# EUREKA MATH™ TIPS FOR PARENTS

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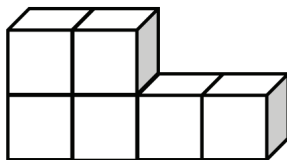
Volume	Explanation
6 cm^3	*I counted 2 cubes on the top and 4 cubes on the bottom. There are 6 total cubes. 2 + 4 = 6. Since each cube is 1 cubic centimeter, the total volume of the figure is 6 cubic centimeters.*

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at GreatMinds.org.

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, Area = length × width.

Volume of a solid: The amount of space inside a three-dimensional solid. For example, in rectangular prisms, Volume = length × width × height.

MODELS

Isometric Dot Paper

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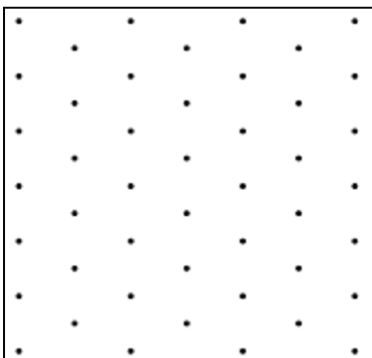
KEY CONCEPT OVERVIEW

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 × width × height.
  - Volume of a rectangular prism = area of the base × height.
- Solve problems by using the equation 1 cm³ = 1 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.
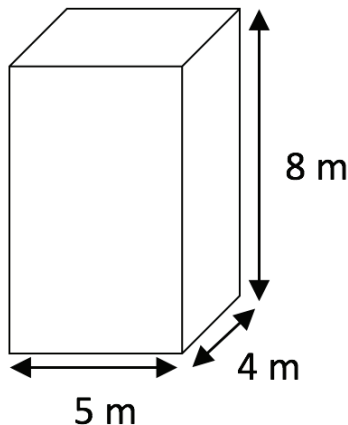
Volume = 5 m × 4 m × 8 m = 160 m³

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at GreatMinds.org.

HOW YOU CAN HELP AT HOME

- Help your child practice finding the volumes of rectangular prisms. Find rectangular prisms 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.

    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.

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 ft × 7 ft × 4 ft. Your child writes
9 ft × 7 ft × 4 ft = 252 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.

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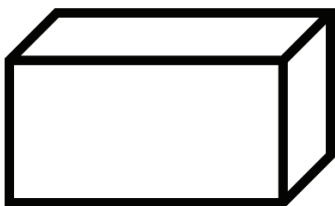
KEY CONCEPT OVERVIEW

In Lessons 10 through 15, 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 12)*

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

$$2\frac{3}{4}\,\text{m} \times \frac{3}{4}\,\text{m}$$
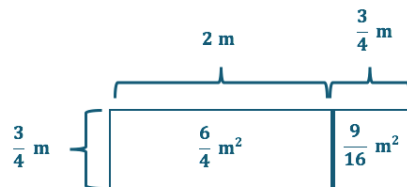
$$\frac{6}{4} + \frac{9}{16}$$

$$= \frac{24}{16} + \frac{9}{16}$$

$$= \frac{33}{16}$$

$$= 2\frac{1}{16}$$

The area of the rectangle is $2\frac{1}{16}\,\text{m}^2$.

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at GreatMinds.org.

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."

For more resources, visit » *Eureka.support*

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.
    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 two cards to form a fraction 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.

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 two cards with the numbers 1 and 3. They represent the fraction $\frac{1}{3}$, so the width of the rectangle is $\frac{1}{3}$ m. You write $\frac{9}{2}$ m $\times \frac{1}{3}$ m. She writes $\frac{9}{2}$ m $\times \frac{1}{3}$ m $= \frac{9}{6}$ m$^2 = 1\frac{3}{6}$ m^2.
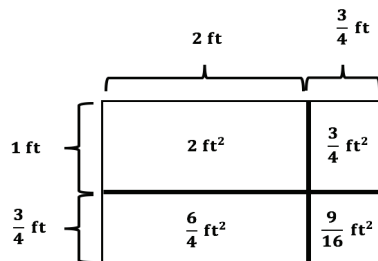
TERMS

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

MODELS

Area Model

$2\frac{3}{4}$ ft $\times 1\frac{3}{4}$ ft $= 4\frac{13}{16}$ ft^2

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KEY CONCEPT OVERVIEW

In Lessons 16 through 21, students learn to draw, analyze, and classify two-dimensional shapes. They do an in-depth analysis of **quadrilaterals** and then classify them based on their properties.

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

- Draw and classify quadrilaterals such as **trapezoids**, **parallelograms**, **rectangles**, **rhombuses**, **kites**, and **squares**.

SAMPLE PROBLEM *(From Lesson 20)*

True or false. If the statement is false, rewrite it to make it true.

	T	F
a. Kites are never rhombuses. **Kites are sometimes rhombuses.**		✓
b. All parallelograms are trapezoids.	✓	
c. All rectangles are squares. **All squares are rectangles.**		✓

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at GreatMinds.org.

HOW YOU CAN HELP AT HOME

- Review quadrilaterals (trapezoid, parallelogram, rhombus, rectangle, kite, and square) with your child. Ask her to define the different quadrilaterals and explain their similarities and differences.

- Hold a scavenger hunt to find objects around your home that contain quadrilateral shapes. Ask your child to classify each quadrilateral shape that he finds.

For more resources, visit » *Eureka.support*

TERMS

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

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.

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

Rectangle: A parallelogram with four 90 degree angles.

Rhombus: A parallelogram with four sides of equal length.

Square: A rectangle with four sides of equal length.

Trapezoid: A quadrilateral with at least one pair of parallel sides.