EUREKA MATH™ TIPS FOR PARENTS

KEY CONCEPT OVERVIEW

In this topic, students use absolute value to find the distance between integers in the **coordinate plane** and to determine the side lengths of polygons. Then, students use the side lengths to calculate the areas of various polygons by decomposing or composing them into shapes with known area formulas. Students also find the **perimeters** of various polygons in the coordinate plane. In the final lesson of the topic, students apply their knowledge of distance, area, and perimeter to real-world situations.

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

- Determine whether the line segment joining two points is horizontal, vertical, or neither.
- Use absolute value to determine the lengths of line segments.
- Name two points that, when connected, form a line segment with a specified length.
- Plot points in the coordinate plane to make a shape, and then find the area and/or perimeter of the shape.
- Calculate and compare the areas and perimeters of various figures.
- Solve real-world math problems involving distance, area, and perimeter.

SAMPLE PROBLEM *(From Lesson 9)*

Jasjeet has made a scale drawing of a vegetable garden she plans to make in her backyard. She needs to determine the perimeter and area to know how much fencing and soil to purchase. Determine both the perimeter and area.

$AB = 4$ **units** $BC = 7$ **units** $CD = 4$ **units**

$DE = 6$ **units** $EF = 8$ **units** $AF = 13$ **units**

Perimeter = 4 units + 7 units + 4 units + 6 units + 8 units + 13 units

Perimeter = 42 units

The area is found by making a horizontal cut from $(1, 1)$ *to point C to decompose into two rectangles.*

Area of Top	Area of Bottom
$A = lw$	$A = lw$
$A = (4$ **units**$)(7$ **units**$)$	$A = (8$ **units**$)(6$ **units**$)$
$A = 28$ **units**^{2}	$A = 48$ **units**^{2}

Total Area = 28 units^2 + 48 units^2

Total Area = 76 units^2
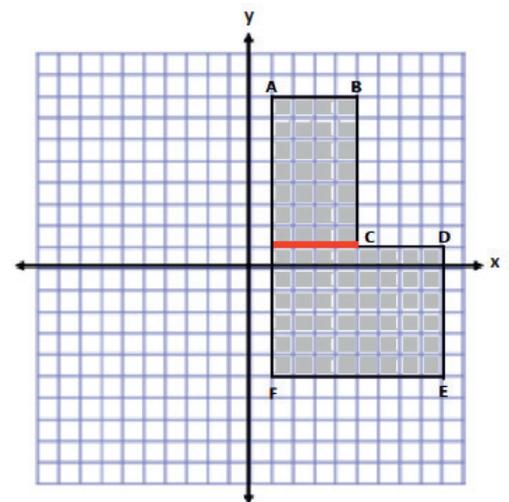
Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at GreatMinds.org.

HOW YOU CAN HELP AT HOME

You can help at home in many ways. Here are some tips to help you get started.

- Create a coordinate grid on a piece of graph paper. Plot the points (1, 4) and (1, −7), and draw a line to connect them. Have your child find the distance between the two points (11 units, or 11 squares, on the graph paper). If your child begins counting the units to find the distance, ask her instead to use absolute value and explain her thinking. (Possible solution for total: "Since the y-coordinates, 4 and −7, have different signs—positive and negative—I will add their absolute values, $|4| + |−7| = 4 + 7 = 11$. So the distance between the two points is 11 units.")

- With your child, find the area and perimeter of this figure by using the strategy of your choice (Area: 130 units^2, Perimeter: 62 units). Then challenge your child to use a different strategy to determine the area.
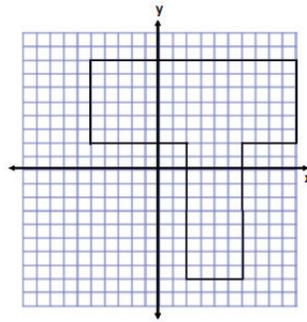
(Possible solutions: The figure may be decomposed the following ways:

Then your child could find the total area by finding the sum of the areas of all the parts.)
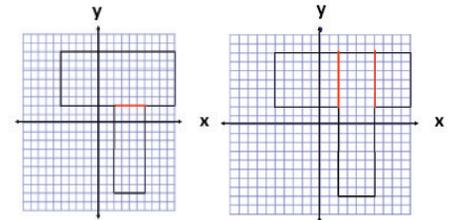
TERMS

Perimeter: The distance around a two-dimensional shape.

MODELS

Coordinate Plane