

Student Guide



Using Coordinates (SG pp. 324–326)

See discussion in the lesson.

Questions 1–3

- 1.* The globe is 3 steps to the left of and 1 step in front of the wastebasket. It is 2 steps to the right of and 6 steps behind the desk.
- 2.* The globe is 5 steps to the right of and 4 steps in front of Mr. Origin.
- 3.* (5, 4)

Using Coordinates

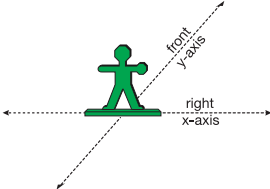



Front View Rear View

This is Mr. Origin.

Does your Mr. Origin look the same as this one? This Mr. Origin has a glove on his right hand. What is special about the right hand of your Mr. Origin?

We can use Mr. Origin to help describe where things are. We can draw a line through Mr. Origin that goes from left to right. We call that the **left/right axis**. (Mr. Origin's hands point in the directions of the left/right axis.) Mathematicians call it the **x-axis**.



Mr. Origin has a button on his front that has a + on it. We can draw a line through Mr. Origin that goes from front to back. We call that the **front/back axis**. Mathematicians call it the **y-axis**.

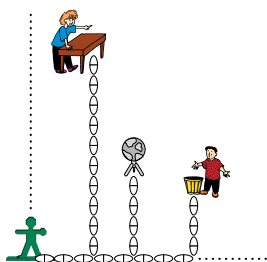
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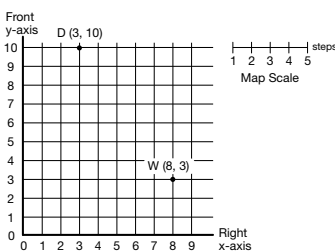
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Elizabeth and Frank use Mr. Origin to map the positions of the desk and the wastebasket.

The room looks like this.



The map looks like this.



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To be able to use the map, it is necessary to know the units Elizabeth and Frank used to measure.

They measured using steps. They also could have measured with standard units of measure like feet or meters.

Frank's wastebasket is 8 steps to the right of and 3 steps in front of Mr. Origin. The **coordinates** of the wastebasket's location are 8 steps right and 3 steps front. Elizabeth's desk is 3 steps to the right of and 10 steps in front of Mr. Origin. What are the coordinates of Elizabeth's desk?

Mathematicians use pairs of numbers, called **coordinates**, to give locations. They write them inside parentheses like this:

The wastebasket is at (8, 3).
Elizabeth's desk is at (3, 10).

The pairs of numbers are called **ordered pairs** because the order in which they are written is very important. The first number always tells the distance to move along the left/right or x-axis. The second number always tells the distance to move along the front/back or y-axis.

Discuss

Discuss these questions with your class.

1. How can you describe the location of the globe within the classroom?
2. Describe the location of the globe using Mr. Origin as a starting point.
3. Use coordinates to give the location of the globe. What two numbers will you use? In what order?

Use the *Practice with Coordinates* page in the *Student Activity Book* to practice locating points on a map.

Play the *Find the Panda Game* in the *Student Activity Book* to practice using coordinates to locate an object on a map.

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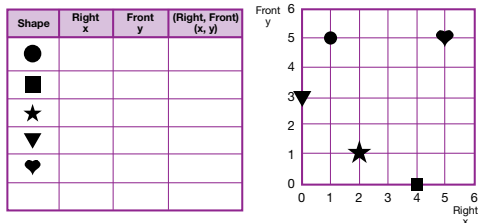
*Answers and/or discussion are included in the lesson.

Student Activity Book

Name _____ Date _____

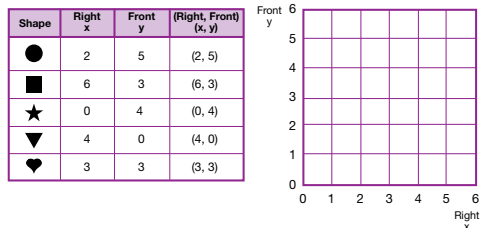
Practice with Coordinates

1. Complete the data table with the coordinates of the shapes.



2. Add a shape to the map and complete the data table with the coordinates.

3. Draw the shapes on the graph using the coordinates in the table.



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Using Coordinates

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Practice with Coordinates (SAB p. 465)

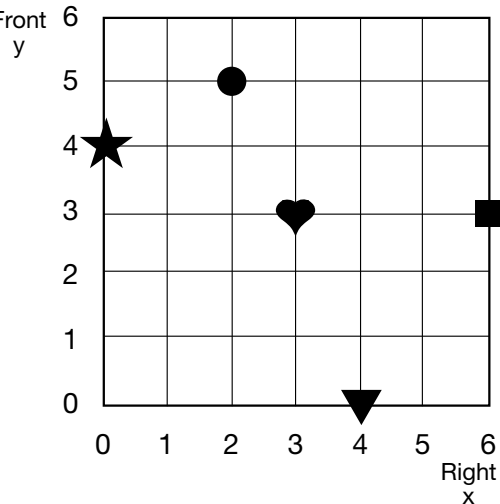
Questions 1–3

1.

Shape	Right x	Front y	(Right, Front) (x, y)
●	1	5	(1, 5)
■	4	0	(4, 0)
★	2	1	(2, 1)
▼	0	3	(0, 3)
♥	5	5	(5, 5)

2. Responses will vary.

3.



Find the Panda (SAB p. 468)

Questions 1–3

1. * Possible response: Julia’s second guess is a good guess because now she knows the coordinate for the x-axis so she only has to move forward to find the coordinate on the y-axis.
2. Possible response: Since Julia is on the right place for the x-axis she only needs to find the location on the y-axis. She is already on 3 and since the panda is at (3,12) she will have to move forward from 8 to get to 12.
3. Answers will vary. Students should realize that the coordinate for the x-axis will remain a 3 and should just change the coordinate for the y-axis. Possible student guesses can include (3,9), (3,10), (3,11), and (3,12).

Name _____ Date _____

Chris is the panda. He chooses 3 right, 12 front (3, 12) as his location. Julia, one of Professor Peabody’s helpers, guesses 7 right, 8 front (7, 8). Julia records the guess on her game board and location table.

Chris records the guess on his game board, too. He sees that Julia must go left and front to reach the panda. So he says, “Go left and front.”

Chris

Location	
	(Right, Front) (x, y)
Panda	(3, 12)
Guess 1	(7, 8)
Guess 2	
Guess 3	
Guess 4	
Guess 5	
Guess 6	

Julia guesses again. This time she guesses 3 right, 8 front (3, 8). Here is Julia’s game board. It shows both of her guesses.

Julia

Location	
	(Right, Front) (x, y)
Guess 1	(7, 8)
Guess 2	(3, 8)
Guess 3	
Guess 4	
Guess 5	
Guess 6	

1. Is Julia’s second guess a good guess? How did you decide?
2. Chris says, “Now go front.” Why does he say this?
3. If you were playing the game and did not know where the panda was, what would be your next guess?

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*Answers and/or discussion are included in the lesson.