

# Inquiry Lab

## Find Distance on the Coordinate Plane



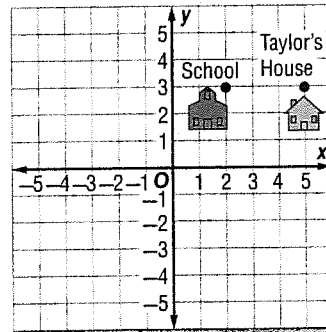
**WHAT** is the relationship between coordinates and distance?



Content Standards  
6.NS.8

Mathematical Practices  
1, 3, 4

**Maps** Taylor's house and school are each shown on the map. What is the distance between the two points?



What do you know? \_\_\_\_\_

What do you need to find? \_\_\_\_\_

### Investigation 1

**Find the distance between Taylor's house and the school.**

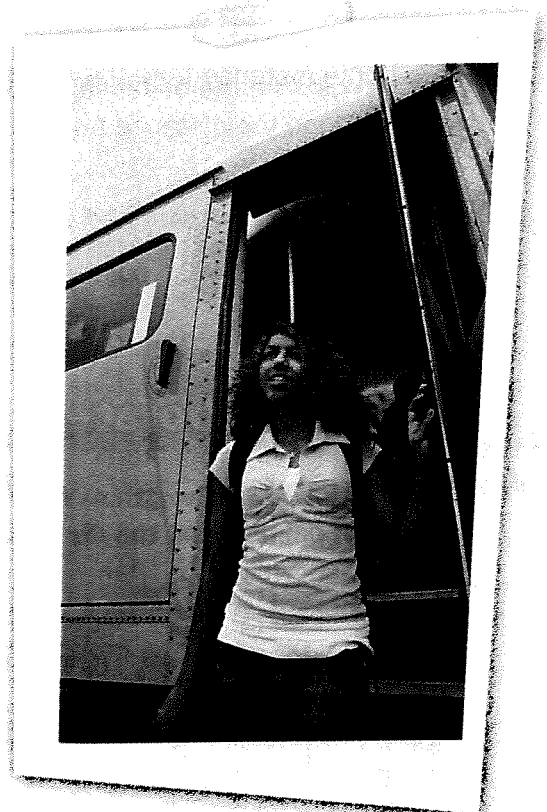
**Step 1** Find the coordinates of Taylor's house.

**Step 2** Find the coordinates of the school.

**Step 3** Draw a line between the points. The line is horizontal, so the  $y$ -coordinates are the same.

**Step 4** To find the distance, count the number of units between the  $x$ -coordinates.

Location	$x$ -coordinate
house	
school	



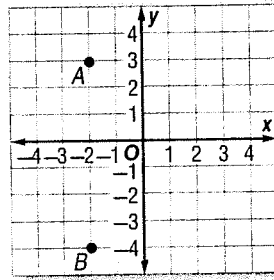
So, there are  units between Taylor's house and the school.

## Investigation 2

Find the distance between point A and point B on the coordinate plane.

**Step 1** Determine the coordinates for point A.

.....



**Step 2** Determine the coordinates for point B.

.....

**Step 3** Draw a line between the points. The line is vertical, so the x-coordinates are the same.

**Step 4** Count the number of units between each y-coordinate and the x-axis.

Point	y-coordinate	Distance from x-axis
A		
B		

**Step 5** To find the distance between the two points, add the distance from the x-axis to each point.

$$\square + \square = \square$$

So, the distance between point A and point B is  $\square$  units.



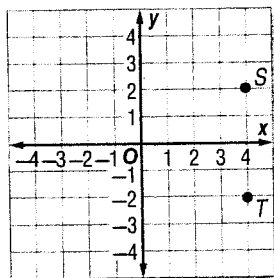
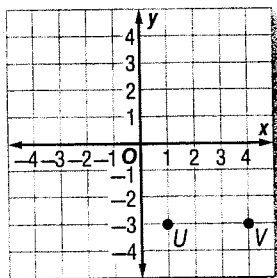
## Collaborate

**CCSS Model with Mathematics** Work with a partner. Draw a line between each pair of points. Find the distance between each pair of points.

1. ....

2. ....

Show your work.





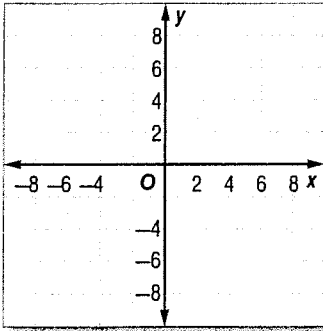
# Collaborate


**CCSS**

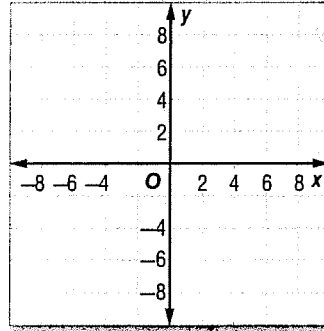
**Model with Mathematics** Work with a partner. Plot each pair of points on the coordinate plane. Find the distance between each pair of points.

3.  $C(-3, -6), D(-3, -1)$

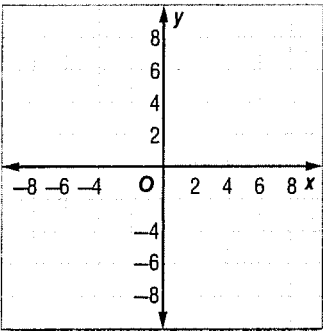
Show your work.



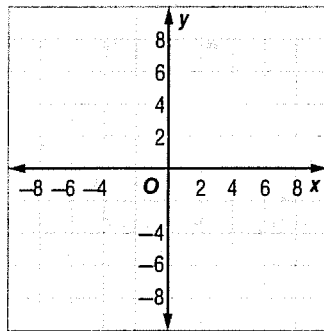
4.  $E(-6, -2), F(1, -2)$



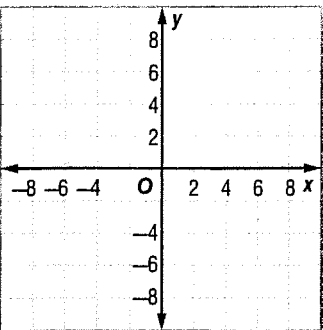
5.  $G(1, -4), H(4, -4)$



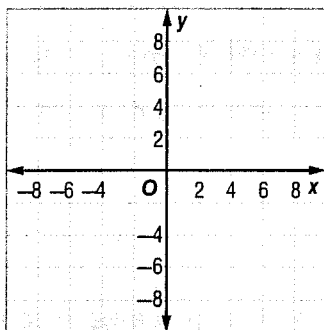
6.  $K(3, -4), L(3, 2)$



7.  $M(5, 1), N(-1, 1)$



8.  $O\left(5\frac{1}{2}, 6\right), P\left(5\frac{1}{2}, 2\right)$





## Analyze

With a partner to complete the table below. Use your answers from Exercises 3–6. The first one is done for you.

Exercise	Coordinates Used	Horizontal or Vertical Line?	Same or Different Quadrant?	Line Length
	2 and -2	horizontal	different	4 units
9.	3 and			
10.	4 and			
11.	5 and			
12.	6 and			

13. Compare your answers from Exercises 11 and 12. What is the relationship between the coordinates used and the length of each line?

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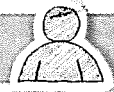
.....

14. Name the coordinates of two points that have the same x-coordinates and are 8 units apart.

15. **Reason Inductively** Use absolute value to write a rule for determining the distance between two points on a coordinate plane that have the same x-coordinate.

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## Reflect

16. **Model with Mathematics** Write and solve a real-world problem that involves determining distance on a coordinate plane.

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17. **WHAT** is the relationship between coordinates and distance?

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