

# Volume

## Expressions, equations, and relationships

**6.8** The student applies mathematical process standards to use geometry to represent relationships and solve problems. The student is expected to:

**(C)** write equations that represent problems related to the area of rectangles, parallelograms, trapezoids, and triangles and volume of right rectangular prisms where dimensions are positive rational numbers

**(D)** determine solutions for problems involving the area of rectangles, parallelograms, trapezoids, and triangles and volume of right rectangular prisms where dimensions are positive rational numbers.

**7.8** The student applies mathematical process standards to develop geometric relationships with volume. The student is expected to:

**(A)** model the relationship between the volume of a rectangular prism and a rectangular pyramid having both congruent bases and heights and connect that relationship to the formulas

**(B)** explain verbally and symbolically the relationship between the volume of a triangular prism and a triangular pyramid having both congruent bases and heights and connect that relationship to the formulas

**7.9** The student applies mathematical process standards to solve geometric problems. The student is expected to:

**(A)** solve problems involving the volume of rectangular prisms, triangular prisms, rectangular pyramids, and triangular pyramids

**8.6** The student applies mathematical process standards to develop mathematical relationships and make connections to geometric formulas. The student is expected to:

**(A)** describe the volume formula  $V = Bh$  of a cylinder in terms of its base area and its height

**(B)** model the relationship between the volume of a cylinder and a cone having both congruent bases and heights and connect that relationship to the formulas

**8.7** The student applies mathematical process standards to use geometry to solve problems. The student is expected to:

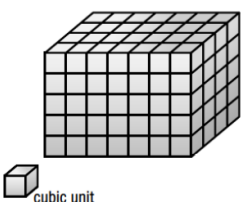
**(A)** solve problems involving the volume of cylinders, cones, and spheres:

My teacher's Volume goals for me are that... I will be able to:

- Identify the faces, specifically the bases and lateral faces, of solids.
- Determine the height of solids and mathematically justify your reasoning.
- Calculate the area of the base of solids.
- Calculate the volume of solids.
- Identify and solve what the question is asking you to calculate...they can be really sneaky!

I will master the **learning goals** for **VOLUME** by:

- 1) Asking questions when I'm not sure of something and answering questions when I know the answer.
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_

Volume	Definition	Real-life Example
	<p>The amount of space inside a 3-D figure. Measured in cubic units. This tells you the number of cubes of a given size it will take to fill the prism.</p> <p>One cubic unit is the amount of space occupied by a cube that measures one unit on each side.</p>	<p>Think of and list 3 examples in real-life when you use or see volume:</p>

### The Four-Corner Organizer

- Step 1:** List out the faces, and identify the bases and lateral faces.
- Step 2:** Name the figure based on its bases and lateral faces.
- Step 3:** Draw the base.
- Step 4:** Identify the height (don't forget that it connects the bases).
- Step 5:** Calculate the area of the base.
- Step 6:** Calculate the volume.

<b>Base:</b> <b>#3</b> Draw the Base	<b>#5</b> Unknowns in the formula	<b>Unknowns:</b> <b>#5</b> $B =$ <b>#4</b> $h =$
<b>#5</b> calculate the area of the base	<b>Work Space</b>	
<b>#2 Name:</b> <b>Formula:</b> <b>#6</b> $V = Bh$		<b>Work Space:</b>