










Trimester:	Unit Title:	Recommended Instructional Days:
2 & 3	Area, Surface Area, and Volume	14 - 18
Domain: Ratio and Proportional Relationships, Expressions and Equations & Geometry		
<p>Strand:</p> <p> 6.RP.A.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g. by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. d. Use ratio reasoning to convert measurements units; manipulate and transform units appropriately when multiplying or dividing quantities.</p> <p> 6.EE.A.2 Write, read and evaluate expressions in which letters stand for numbers. c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). <i>For example, use the formulas $V=s^3$ and $A=6s^2$ to find the volume and surface area of a cube with sides of length $s=1/2$.</i></p> <p> 6.EE.B.5 Understand solving an equation or inequality as a process of answering a question: which values from a specific set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.</p> <p> 6.EE.B.6 Uses variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.</p> <p> 6.EE.B.7 Solve real-world and mathematical problems by writing and solving equations in the form $x + p = q$ and $px = q$ for cases in which p, q, and x are all nonnegative rational numbers. </p> <p> 6.G.A.1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.</p> <p> 6.G.A.2 Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = l w h$ and $V = B h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.</p>		

 **6.G.A.4** Represent three-dimensional figures (eg. pyramid, triangular prism, rectangular prism) using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.



Major Cluster



Supporting Cluster



Additional Cluster



Climate Change Opportunity

Progress Indicator: ◇ Tests ◇ Homework / Classwork ◇ Projects ◇ Formative assessments ◇ Summative assessments

Mathematical Practices:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reason of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLs-CLKS within Unit

Essential Questions:

Lesson 7.1: How can you use the area of a parallelogram and one of its dimensions to find the other dimension?

Lesson 7.2: How can you explain how the area of a parallelogram is used to find the area of a triangle?

Lesson 7.3: How can you use decomposition to find the area of a figure?

Lesson 7.4: What is the difference between area and surface area?

Lesson 7.5: How can a net help to find surface area?

Lesson 7.6: How can you find the surface area of a pyramid?

Lesson 7.7: How can you use the volume of a rectangular prism and two of its dimensions to find the other dimension?

Essential Understandings:

Lesson 7.1: Find areas and missing dimensions of parallelograms.

Lesson 7.2: Find areas and missing dimensions of triangles, and find areas of composite figures.

Lesson 7.3: Find areas of trapezoids, kites, and composite figures.

Lesson 7.4: Describe and draw three dimensional figures.

Lesson 7.5: Represent prisms using nets and use nets to find surface areas of prisms.

Lesson 7.6: Represent pyramids using nets and use nets to find surface areas of pyramids.

Lesson 7.7: Find volumes and missing dimensions of rectangular prisms.

Vocabulary:

- polygon
- composite figure
- kite
- solid
- polyhedron
- face
- edge
- vertex
- prism
- pyramid
- surface area
- net
- volume

**Encourage students to practice using the unit vocabulary as they talk and write about mathematics. Understanding vocabulary will aid their understanding of the concepts. When students encounter a new definition, encourage them to write in their Big Ideas Student Journals. They will revisit these definitions during the Chapter Review.*

Suggested Activity Descriptions:

- Performance Task TB pg. 283, Maximizing the Volume of Boxes
- Exploration Activities at the beginning of each section.
- Students analyze sample student answers to compare strategies and approaches for problem solving.
- Students engage in fluency practice resources.
- Students will measure the dimensions of a cereal box to the nearest inch, find the area of each face, and then cut the box apart to reveal the net. Students will make connections between the dimensions on the three-dimensional prism and lengths on the net.
- ***Climate Change*** (6.EE.B.7): Students may solve real-world problems by writing and solving one-variable equations related to deforestation and/or increasing livestock farming as contributors to climate change. 🌱

Interdisciplinary Connections:

Science:

1. Big Ideas STEAM Video and corresponding questions on TB page 283.
2. Rich Math Tasks: Science Notes, pgs. 9 - 14, digital Big Ideas resource.
3. Example 4 Modeling Real Life TB. pg. 315.

Social Studies:

1. Closure TE pg. T-294.
2. Rich Math Tasks: History Notes, pgs. 3 - 8, digital Big Ideas resource.
3. Self Assessment for Problem Solving TB pg. 308, problem #8.

Language Arts:

1. Preparing to Teach, Construct Viable Arguments and Critique the Reasoning of Others, TE pg. T-291.

Spot Light On: Rachel Carson

Social and Emotional Learning: <i>Competencies</i>	Social and Emotional Learning: <i>Sub-Competencies</i>
<p>SEL Competencies:</p> <ul style="list-style-type: none"> • Self-Awareness • Social Awareness • Self-Management • Relationship Skills • Responsible Decision-Making 	<ul style="list-style-type: none"> • Recognizing the importance of self-confidence in handling daily tasks and challenges. • Demonstrate an awareness of the expectations for social interactions in a variety of ways. • Demonstrate an understanding of the need for mutual respect when viewpoints differ. • Identify and apply ways to persevere through alternative methods to achieve goals. • Utilize positive communication and social skills to interact effectively with others. • Develop, implement, and model effective problem solving and critical thinking skills.

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Big Ideas Unit 7: Area, Surface Area, and Volume

Updated
 August 2024

Assessments (Formative) <i>To show evidence of meeting the standard/s, students will successfully engage within:</i>		Assessments (Summative) <i>To show evidence of meeting the standard/s, students will successfully complete:</i>	
Formative Assessments: • Teacher Observations • Exit Tickets • Quizzes • Self Assessments • Big Ideas Student Journals • Homework/Classwork • Teacher Created Assessments • Progress Monitoring Items • Formative Assessment Tips in Big Ideas Teacher Edition		Benchmarks & Summative Assessments: • Chapter/Unit Assessments • Standardized Tests • Project-based Assessments	
Differentiated Student Access to Content: Teaching and Learning <i>Resources/Materials</i>			
Core Resources	Alternate Core Resources <i>IEP/504/At-Risk/ESL</i>	ELL Core Resources	Gifted & Talented Core Resources
Big Ideas Student Journal, Dynamic Assessment System, iReady, Khan Academy, Illustrative Mathematics, Learn360, TeacherTube, BrainPOP, Freckle, LearnZillion, MobyMax, 60 minutes of weekly ST Math, Edulastic, Achieve the Core, Desmos	Reteach worksheets, Extra Practice worksheets, Math manipulatives, Scaffolding Instructions in each section of textbook, Tutorial Videos, Skills Review Handbook, Skills Trainer	Dictionary for native language, Video tutorial in native language, ELL Support in each section of Big Ideas Teacher’s Edition	ST Math Challenge Objectives, G&T tasks, Enrichment and Extension worksheets, Art of Problem Solving, Leveled assessments
Supplemental Resources			
Technology: • Chromebooks • Scientific/Graphing Calculators (upper grades only) • Online math manipulatives Other: • Google Classroom, Google Meets, Schoology, Interactive Workbooks • Illustrative Mathematics • insidemathematics.org • National Library of Virtual Manipulatives			

Differentiated Student Access to Content: Recommended <i>Strategies & Techniques</i>			
Core Resources	Alternate Core Resources <i>IEP/504/At-Risk/ESL</i>	ELL Core Resources	Gifted & Talented Core
Deliver instruction utilizing varied learning styles including audio, visual, and tactile/kinesthetic, provide individual instruction as needed, modify assessments and/or rubrics.	Utilize a multi-sensory (VAKT) approach during instruction, provide alternate presentations of skills by varying the method (repetition, simple explanations, additional examples, modeling, etc.), modify test content and/or format, allow students to retake test for additional credit, provide additional times and preferential seating as needed, review, restate and repeat directions, provide study guides, and/or break assignments into segments of shorter tasks.	Extend time requirements, preferred seating, positive reinforcement, check often for understanding/review, oral/visual directions/prompts when necessary, supplemental materials including use of an online bilingual dictionary, and modified assessment and/or rubric.	Create an enhanced set of introductory activities, integrate active teaching/learning opportunities, incorporate authentic components, propose interest-based extension activities, and connect student to related content.

NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	Disciplinary Concept(s): Critical Thinking and Problem Solving	
	Core Ideas:	An essential aspect of problem solving is being able to self reflect on why possible solutions for solving problems were or were not successful.
	Performance Expectation/s:	9.4.8.CT.2: Develop multiple solutions to a problem and evaluate short- and long-term effects to determine the most plausible option.
	Career Readiness, Life Literacies, & Key Skills Practices	
	Act as a responsible and contributing community member and employee. Attend to financial well-being. Consider the environmental, social and economic impacts of decisions. Demonstrate creativity and innovation. Utilize critical thinking to make sense of problems and persevere in solving them.	

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	<p>Model integrity, ethical leadership and effective management. Plan education and career paths aligned to personal goals. Use technology to enhance productivity, increase collaboration and communicate effectively. Work productively in teams while using cultural/global competence.</p>
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New Jersey Legislative Statutes and Administrative Code (place an "X" before each law/statute if/when present within the curriculum map)									
	Amistad Law: <i>N.J.S.A. 18A 52:16A-88</i>		Holocaust Law: <i>N.J.S.A. 18A:35-28</i>	X	LGBT and Disabilities Law: <i>N.J.S.A. 18A:35-4.35</i>	X	Diversity & Inclusion: <i>N.J.S.A. 18A:35-4.36a</i>	X	Standards in Action: <i>Climate Change</i>