EUREKA MATH™ TIPS FOR PARENTS

KEY CONCEPT OVERVIEW

Lessons 1 through 3 focus on problem solving, where students share and analyze efficient problem-solving strategies.

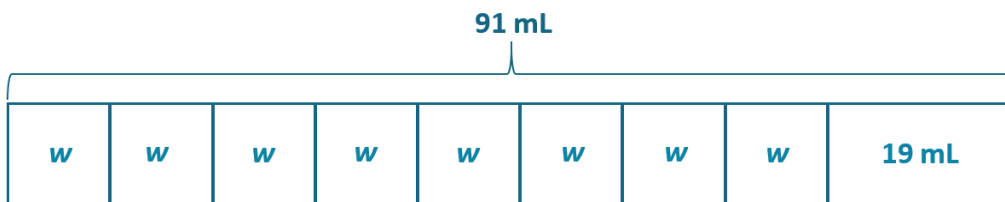You can expect to see homework that asks your child to do the following:

- Solve a variety of word problems by using the **RDW process**.
- Use a letter to represent the unknown.
- Use addition, subtraction, multiplication, and division to solve multi-step problems.

SAMPLE PROBLEM *(From Lesson 3)*

Use the RDW process to solve the following problem. Use a letter to represent the unknown.

Monica measures 91 milliliters of water into 9 tiny beakers. She measures an equal amount of water into the first 8 beakers. She pours the remaining water into the ninth beaker. It measures 19 milliliters. How many milliliters of water are in each of the first 8 beakers?

91 mL

| w | w | w | w | w | w | w | w | 19 mL |

$91 - 19 = 72$

$72 \div 8 = w$

$9 = w$

*There are **9** milliliters of water in each of the first **8** beakers.*

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

- Children frequently benefit from acting out problems they are trying to solve. If possible, have your child act out homework problems that are difficult for him to solve. For example, if the problem is about money, use play or real money to physically act out what is happening in the word problem. If the problem is about pouring water into beakers, set out some containers that would simulate the word problem, and let your child pour water into the containers according to what happens in the problem. It may be helpful to take a video of your child acting out the problem and have him watch it many times. After acting out the problem, he may find it easier to work on the drawing and writing parts of the RDW process.

TERMS

RDW process: A three-step process used in solving word problems that requires students to 1) read the problem for understanding, 2) draw a picture or model (e.g., a tape diagram), and 3) write an equation and statement of their answer.

EUREKA MATH™ TIPS FOR PARENTS

KEY CONCEPT OVERVIEW

In Lessons 4 through 9, students learn about the **attributes** of **two-dimensional figures**.

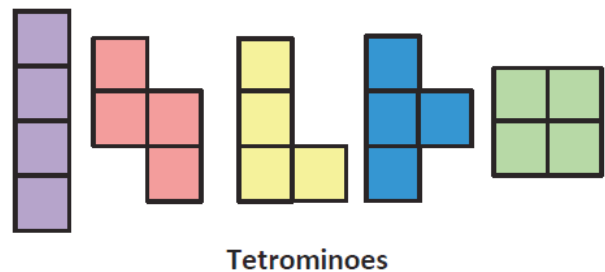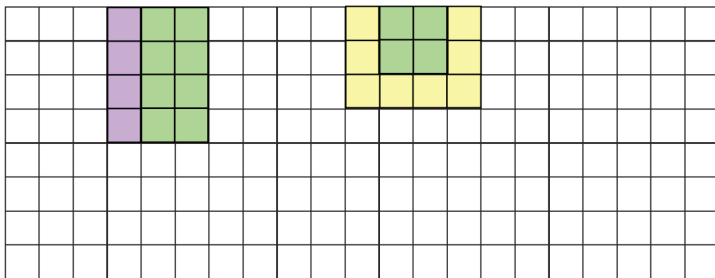You can expect to see homework that asks your child to do the following:

- Given the attributes of **quadrilaterals** and other **polygons** (including **trapezoids**, **rhombuses**, **pentagons**, **hexagons**, and **regular polygons**), determine and draw each, and identify any parallel sides.

- **Compose** polygons by using **tetrominoes** (supplied to students).

- **Decompose** polygons by drawing lines to divide them into specified polygons.

- Compose polygons from **tangram** pieces (supplied to students).

SAMPLE PROBLEM *(From Lesson 7)*

Use tetrominoes to create at least two different rectangles, each with an area of 12 square units.

Next, color the grid below to show how you created the rectangles. You may use the same tetromino more than once.

Tetrominoes

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

- Go for a walk around your neighborhood or to a local park or playground, and ask your child to take pictures of different shapes. Try to find shapes that are composed from other shapes. Print out the pictures, or use software to design a slide show of the photos. Have your child add captions to describe the shapes by using the vocabulary she has been learning in school.

TERMS

Attributes: Characteristics of specific shapes. For example, a rectangle has the attributes of two sets of parallel sides and four 90 degree (right) angles.

Compose/Decompose: To make (compose) or break apart (decompose) a number, figure, or array.

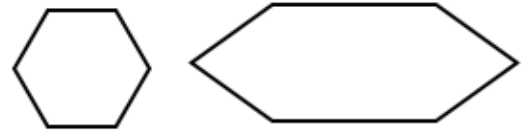**Hexagon:** A polygon with six sides. (See Figure 1.)
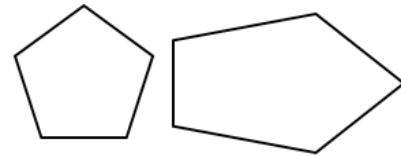
Pentagon: A polygon with five sides. (See Figure 2.)

Polygon: A closed shape with three or more straight sides. For example, triangles, rectangles, pentagons, hexagons, and octagons are all polygons.

Quadrilateral: Any polygon with four sides. For example, squares, rectangles, trapezoids, rhombuses, and parallelograms are all quadrilaterals.

Regular polygon: A polygon with all sides equal in length and all angles equal in measure. (See Figure 3.)

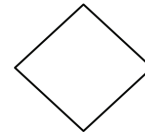**Rhombus:** A quadrilateral with all sides equal in length. (See Figure 4.)

Trapezoid: A quadrilateral with at least one pair of parallel sides. (See Figure 5.)
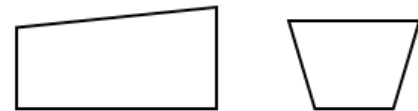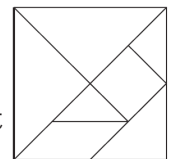
Two-dimensional figure: A flat figure with length and width. For example, squares, circles, triangles, and hexagons are two-dimensional figures, whereas cones, cubes, and prisms are three-dimensional figures.

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

MODELS

Tangrams: A special set of puzzle pieces with five triangles and two quadrilaterals that compose a square.

Tetrominoes: Shapes composed of four connected squares so every square shares at least one side with another square.

Tangram

Tetrominoes

EUREKA MATH™ TIPS FOR PARENTS

KEY CONCEPT OVERVIEW

Lessons 10 through 17 focus on **perimeter** and solving real-world problems involving perimeter.
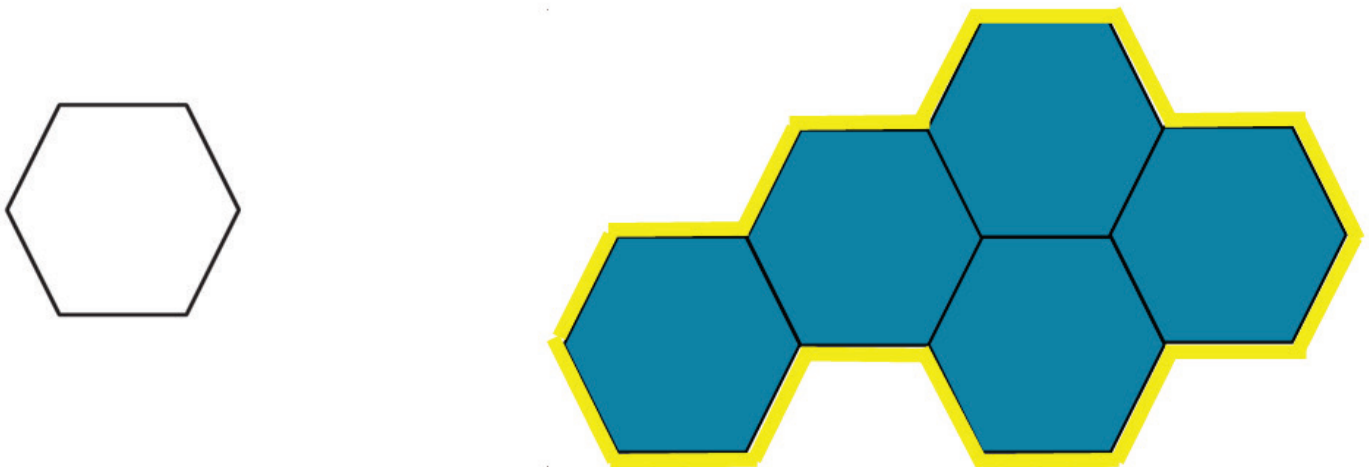
You can expect to see homework that asks your child to do the following:

- Identify perimeter and distinguish it from the area of a shape.
- Trace around shapes to conceptually understand perimeter.
- **Tessellate** to compose larger shapes.
- Measure and label side lengths to calculate the perimeter of given shapes.
- Determine the perimeters of irregular shapes made up of several rectangles and of regular polygons that have unknown measurements.
- Find the perimeter of circular objects at home using string and a ruler.

SAMPLE PROBLEM *(From Lesson 11)*

Tessellate at least five copies of the given hexagon to make a new shape, without gaps or overlaps. Outline the perimeter of your new shape with a highlighter. Shade in the area with a crayon or colored pencil.

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at GreatMinds.org.
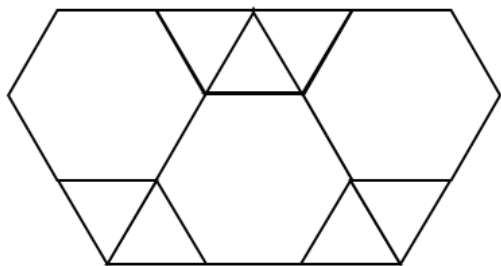
HOW YOU CAN HELP AT HOME

- With your child, use a tape measure to practice measuring the perimeters of objects at home such as a tabletop or desktop, the floor of a small room, or a toy box. Talk about what units are best for measuring different perimeters (e.g., inches to measure a toy box, feet to measure the floor in a room).

TERMS

Perimeter: The outside boundary of a closed shape. It can be measured by finding the sum of the side lengths. For example, a square with a side length of 2 inches has a perimeter of 8 inches because 2 inches + 2 inches + 2 inches + 2 inches = 8 inches.

Tessellate: To tile a surface with repeating shapes without gaps or overlaps. For example, in the image shown below, hexagons and triangles have been tessellated.

EUREKA MATH™ TIPS FOR PARENTS

KEY CONCEPT OVERVIEW

In Lessons 18 through 22, students make connections between area and perimeter.

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

- Create as many rectangles as possible with a given area or a given perimeter.
- Compare and analyze the perimeters and areas of different rectangles and draw conclusions.
- Create and analyze **line plots** based on the number of rectangles created.

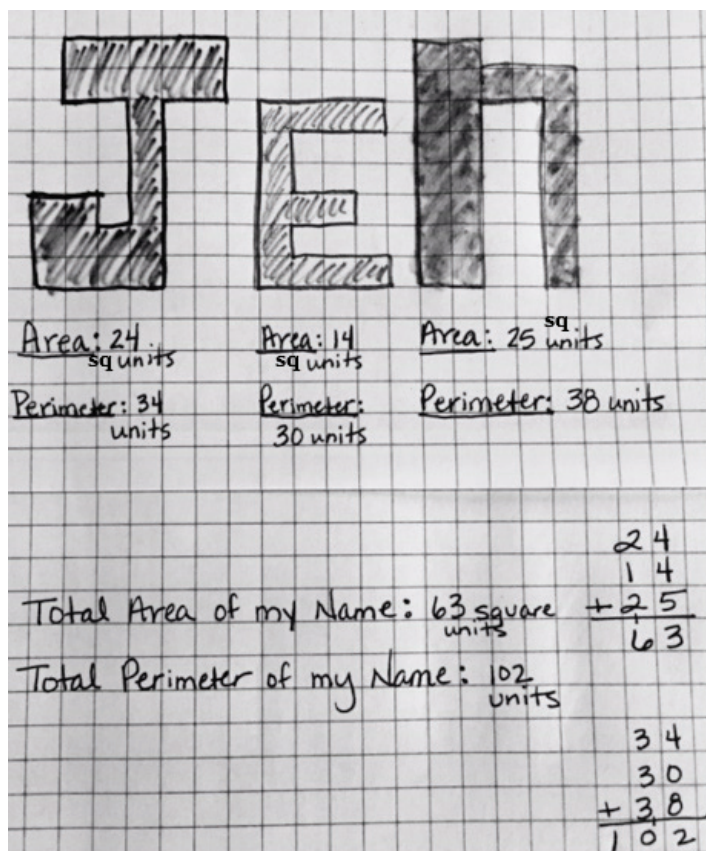## SAMPLE PROBLEM *(From Lesson 22)*

Sumi uses unit square tiles to build 3 different rectangles, each with an area of 32 square units. Does knowing the number of rectangles she built that have an area of 32 square units help her find the number of rectangles she can build that have a perimeter of 32 units? Why or why not?

No, area and perimeter are different measurements, so knowing the number of rectangles she built that have an area of 32 square units does not help Sumi find the number of rectangles she can build that have a perimeter of 32 units.

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at GreatMinds.org.
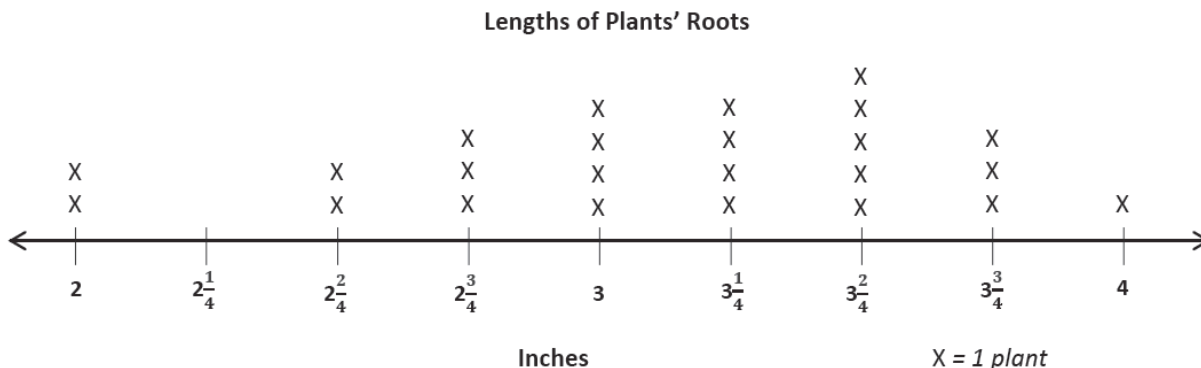
HOW YOU CAN HELP AT HOME

- Ask your child's teacher or search online for printable grid paper. Have your child use crayons or markers to construct her name on the grid paper and find the area and perimeter of each letter. (See image at right.) Then have your child find the total area and perimeter of her name. If your child desires, she can do the rest of the names in your family as well.

Area: 24 sq units
Perimeter: 34 units

Area: 14 sq units
Perimeter: 30 units

Area: 25 sq units
Perimeter: 38 units

Total Area of my Name: 63 square units

Total Perimeter of my Name: 102 units

$$\begin{array}{r} 24 \\ 14 \\ +25 \\ \hline 63 \end{array}$$

$$\begin{array}{r} 34 \\ 30 \\ +38 \\ \hline 102 \end{array}$$

MODELS

Line Plot: A display of data on a horizontal number line.

Lengths of Plants' Roots

Inches

X = 1 plant

EUREKA MATH™ TIPS FOR PARENTS

KEY CONCEPT OVERVIEW

In Lessons 23 through 30, students solve real-world problems and complete projects by using the concepts of area and perimeter.

You can expect to see homework that asks your child to do the following:
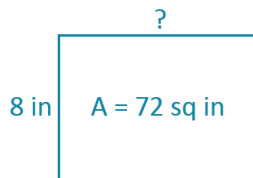
- Determine the perimeter when given information about a shape.

- Draw different rectangles that have the same perimeter and label the lengths and widths of each.

- Determine both the area and perimeter of a given rectangle when given a drawing or a word problem.

SAMPLE PROBLEM *(From Lesson 28)*

The area of Mason's rectangular painting is 72 square inches. The width of the painting is 8 inches.

a. Estimate to draw Mason's painting, and label the side lengths.

```
        ?
   ┌──────────┐
8 in│ A = 72 sq in │
   └──────────┘
```

b. What is the length of the painting?

$Length = 72$ **sq in** $\div$ **8 in** $=$ **9 in**

The length of the painting is 9 inches.

c. What is the perimeter of Mason's painting?

$Perimeter =$ **8 in** $+$ **8 in** $+$ **9 in** $+$ **9 in** $=$ **34 in**

The perimeter of Mason's painting is 34 inches.

d. Mason's mom hangs his painting on a wall where she has already hung two of Mason's other paintings. The areas of the other paintings are 64 square inches and 81 square inches. What is the total area of all three paintings that are hanging on the wall?

$Total\ area =$ **64 sq in** $+$ **81 sq in** $+$ **72 sq in** $=$ **217 sq in**

The total area of all three paintings is 217 square inches.

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

- Read *Spaghetti and Meatballs for All! A Mathematical Story,* by Marilyn Burns, with your child. (Ask your school librarian or search online for a copy.) Talk about how area and perimeter are important to the story.

- Give your child a tape measure and ask him to find the area and perimeter of the surfaces of objects around the house, such as the top of a desk or table, a computer or TV screen, a cupboard door, a cookie sheet, a window, or a door. Make sure that each of the chosen objects has a rectangular surface. Ask your child to record his findings and talk about which objects have the largest and smallest area and perimeter measurements.