

Learning Objective: Students will be able to draw polygons in the coordinate plane and find the lengths of their sides.

# Warm Up

$$74 \overline{)5476}$$

$$66 \overline{)6270}$$

$$78 \overline{)6708}$$

$$98 \overline{)8624}$$

$$96 \overline{)2112}$$

$$43 \overline{)4085}$$

$$34 \overline{)1870}$$

$$42 \overline{)420}$$

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# Warm Up Answers

$$\begin{array}{r} 74 \\ \hline 74 \overline{)5476} \end{array}$$

$$\begin{array}{r} 95 \\ \hline 66 \overline{)6270} \end{array}$$

$$\begin{array}{r} 86 \\ \hline 78 \overline{)6708} \end{array}$$

$$\begin{array}{r} 88 \\ \hline 98 \overline{)8624} \end{array}$$

$$\begin{array}{r} 22 \\ \hline 96 \overline{)2112} \end{array}$$

$$\begin{array}{r} 95 \\ \hline 43 \overline{)4085} \end{array}$$

$$\begin{array}{r} 55 \\ \hline 34 \overline{)1870} \end{array}$$

$$\begin{array}{r} 10 \\ \hline 42 \overline{)420} \end{array}$$

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Lesson 4.4

February 15, 2017

## Essential Question:

How can you find the lengths of line segments in a coordinate plane?

Lesson 4.4

February 15, 2017

## Lesson Objective:

Students will be able to:

draw polygons in the coordinate plane and find the lengths of their sides.

# Self-Evaluation Scale

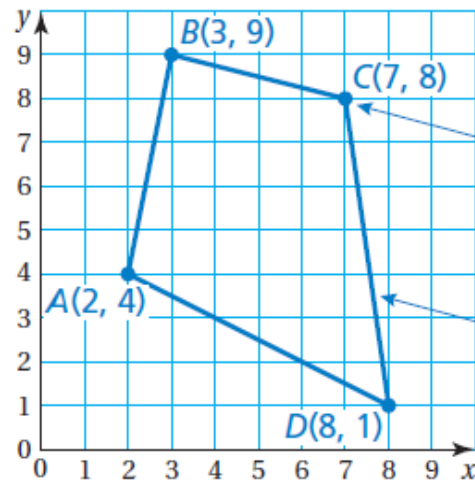
Score	Description
4	I can teach other students how to draw polygons in the coordinate plane and find the lengths of their sides.
3	I can draw polygons in the coordinate plane and find the lengths of their sides.
2	I recognize, but still need help to draw polygons in the coordinate plane and find the lengths of their sides.
1	I do not know how to draw polygons in the coordinate plane and find the lengths of their sides.

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**1**

## Drawing a Polygon in a Coordinate Plane

The vertices of a quadrilateral are  $A(2, 4)$ ,  $B(3, 9)$ ,  $C(7, 8)$ , and  $D(8, 1)$ .  
Draw the quadrilateral in a coordinate plane.



Plot and label the vertices.

Connect the points to form the quadrilateral.

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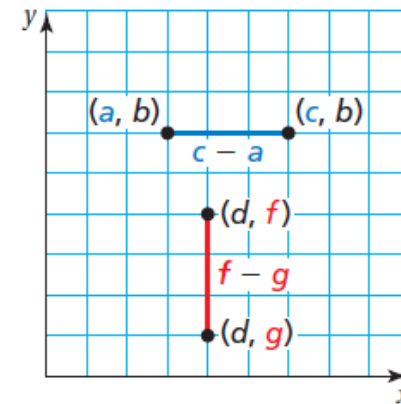
## Key Idea

### Finding Distances in the First Quadrant

You can find the length of a horizontal or vertical line segment in a coordinate plane by using the coordinates of the endpoints.

- When the  $x$ -coordinates are the same, the vertical distance between the points is the difference of the  $y$ -coordinates.
- When the  $y$ -coordinates are the same, the horizontal distance between the points is the difference of the  $x$ -coordinates.

Be sure to subtract the lesser coordinate from the greater coordinate.



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## 2 Finding a Perimeter

The vertices of a rectangle are  $F(1, 6)$ ,  $G(7, 6)$ ,  $H(7, 2)$ , and  $J(1, 2)$ . Draw the rectangle in a coordinate plane and find its perimeter.

Draw the rectangle and use the vertices to find its dimensions.

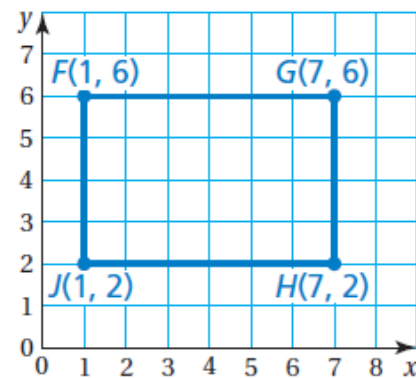
The length is the horizontal distance between  $F(1, 6)$  and  $G(7, 6)$ , which is the difference of the  $x$ -coordinates.

$$\text{length} = 7 - 1 = 6 \text{ units}$$

The width is the vertical distance between  $G(7, 6)$  and  $H(7, 2)$ , which is the difference of the  $y$ -coordinates.

$$\text{width} = 6 - 2 = 4 \text{ units}$$

So, the perimeter of the rectangle is  $2(6) + 2(4) = 20$  units.





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### 3 Real-Life Application

In a grid of the exhibits at a zoo, the vertices of the giraffe exhibit are  $E(0, 90)$ ,  $F(60, 90)$ ,  $G(100, 30)$ , and  $H(0, 30)$ . The coordinates are measured in feet. What is the area of the giraffe exhibit?

Plot and connect the vertices using a coordinate grid to form a trapezoid. Use the coordinates to find the lengths of the bases and the height.

$$b_1 = 60 - 0 = 60$$

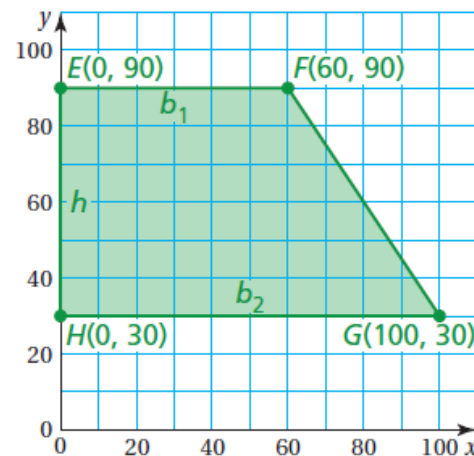
$$b_2 = 100 - 0 = 100$$

$$h = 90 - 30 = 60$$

Use the formula for the area of a trapezoid.

$$\begin{aligned} A &= \frac{1}{2}(60)(60 + 100) \\ &= \frac{1}{2}(60)(160) = 4800 \end{aligned}$$

❖ The area of the giraffe exhibit is 4800 square feet.



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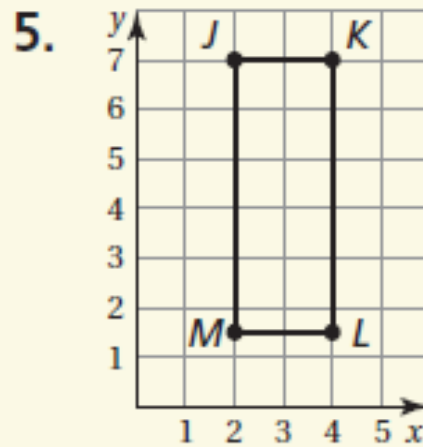
OYO!

 **On Your Own**

5. The vertices of a rectangle are  $J(2, 7)$ ,  $K(4, 7)$ ,  $L(4, 1.5)$ , and  $M(2, 1.5)$ . Find the perimeter and the area of the rectangle.

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# OYO! Answers



15 units; 11 square units

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# Assignment

Complete problems:

6, 8, 10, 12, 14, 18, 20, 22, 24, & 26

on pages 178 - 179 in your Big Ideas Text Book.

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# Homework

In your Big Ideas Record and Practice  
Journal .

