# Guided Practice

## At A Glance

Students interpret coordinate values of points in the context of a problem. Then students use coordinate graphs and points to solve real-world and mathematical problems.

## Step By Step

- Ask students to solve the problems individually, and record all their work, including graphs.
- **Pair/Share** When students have completed each problem, have them Pair/Share to discuss their solutions with a partner or in a group.

## Solutions

**Example** See possible explanation on the Student Book page. Students may also create a table from the graph, labeling the *x*-column "Chores Completed" and the *y*-column "Weekly Allowance."

**16 Solution**
Distance between points *A* and *B* is 4 units. Distance between points *C* and *D* is 4 units; Students could solve by counting the units between each pair of points on the graph.
***DOK 2***





# Practice Solving Problems on a Coordinate Plane

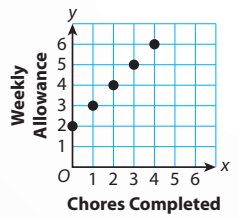
**Study the example below. Then solve problems 16–18.**

### Example

The graph shows how Jaina's parents determine her weekly allowance. What is the meaning of (3, 5)?

**Look at how you can use the graph to solve this problem.**

The *x*-axis is labeled "Chores Completed." The *x*-coordinate in (3, 5) is 3. The *y*-axis is labeled "Weekly Allowance." The *y*-coordinate in (3, 5) is 5.

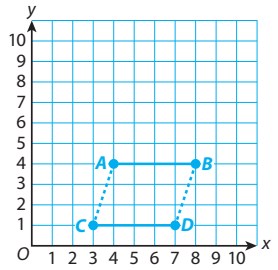



***Solution*** If Jaina completes 3 chores, she will earn $5.

The labels on the axes tell me what the numbers mean.

**Pair/Share**
Explain how to use the graph to find how many chores Jaina must complete to earn $4.

**16** Plot the points (4, 4), (8, 4), (3, 1), and (7, 1) on the coordinate plane. Use the points to draw two parallel, horizontal segments. Label the endpoints of one segment *A* and *B*. Label the endpoints of the other segment *C* and *D*. What is the distance between points *A* and *B*? What is the distance between points *C* and *D*?




***Solution*** Distance between points *A* and *B* is 4 units. Distance between points *C* and *D* is 4 units.

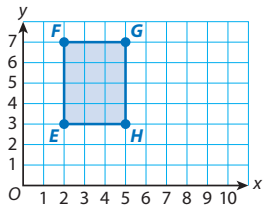
Do parallel lines ever intersect?

**Pair/Share**
What shape could have the 4 points as vertices? Draw the shape on the coordinate plane.



## Teacher Notes

**17** What is the area of rectangle *EFGH* shown on the coordinate plane?




The formula for the area of a rectangle is $A = \ell \times w$.

**Show your work.**

**Possible student work:**

**length of *EH* = distance between *E* and *H*: 5 − 2 = 3**

**length of *GH* = distance between *G* and *H*: 7 − 3 = 4**

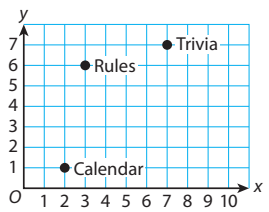
**Area of rectangle = $\ell \times w$ and 3 × 4 = 12**

***Solution*** **12 square units**

**Pair/Share**
Suppose the *x*-coordinates for points *G* and *H* each increase by 1. What kind of shape would this be? What is the area of the shape?

**18** Mr. Palmer uses the coordinate plane to design his bulletin board.

He moves *Rules* 2 units right and 3 units down. What ordered pair represents the new location of *Rules*? Circle the letter of the correct answer.




What is the ordered pair for the starting point?

**A** (5, 3)

**B** (1, 9)

**C** (1, 3)

**D** (5, 9)

Maya chose **C** as the correct answer. How did she get that answer?

**Possible answer: Starting at (3, 6), Maya moved 2 units left and then 3 units down.**

**Pair/Share**
Does Maya's answer make sense?



## Teacher Notes

## Solutions

**17 Solution**

12 square units; see possible student work on the Student Book page.

***DOK 1***

**18 Solution**

**A**; Add 2 to the *x*-coordinate and subtract 3 from the *y*-coordinate.

Explain to students why the other two answer choices are not correct:

**B** is not correct because that location would be 2 units left instead of right and 3 units up instead of down.

**D** is not correct because that location would be 3 units up instead of down.

***DOK 3***

Ready **Mathematics** PRACTICE AND PROBLEM SOLVING

Assign *Practice and Problem Solving* **pages 335–336** after students have completed this section.

# Independent Practice

## At A Glance

Students use coordinate graphs and ordered pairs to solve real-world and mathematical problems that might appear on a mathematics test.

## Solutions

**1 Solution**

**D**; Determine the correct ordered pair (*x*, *y*) for each point on the coordinate plane.

***DOK 1***

**2 Solution**

6 units; Subtract the *x*-coordinate for *R*, 2, from the *x*-coordinate for *O*, 8.

***DOK 1***

**3 Solution**

See plotted points on the Student Book page.

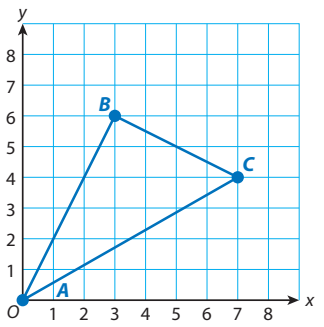
***DOK 1***



## Practice Solving Problems on a Coordinate Plane

**Solve the problems.**

**1** Look at triangle *ABC*.




What are the coordinates of points *A*, *B*, and *C*?

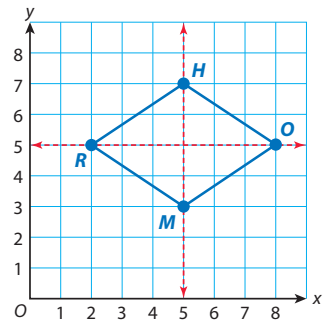
**A** *A*(1, 1), *B*(6, 3), *C*(4, 7)

**B** *A*(1, 1), *B*(3, 6), *C*(7, 4)

**C** *A*(0, 0), *B*(6, 3), *C*(4, 7)

**D** *A*(0, 0), *B*(3, 6), *C*(7, 4)

**2** The coordinate plane below shows rhombus *RHOM* with lines of symmetry.

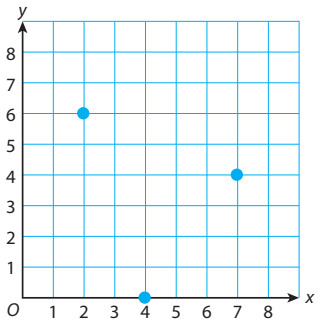



What is the horizontal distance between points *R* and *O*?

6 units

**3** Plot the following three points on the coordinate plane below.

(2, 6) (7, 4) (4, 0)





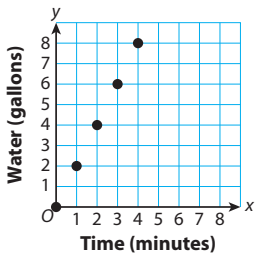

## Quick Check and Remediation

- Ask students to find the perimeter of the rectangle whose vertices are *A*(4, 6), *B*(12, 6), *C*(12, 2), and *D*(4, 2). [24 units]
- For students who are struggling, use the chart to guide remediation.
- After providing remediation, check students' understanding. Ask students to find the perimeter of the rectangle whose vertices are *P*(4, 2), *Q*(4, 4), *R*(7, 2), and *S*(7, 4). [10 units]
- If a student is still having difficulty, use *Ready Instruction*, Grade 5, Lesson 28.

| If the error is . . . | Students may . . . | To remediate . . . |
|---|---|---|
| 20 units | have found a length of 6 by subtracting the *y*-coordinate of *A* from the *x*-coordinate of *B*. | Have students plot the points on graph paper. Point out that since *A* and *B* are on the same horizontal grid line, they have the same *y*-coordinate. Emphasize that you can find the distance between two points that have the same *y*-coordinate by subtracting their *x*-coordinates. Have students find the length both by counting and by subtracting. Then have them find the perimeter using the correct length. |
| 8 units | have only found the length of the rectangle. | Have students plot the points on graph paper. Then have them find and label all four side lengths. Ask students to compare their answer to the labels on the graph. Ask students to identify their error and explain how to correct it. |
| 12 units | have added the length and the width. | Have students plot the points on graph paper and label all four side lengths. Then have students trace the perimeter of the rectangle with their finger or pencil, saying the lengths of the sides aloud as they do so. Ask students to identify and correct their error. |

**4** The coordinate plane shows the relationship between the amount of water in the bathtub and the amount of time the faucet has been turned on.

How many minutes must the faucet be turned on for the bathtub to hold 8 gallons of water?




**A** 16 minutes

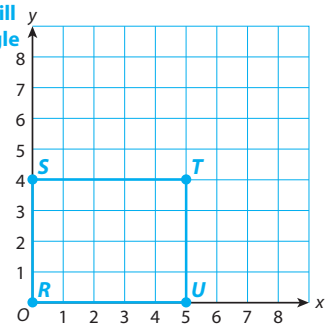
**B** 8 minutes

**C** 4 minutes

**D** 2 minutes

**5** **Part A** The area of rectangle *RSTU* is 20 square units. Draw rectangle *RSTU* on the coordinate plane below with one vertex at the origin.

**Students' drawings will vary. Possible rectangle shown.**




**Part B** Write the ordered pairs for the points *R*, *S*, *T*, and *U*. **Possible answer: *R*(0, 0), *S*(0, 4), *T*(5, 4), *U*(5, 0)**

**Part C** How do you know that the area of rectangle *RSTU* is 20 square units?

**Possible answer: The length of segment *RS* = 4 units. The length of segment *ST* = 5 units. 5 units × 4 units = 20 square units.**

**Self Check** Go back and see what you can check off on the Self Check on page 295.





## Solutions

**4 Solution**

**C**; Identify the *x*-coordinate of the point that has a *y*-coordinate of 8.

***DOK 2***

**5 Part A Solution**

Draw a rectangle with side lengths that have a product of 20. See possible rectangle on the Student Book page.

**Part B Solution**

Write ordered pairs for the vertices of the rectangle. See ordered pairs on the Student Book page for possible rectangle drawn in Part A.

**Part C Solution**

See possible student answer on the Student Book page.

***DOK 3***

## ▶ Hands-On Activity

**Model the classroom on a coordinate plane.**

***Materials:*** graph paper

Distribute graph paper to students. Have students create a diagram of the classroom on a coordinate plane. Provide students with a list of items to include, such as their desks, the teacher's desk, windows, etc. Be sure to decide on a corner of the classroom to be the origin. Have students share and compare their diagram with a partner. Then have pairs describe how to get from one point to another, such as from their desk to the teacher's desk.

## ▶ Challenge Activity

**Explore the relationship between doubling the coordinates of the vertices of a rectangle, the side lengths, and the area.**

Draw a pair of rectangles such that the coordinates of the vertices of one rectangle are twice the coordinates of the vertices of the other rectangle. Find the side lengths and area of each rectangle. Describe the relationship between the side lengths of the two rectangles. [The side lengths of one rectangle are twice the side lengths of the other rectangle.] Describe the relationship between the areas of the two rectangles. [The area of one rectangle is 4 times the area of the other rectangle.]

Repeat for another pair of rectangles. Describe any relationships you notice between doubling the coordinates of the vertices of a rectangle, the side lengths, and the area. Have students explain if they think this relationship is always true.