the SGI activities that they started yesterday • Have the students take the Volume Quiz • When they are finished, the students will complete their monthly Reading/Writing Assignment using the Scholastic Math Magazine • When the students finish the assignment, they should work on Khan Academy on their Chromebooks <p style="text-align: center;">HW: None</p>

<p>4 of 11 <i>1/22/19</i></p>	<p>Volume of Composite Objects <i>Students will be able to solve volume problems with composite objects.</i></p> <p>Warm-up Question: Find the volume of a rectangular prism with a length of 5 in, a width of 10 in, and a height of 2 in. {100 inch³}</p>	<ul style="list-style-type: none"> • Pass back and go over the Volume Quiz • Go over the What Is A Composite Object? Notes • Go over the Volume of Compound Figures WS together • SGI: Have the students work with groups of 3 on the 3D Composite Solids “He Said, She Said” Activity • When they are finished, they should work on the Compound Figures Practice WS <p>HW: Complete the Compound Figures Practice WS</p>
<p>5 of 11 <i>1/23/19</i></p>	<p>Solving Problems Using Volume <i>Students will be able to solve real world problems using volume.</i></p> <p>Warm-up Question: How do you find the volume of a composite solid formed by two or more prisms? {You find the volume of each prism and then you add them together.}</p>	<ul style="list-style-type: none"> • Check and go over the homework (Compound Figures Practice WS) • Go over the How Can We Use Volume to Solve Problems? Notes • Small Group Instruction <ul style="list-style-type: none"> ◦ SGI Group 1: Volume of Prisms Scavenger Hunt Activity (Groups of 3) ◦ SGI Group 2: Volume Study Guide (Individual) • When they are finished, the students should work on the How Can We Use Volume to Solve Problems? WS <p>HW: Finish the How Can We Use Volume to Solve Problems? WS and study for the Volume Test</p>
<p>6 of 11 <i>1/24/19</i></p>	<p>Volume Test <i>Students are individually evaluated on their understanding of the objectives in Volume Unit.</i></p> <p>Warm-up Question: Are there any questions before the test? {Answers will vary}</p>	<ul style="list-style-type: none"> • Check and go over the homework (How Can We Use Volume to Solve Problems? WS) • Have the students take the Volume Test • When the students finish the test, they should work on Khan Academy on their Chromebooks <p>HW: None</p>
<p>7 of 11 <i>1/25/19</i></p>	<p>Nets and Surface Area <i>Students will be able to draw, name, and identify parts of three-dimensional figures. Students will be able to calculate the surface area of rectangular prisms.</i></p> <p>Warm-up Question: How would you define surface area? {The total area of the surface of a three-dimensional object.}</p>	<ul style="list-style-type: none"> • Pass back and go over the Volume Test. • Go over How Are 3D Figures and Area Related? Notes • The students should work with their partners on the How Are 3D Figures and Area Related? WS and we will go over it when they finish • Go over the How Do You Find the Surface Area of Rectangular Prisms? Notes • Have the students complete the How Do You Find the Surface Area of Rectangular Prisms? WS <p>HW: None</p>
<p>8 of 11 <i>1/28/19</i></p>	<p>Surface Area of Prisms <i>Students will be able to calculate the surface area of triangular prisms.</i></p> <p>Warm-up Question: What do you think is the difference between rectangular prisms and triangular prisms is? {the base-one is rectangular and one is triangular}</p>	<ul style="list-style-type: none"> • Go over How Are Triangular Prisms Different Than Rectangular Prisms? Notes • Have the students work on the How Are Triangular Prisms Different Than Rectangular Prisms? WS and go over it when they are finished • SGI: Have the students work with groups on the Surface Area of Prisms Solve and Color Activity <p>HW: None</p>

<p>9 of 11 1/29/19</p>	<p>Solving Problems Using Surface Area <i>Students will be able to solve real world problems using surface area.</i></p> <p>Warm-up Question: You know how to solve for the area and volume of composite figures. How do you think you can solve problems for the surface area of composite figures? {find the surface area of each individual shape and then you add them together and subtract twice the area of the parts not on the surface}</p>	<ul style="list-style-type: none"> Go over the How Can We Use Surface Area to Solve Problems? Notes Have the students work on Surface Area Word Problems WS and put the problems on the board when the students finish Have the students work on the How Can We Use Surface Area to Solve Problems? WS and go over it when they are finished <p>HW: None</p>
<p>10 of 11 1/30/19</p>	<p>Review of Surface Area <i>Students will be able to review concepts taught in previous lessons on surface area.</i></p> <p>Warm-up Question: What is the surface area of a rectangular prism with a length of 20 cm, a width 6 cm, and a height of 4 cm? {448 cm²}</p>	<ul style="list-style-type: none"> Have the students begin the SGI activities that will also carry into tomorrow <ul style="list-style-type: none"> SGI Group 1: Surface Area Task Cards Activity (Student Led) SGI Group 2: Surface Area Study Guide (Student Led) SGI Group 3: Surface Area and Nets Cut and Paste Activity (Student Led) <p>HW: None</p>
<p>11 of 11 1/31/19</p>	<p>Surface Area Test <i>Students are individually evaluated on their understanding of the objectives in Surface Area Unit.</i></p> <p>Warm-up Question: Are there any questions before the test? {Answers will vary}</p>	<ul style="list-style-type: none"> Give the students a final chance to ask any questions they have about the material that will be covered on the test Have the students complete the Surface Area Test (they can use their formula sheet) When the students finish the assignment, they should work on Khan Academy on their Chromebooks <p>HW: None</p>
<p>EXTRA 2/1/19 to 2/6/19</p>	<p>Build A Tiny House Project <i>Students will be able to review geometric concepts while building a tiny house.</i></p> <p>Warm up: Have you have watched a show where they built tiny houses? {Answers will vary}</p>	<ul style="list-style-type: none"> Introduce the Build A Tiny House Project. Have the students watch the HGTV Tiny Houses Show Clips <p>HW: None</p>
	<p>Build A Tiny House Project <i>Students will be able to review geometric concepts while building a tiny house.</i></p> <p>Warm up: No Question Today</p>	<ul style="list-style-type: none"> Have the students work on the Build A Tiny House Project <p>HW: None</p> <p>Project due by the end of class on 2/12/19</p>
<p>EXTRA 2/7/19</p>	<p>Unit Rewind <i>Students will be able to review the concepts taught in the previous units.</i></p>	<ul style="list-style-type: none"> Pass back and go over the Unit 4 Part 3 Test Go over the “Rational Number Operations, Rates, Percents, and Proportional Relationships, Equations and Inequalities, Angle Relationships, and Proportionality and Scale Drawings, 2D

	<p>Warm-up Question: What concept from the past units did you not fully understand? {Answers will vary}</p>	<p>Geometry, and Volume and Surface Area” parts of the 7th Grade Review Notes Packet</p> <ul style="list-style-type: none"> • Small Group Instruction <ul style="list-style-type: none"> ○ SGI Group 1: Angle Relationship Stations (Partners) ○ SGI Group 2: Units 1-4 Part 2 Rewind WS (Partners) <p style="text-align: center;">HW: None</p>
<p>EXTRA 2/8/19</p>	<p>Unit Rewind Quiz <i>Students are individually evaluated on their understanding of the objectives in previous units.</i></p> <p>Warm-up Question: Are there any questions before the quiz? {Answers will vary}</p>	<ul style="list-style-type: none"> • Pass back and go over the SGI Activities from yesterday • Have the students take the Units 1-4 Part 2 Rewind Quiz • When the students finish, they should work on Khan Academy on their Chromebooks <p style="text-align: center;">HW: None</p>
<p>EXTRA 2/11/19</p>	<p>Common Core / PSSA Baseline Second Assessment <i>Students will complete a PDE Sampler Assessment for Grade 7 Mathematics.</i></p> <p>No Warm-up Question</p>	<ul style="list-style-type: none"> • Students will complete a PDE Assessment for Grade 7 Mathematics <p style="text-align: center;">HW: None</p>
<p>EXTRA 2/12/19</p>	<p>Build A Tiny House Project <i>Students will be able to review geometric concepts while building a tiny house.</i></p>	<ul style="list-style-type: none"> • We will recap the Tiny House Project and the students will make any changes they need to to their project. <p style="text-align: center;">HW: None</p>