

KEY CONCEPT OVERVIEW

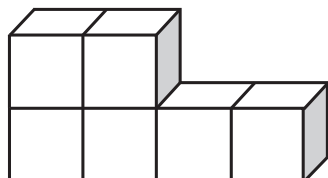
In Lessons 1 through 3, students explore the concept of volume by using cubes. They also apply their skills in real-world contexts.

You can expect to see homework that asks your child to do the following:

- Find the **volume of a solid** by counting the cubes and by applying other strategies.
- Draw cubic units on **isometric dot paper**.
- Solve word problems involving volume.

SAMPLE PROBLEM *(From Lesson 1)*

The solid below is made up of 1 cm cubes. Find the total volume of the figure and write it in the chart below.



Volume	Explanation
6 cm ³	<i>I counted 2 cubes on the top and 4 cubes on the bottom. There are 6 total cubes. $2 + 4 = 6$. Since each cube is 1 cubic centimeter, the total volume of the figure is 6 cubic centimeters.</i>

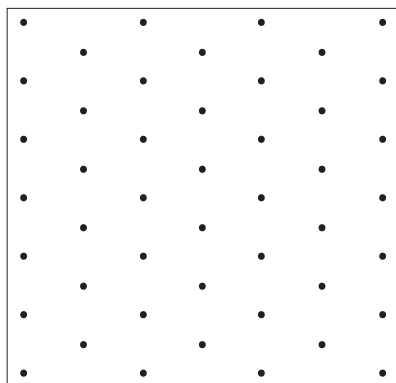
HOW YOU CAN HELP AT HOME

- Ask your child to define perimeter, **area**, and volume. Have him explain how the three terms are different and name the units used to measure perimeter, area, and volume. Then ask him to match the equations below with each term.
 - $2\text{ m} + 4\text{ m} + 2\text{ m} + 4\text{ m} = 12\text{ m}$
This is perimeter, and it is measured in regular units (e.g., m, ft, yd).
 - $6\text{ m} \times 8\text{ m} = 48\text{ m}^2$
This is area, and it is measured in square units (e.g., m^2 , ft^2 , yd^2).
 - $3\text{ m} \times 5\text{ m} \times 9\text{ m} = 135\text{ m}^3$
This is volume, and it is measured in cubic units (e.g., m^3 , ft^3 , yd^3).
- Together, practice drawing cubic units on either centimeter grid paper or isometric dot paper.

TERMS

Area: The amount of space inside a two-dimensional shape. For example, in rectangles, $\text{Area} = \text{length} \times \text{width}$.

Volume of a solid: The amount of space inside a three-dimensional solid. For example, in rectangular prisms, $\text{Volume} = \text{length} \times \text{width} \times \text{height}$.

MODELS**Isometric Dot Paper**

TIPS FOR FAMILIES**KEY CONCEPT OVERVIEW** _____

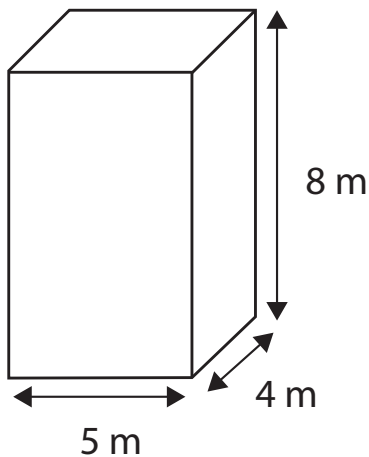
In Lessons 4 through 9, students continue to work with volume as they learn to find the volume of a **rectangular prism**. Additionally, students apply their skills in real-world contexts.

You can expect to see homework that asks your child to do the following:

- Find the volume of a rectangular prism by using volume formulas:
 - Volume of a rectangular prism = length \times width \times height.
 - Volume of a rectangular prism = area of the base \times height.
- Solve problems by using the equation $1 \text{ cm}^3 = 1 \text{ mL}$. For example, if the volume of a small tank is calculated to be 523 cm^3 , this is the same as 523 mL.
- Solve word problems involving volume.

SAMPLE PROBLEM *(From Lesson 4)* _____

Calculate the volume of the rectangular prism. Include the units in your number sentence.



Volume = $5 \text{ m} \times 4 \text{ m} \times 8 \text{ m} = 160 \text{ m}^3$

HOW YOU CAN HELP AT HOME

- Practice finding the volumes of rectangular prisms by using rectangular prisms found in your home. Use a ruler to measure the length, width, and height of each prism to the nearest centimeter or inch, and then find the volume of the prism. For example, if a cereal box measures a length of 9 inches, a width of 3 inches, and a height of 13 inches, then the volume of this cereal box is 351 cubic inches.
- Play the Find the Volume card game with your child.
 1. Remove the jacks, queens, kings, aces, and jokers from a deck of cards. *If playing cards are not available, the game may be played by writing the digits 1-9, each four times, on small pieces of paper.*
 2. Put the stack of remaining cards facedown.
 3. Flip over three cards.
 4. The number on each card represents a dimension of a rectangular prism. Let the first card represent the length, the second the width, and the third the height.
 5. Choose a unit of measure for the dimensions of the rectangular prism, such as inches, feet, centimeters, or meters.
 6. Write the multiplication expression for the volume of the rectangular prism, and ask your child to find the volume.
 7. Give a point to your child for answering correctly, or a point to yourself if they don't. The goal is for your child to get 5 points first.

For example, you flip cards with the numbers 9, 7, and 4, and you decide to use feet as the unit. The number 9 represents the length of 9 feet. The number 7 represents the width of 7 feet. The number 4 represents the height of 4 feet. You write $9 \text{ ft} \times 7 \text{ ft} \times 4 \text{ ft}$. Your child writes $9 \text{ ft} \times 7 \text{ ft} \times 4 \text{ ft} = 252 \text{ cubic ft}$.

NOTE: For rectangular prisms, you can assign any of the three numbers to be the length, width, or height. The multiplication yields the same answer regardless of measurement assignment.

TERMS

Rectangular prism: A three-dimensional figure with six rectangular sides. See sample image below.



TIPS FOR FAMILIES

KEY CONCEPT OVERVIEW

In Lessons 10 through 14, students work with **area**. They focus on rectangular figures with fractional side lengths.

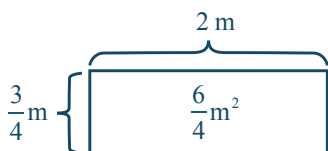
You can expect to see homework that asks your child to do the following:

- Find the area of rectangular figures with fractional side lengths by multiplying the length by the width (as shown in the Sample Problem below).
- Sketch rectangles given their fractional side lengths, and then find the areas.
- Use an inch ruler to measure the lengths and the widths of rectangles to the nearest $\frac{1}{4}$ inch, and then find the areas.
- Solve word problems involving area.

SAMPLE PROBLEM *(From Lesson 11)*

Find the area of a rectangle with the following dimensions. Explain your thinking using the **area model**.

$$2\text{m} \times \frac{3}{4}\text{m}$$



$$2 \times \frac{3}{4} = \frac{6}{4}$$

$$\frac{6}{4} = 1\frac{2}{4} = 1\frac{1}{2}$$

The area of the rectangle is $1\frac{1}{2}\text{m}^2$.

HOW YOU CAN HELP AT HOME

- At the dinner table or on the go, help your child practice finding the area of a rectangle. Choose values for the dimensions of a rectangle that are based on multiplication facts your child knows. For example, you say, “The length of a rectangle is 8 yards, and the width of the rectangle is 9 yards. What’s the area of the rectangle?” He says, “8 yards times 9 yards equals 72 square yards.”

HOW YOU CAN HELP AT HOME

(continued)

- Play the Find the Area card game with your child.
 1. Remove the jacks, queens, kings, and jokers from a deck of cards. Let aces have a value of one. *If playing cards are not available, the game may be played by writing the digits 1–9 on small pieces of paper.*
 2. Put the stack of remaining cards facedown.
 3. Flip two cards to form a fraction that represents the length of a rectangle.
 4. Have your child flip one card that represents the width of the rectangle.
 5. Choose a unit of measure for the dimensions of the rectangle, such as inches, feet, or meters.
 6. Write the multiplication expression for the area of the rectangle, length times width, and ask your child to find the area of the rectangle.
 7. Give a point to your child for answering correctly, or a point to yourself if they don't. The goal is for your child to get 5 points first.

For example, you flip two cards with the numbers 9 and 2. They represent $\frac{9}{2}$. You decide to use meters for the dimensions, so the length of the rectangle is $\frac{9}{2}$ m. Your child flips one card with the number 3 so the width of the rectangle is 3m. You write $\frac{9}{2}$ m \times 3m. She writes

$$\frac{9}{2} \text{ m} \times 3 \text{ m} = \frac{27}{2} \text{ m}^2 = 13\frac{1}{2} \text{ m}^2.$$

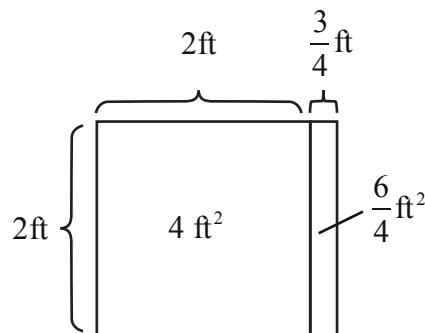
TERMS

Area: The amount of space inside a two-dimensional shape. For example, in rectangles, Area = length \times width.

MODELS

Area Model

$$2\frac{3}{4} \text{ ft} \times 2 \text{ ft} = 5\frac{1}{2} \text{ ft}^2$$



TIPS FOR FAMILIES**KEY CONCEPT OVERVIEW**

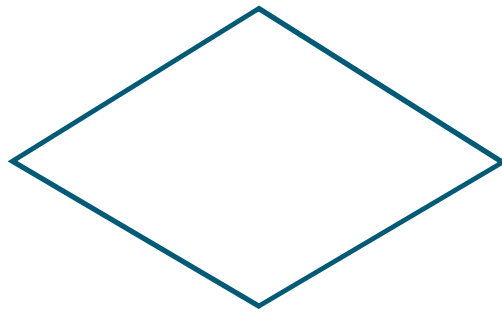
In Lessons 15 through 22, students learn to draw, analyze, and classify two-dimensional shapes. They classify triangles by their side lengths and angle measures, and do an in-depth analysis of **quadrilaterals** to classify them based on their properties.

You can expect to see homework that asks your child to do the following:

- Classify triangles by side lengths (e.g., **equilateral**, **isosceles**, **scalene**) and by angle measurements (e.g., **acute**, **right**, **obtuse**).
- Draw triangles that fit different classifications (e.g., acute and scalene).
- Draw and classify quadrilaterals such as **trapezoids**, **parallelograms**, **rectangles**, **rhombuses**, **kites**, and **squares**.

SAMPLE PROBLEM *(From Lesson 19)*

Draw a rhombus with no right angles.

**HOW YOU CAN HELP AT HOME**

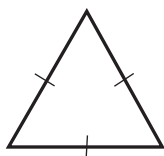
- Review the attributes of triangles (acute, right, obtuse, equilateral, isosceles, scalene) with your child. Ask them to define the different attributes.
- Review quadrilaterals (trapezoid, parallelogram, rhombus, rectangle, kite, and square) with your child. Ask them to define the different quadrilaterals and explain their similarities and differences.
- Hold a scavenger hunt to find objects around your home that contain quadrilateral or triangle shapes. Ask your child to classify each quadrilateral shape or triangle that they find.

TERMS

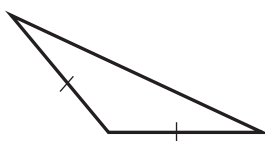
Acute triangle: A triangle in which all three angles measure less than 90 degrees.



Equilateral triangle: A triangle with three sides of equal length.



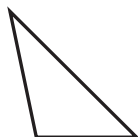
Isosceles triangle: A triangle with at least two sides of equal length.



Kite: A quadrilateral with two pairs of adjacent sides that are equal in length; a kite is a rhombus if all side lengths are equal.



Obtuse triangle: A triangle with one angle whose measure is greater than 90 degrees.



Parallelogram: A quadrilateral with opposite sides that are parallel and equal in length.



Quadrilateral: A closed figure with four sides. For example, kites, parallelograms, rectangles, rhombuses, squares, and trapezoids are all quadrilaterals.

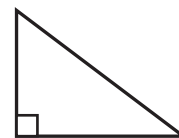
Rectangle: A parallelogram with four 90 degree angles.



Rhombus: A parallelogram with four sides of equal length.



Right triangle: A triangle with one angle that measures 90 degrees.



Scalene triangle: A triangle with no sides of equal length and no angles of equal measure.



Square: A rectangle with four sides of equal length.



Trapezoid: A quadrilateral with exactly one pair of parallel sides.

