

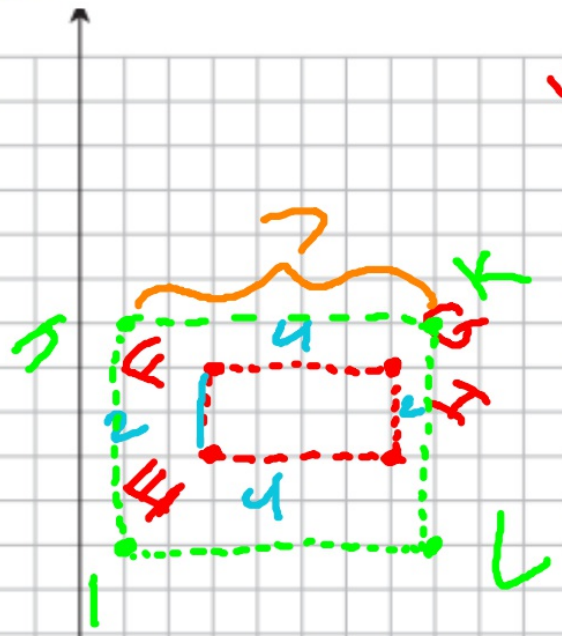
your work.

- $EF = 2$ units, $FG = 4$ units, $GH = 2$ units,
- a. $HE = 4$ units; 12 units
- $IJ = 5$ units, $JK = 7$ units, $KL = 5$ units,
- b. $LI = 7$ units; 24 units

Got It? Do these problems to find out.

Use the coordinates to find the length of each side. Then find the perimeter of the rectangle.

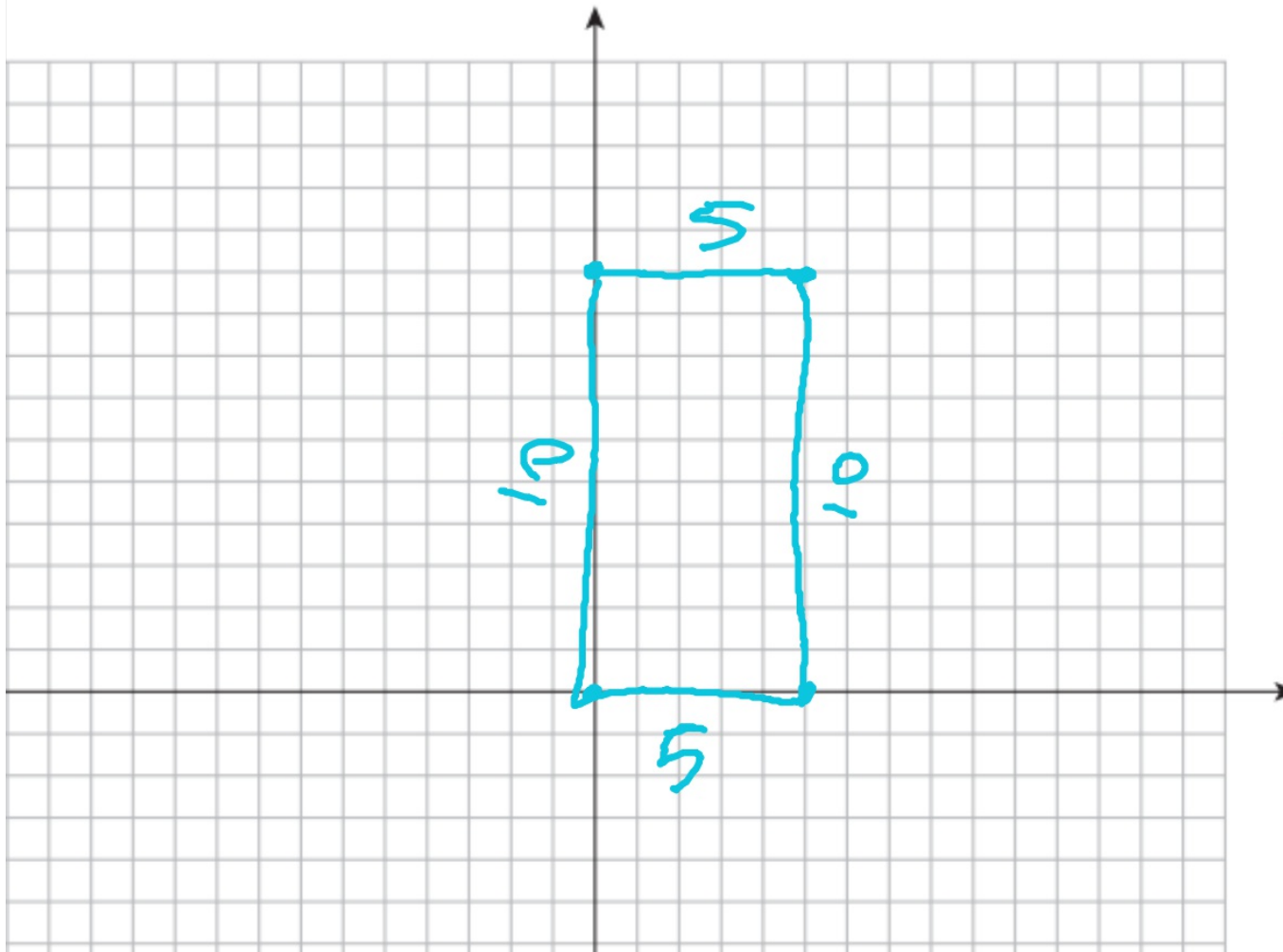
- a. $E(3, 6), F(3, 8), G(7, 8), H(7, 6)$
- b. $I(1, 4), J(1, 9), K(8, 9), L(8, 4)$



"First Quadrant"

$$2 + 4 + 2 + 4 = 12$$

3. Mrs. Piel is building a fence around the perimeter of her yard for her dog. The coordinates of the vertices of the yard are $(0, 0)$, $(0, 10)$, $(5, 10)$, and $(5, 0)$. If each grid square has a length of 100 feet, find the amount of wire, in feet, needed for the fence. What is the shape of her yard? (Example 3) 3,000 ft; rectangle



$$\begin{aligned} &5 + 10 + 5 + 10 \\ &= 30 \times 100 \\ &= 3000 \end{aligned}$$

Guided Practice



Use the coordinates to find the length of each side of the rectangle.

Then find the perimeter. (Examples 1 and 2)

1. $L(3, 3), M(3, 5), N(7, 5), P(7, 3)$


$LM = 2$ units, $MN = 4$ units, $NP = 2$ units,
 $PL = 4$ units; 12 units

2. $P(3, 0), Q(6, 0), R(6, 7), S(3, 7)$

$PQ = 3$ units, $QR = 7$ units, $RS = 3$ units,
 $SP = 7$ units; 20 units

show your work.

3. Mrs. Piel is building a fence around the perimeter of her yard for her dog. The coordinates of the vertices of the yard are $(0, 0), (0, 10), (5, 10),$ and $(5, 0)$. If each grid square has a length of 100 feet, find the amount of wire, in feet, needed for the fence. What is the shape of her yard? (Example 3) **3,000 ft; rectangle**

4.  **Building on the Essential Question** How can coordinates help you to find the area of figures on the coordinate plane? **Sample answer: Coordinates can be used to identify a figure and find the lengths of the sides. The lengths of the sides can be used in the area formulas for various figures.**

Rate Yourself!

How well do you understand polygons on the coordinate plane? Circle the image that applies.



Clear



Somewhat Clear



Not So Clear

For more help, go online to access a Personal Tutor.



Independent Practice

Go online for Step-by-Step Solutions



Use the coordinates to find the length of each side of the rectangle.

Then find the perimeter. (Examples 1 and 2)

1. $D(1, 2), E(1, 7), F(4, 7), G(4, 2)$

Show your work.

$DE = 5$ units, $EF = 3$ units, $FG = 5$ units,

$GD = 3$ units; 16 units

2. $Q(0, 0), R(4, 0), S(4, 4), T(0, 4)$

$QR = 4$ units, $RS = 4$ units, $ST = 4$ units,

$TQ = 4$ units; 16 units

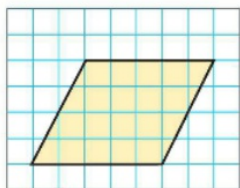
3. Natasha is building a rectangular picture frame for her favorite photo.

The coordinates of the vertices of the frame are $(0, 0), (0, 8), (12, 8)$, and $(12, 0)$. Each grid square has a length of 3 centimeters. Find the amount of wood, in centimeters, needed for the perimeter. (Example 3)

120 cm

Find the area of each figure in square units. (Example 4)

4. 20 square units



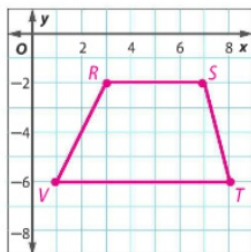
5. 28 square units



Graph each figure and classify it. Then find the area. (Example 5)

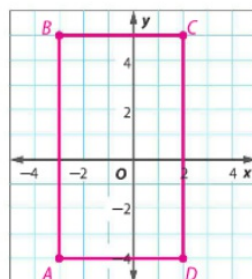
6. $R(3, -2), S(7, -2), T(8, -6), V(1, -6)$

trapezoid; 22 units²



7. $A(-3, -4), B(-3, 5), C(2, 5), D(2, -4)$

rectangle; 45 units²



8. **CCSS Use Math Tools** A rectangle has a perimeter of 20 units. The coordinates of three of the vertices are $(0, 0)$, $(6, 0)$, and $(6, 4)$ as shown on the graph.



- a. What is the coordinate of the missing vertex?
 $(0, 4)$
- b. Plot points $(6, 6)$ and $(2, 4)$. Connect these points to create a composite figure.
- c. What is the area of the composite figure? **28 square units**

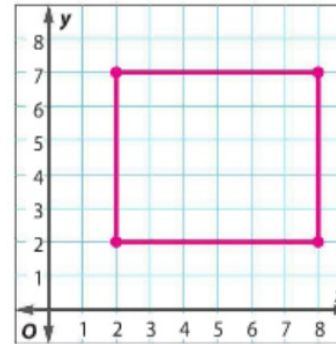


H.O.T. Problems Higher Order Thinking

9. **CCSS Use Math Tools** Draw a rectangle on a coordinate plane that has a perimeter of 16 units. Label all of the vertices with the coordinates. Then find the area of the rectangle. **See students' work.**
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10. **CCSS Persevere with Problems** A certain rectangle has a perimeter of 22 units and an area of 30 square units. Two of the vertices have coordinates at (2, 2) and (2, 7). Find the two missing coordinates. Use the coordinate plane to support your answer.

Sample answer: (8, 2) and (8, 7)



11. **CCSS Identify Structure** Explain the steps you would use to find the perimeter of a rectangle using the coordinates of the vertices.

Sample answer: Subtract the x-coordinates of the points with the same y-coordinates to find the length of 2 of the sides and then subtract the y-coordinates of the points with the same x-coordinates to find the length of the other 2 sides. Then find the sum of all 4 sides to find the perimeter.

12. **CCSS Persevere with Problems** Rectangle $QRST$ has vertices $Q(3, 2)$ and $S(7, 8)$.

- a. Give two possible coordinates for vertices R and T .

Sample answer: $R(3, 8)$ and $T(7, 2)$;

- b. Find the perimeter and area of the rectangle.

20 units; 24 units²

