



Bridging for Math Strength Resources

[Standards of Learning Curriculum Framework](#)

Standard of Learning (SOL) 7.4b Solve problems, including practical problems, involving the volume and surface area of rectangular prisms and cylinders.



Student Strengths	Bridging Concepts	Standard of Learning
<p>The student can determine whether the concept of perimeter, volume or area is appropriate to the situation.</p> <p>The student can substitute values for given variables and simplify expressions following order of operations.</p>	<p>The student will solve problems, including practical problems, involving circumference and area of a circle; and solve problems, including practical problems, involving area and perimeter of triangles and rectangles.</p>	<p>Students can solve problems, including practical problems, involving the volume and surface area of rectangular prisms and cylinders.</p>

Understanding the Learning Trajectory

Big Ideas:

- 3D solids can often be described using a 2D net and measurements from 2D shapes.
- Measurements (such as length, circumference, diameter, etc.) can be used to describe 3D solids and to determine the surface area and volume of 3D solids.

Formative Assessment:

- VDOE Just in time Quick Check [SOL 7.4a](#) (Word) / [PDF](#) / [Desmos](#)

Important Assessment Look Fors:

- The student correctly identified the object and formula needed for a given situation

- The student correctly applied the formula for surface area or volume and solved accordingly
- The student correctly identified the dimensions of a rectangular prism or cylinder and substituted the values in for the appropriate variables within the surface area or volume formulas.

Purposeful Questions:

- What words helped you identify the formula needed for this problem?
- If you labeled your given values differently, how will your answer change? Can you label your given values differently without changing the solution?
- How can you justify your solution?

Bridging Activity to Support Standard	Instructional Tips
Routine Would You Rather?	The students will apply the concepts of volume and surface area of a cube to determine which choice is the better option. This routine can open up discussion regarding whether the assumption is that the cubes of gold are solid or not and should this be best determined by surface area or volume.
Rich Tasks Shipping Box Task	Students are given the task of developing a shipping box for multiples of the same item. Students can create their own box and apply visual representations to their reasoning. Students can share answers with peers to compare and discuss the choices they made within the problem
Games/Tech Desmos 7.4ab Volume or Surface Area? Math Games: Surface Area Math Games: Volume of Prisms and Cylinders	<p>Given visuals, measurement units, and various scenarios, students will stack cards to determine whether volume or surface area is being represented.</p> <p>Given visual representations of three-dimensional objects, the students calculate the surface area and are provided immediate feedback in regards to the accuracy of their answer.</p> <p>Students are given pictorial representations of prisms or cylinders and must compute the volume formula for the given objects. Students are provided immediate feedback.</p>
Other Resources: <ul style="list-style-type: none"> • VDOE Mathematics Instructional Plans (MIPS) <ul style="list-style-type: none"> ◦ 7.4ab - Volume and Surface Area of Rectangular Prisms and Cylinders (Word) / PDF Version • VDOE Algebra Readiness Remediation Plans <ul style="list-style-type: none"> ◦ Cones and Square Pyramids (Word) / PDF ◦ Ranking Cylinders and Rectangular Prisms (Word) / PDF ◦ Real Life Examples (Word) / PDF ◦ Relational Solids (Word) / PDF • VDOE Word Wall Cards: Grade 7 (Word) (PDF) <ul style="list-style-type: none"> ◦ Rectangular Prism ◦ Volume of a Rectangular Prism ◦ Surface Area of a Rectangular Prism ◦ Cylinder • VDOE Instructional Videos for Teachers <ul style="list-style-type: none"> ◦ Units of Measure (grades 4-8) • Other VDOE Resources <ul style="list-style-type: none"> ◦ Area, Volume, and Surface Area: Find the Volume of Rectangles inside Rectangles [eMediaVA] ◦ Cylinder Surface Area School Yourself Geometry [eMediaVA] • Desmos Activity <ul style="list-style-type: none"> ◦ Surface Area of a Rectangular Prism 	

Learning Trajectory Resources:

- Charles, R. (2005). Big ideas and understandings as the foundation for elementary and middle school mathematics. *Journal of Mathematics Education Leadership*, 7(3), NCSM.
- Clements, D. H., & Sarama, J. (2019). Learning and teaching with learning trajectories [LT]2. Marsico Institute, Morgridge College of Education, University of Denver. <https://www.learningtrajectories.org/>
- Common Core Standards Writing Team. (2019). [*Progressions for the Common Core State Standards for Mathematics*](#). Tucson, AZ: Institute for Mathematics and Education, University of Arizona.
- Richardson, K. (2012). How Children Learn Number Concepts: A Guide to Critical Learning Phases. Bellingham: Math Perspectives Teacher Development Center.
- Van De Walle, J., Karp, K. S., & Bay-Williams, J. M. (2018). *Elementary and Middle School Mathematics: Teaching Developmentally*. (10th edition) New York: Pearson (2019:9780134802084)
- VDOE Curriculum Framework for All Grades - [Standard of Learning Curriculum Framework \(SOL\)](#)