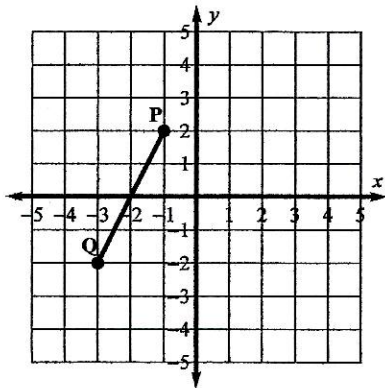


# Linear Reflections

1. a. Reflect  $\overline{PQ}$  over the  $y$ -axis. Draw the reflected line segment and label it  $\overline{P'Q'}$  then complete the table of values.



$\overline{PQ}$	
$x$	$y$
-3	-2
-2	0
-1	2

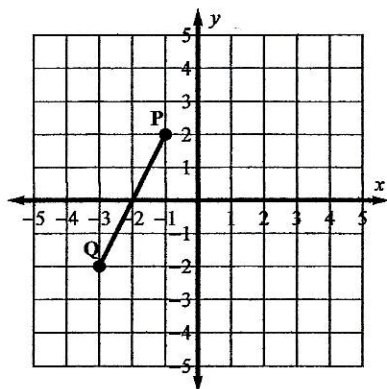
$\overline{P'Q'}$	
$x'$	$y'$
	-2
	0
	2

- b. The ordered pair for point Q is  $(-3, -2)$ . What is the ordered pair for point  $Q'$ ?
- c. Show the process used to create the new ordered pair.  
 $(-3 \times \underline{\hspace{1cm}}, -2 \times \underline{\hspace{1cm}})$
- d. If the ordered pair for point Q is expressed as  $(a, b)$ , write the ordered pair for  $Q'$  in terms of  $a$  and  $b$ .
- e. Segment  $\overline{AB}$  is reflected over the  $y$ -axis to create  $\overline{A'B'}$ . Without graphing, complete the table.

$\overline{AB}$	
$x$	$y$
-3	51
2	-9
5	-45

$\overline{A'B'}$	
$x'$	$y'$

2. a. Reflect  $\overline{PQ}$  over the  $x$ -axis. Draw the reflected line segment and label it  $\overline{P'Q'}$  then complete the table of values.



$\overline{PQ}$	
$x$	$y$
-3	-2
-2	0
-1	2

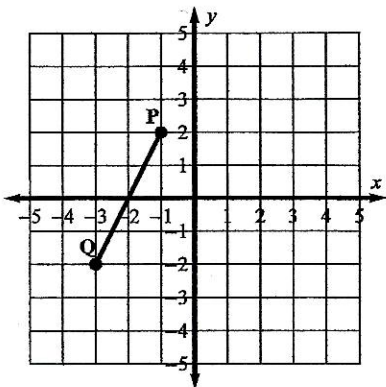
$\overline{P'Q'}$	
$x'$	$y'$
-3	
-2	
-1	

- b. The ordered pair for point Q is  $(-3, -2)$ . What is the ordered pair for point  $Q'$ ?
- c. Show the process used to create the new ordered pair.
- $(-3 \times \underline{\hspace{1cm}}, -2 \times \underline{\hspace{1cm}})$
- d. If the ordered pair for point Q is expressed as  $(a, b)$ , write the ordered pair for  $Q'$  in terms of  $a$  and  $b$ .
- e. Segment  $\overline{AB}$  is reflected over the  $x$ -axis to create  $\overline{A'B'}$ . Without graphing, complete the table.

$\overline{AB}$	
$x$	$y$
-3	51
2	-9
5	-45

$\overline{A'B'}$	
$x'$	$y'$

3. a. Draw the line  $x=1$  on the same grid with  $\overline{PQ}$ . Reflect  $\overline{PQ}$  over the line  $x=1$ . Draw the reflected line segment and label it  $\overline{P'Q'}$  then complete the table of values.



$\overline{PQ}$	
$x$	$y$
-3	-2
-2	0
-1	2

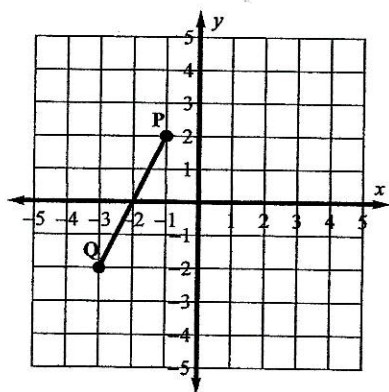
$\overline{P'Q'}$	
$x'$	$y'$
	-2
	0
	2

- b. The ordered pair for point Q is  $(-3, -2)$ . What is the ordered pair for point  $Q'$ ?
- c. Show the process used to determine  $x'$  from  $x$ .
- $(-3 \times -1) + \underline{\hspace{2cm}}$
- d. If the ordered pair for point Q is expressed as  $(a, b)$ , write the ordered pair for  $Q'$  in terms of  $a$  and  $b$ .
- e. If  $\overline{PQ}$  had been reflected over the  $y$ -axis instead of over  $x=1$ , how many units to the right would the reflection need to be moved in order to match the graph of  $\overline{P'Q'}$ ?
- f. Segment  $\overline{AB}$  is reflected over the line  $x=1$  to create  $\overline{A'B'}$ . Without graphing, complete the table.

$\overline{AB}$	
$x$	$y$
-3	51
2	-9
5	-45

$\overline{A'B'}$	
$x'$	$y'$

4. a. Reflect  $\overline{PQ}$  over the line  $y = -1$ . Draw the reflected line segment and label it  $\overline{P'Q'}$  then complete the table of values.



$\overline{PQ}$	
$x$	$y$
-3	-2
-2	0
-1	2

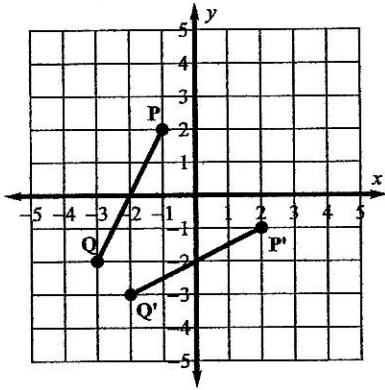
$\overline{P'Q'}$	
$x'$	$y'$
-3	
-2	
-1	

- b. The ordered pair for point Q is  $(-3, -2)$ . What is the ordered pair for point  $Q'$ ?
- c. Show the process used to determine  $y'$  from  $y$ .
- $(-2 \times -1) + \underline{\hspace{2cm}}$
- d. If the ordered pair for point Q is expressed as  $(a, b)$ , write the ordered pair for  $Q'$  in terms of  $a$  and  $b$ .
- e. If  $\overline{PQ}$  had been reflected over the  $x$ -axis instead of over  $y = -1$ , how many units down would the reflection need to be moved in order to match the graph of  $\overline{P'Q'}$ ?
- f. Segment  $\overline{AB}$  is reflected over  $y = -1$  to create  $\overline{A'B'}$ . Without graphing, complete the table.

$\overline{AB}$	
$x$	$y$
-3	51
2	-9
5	-45

$\overline{A'B'}$	
$x'$	$y'$

5. a. Complete the tables for  $\overline{PQ}$  and  $\overline{P'Q'}$ .



$\overline{PQ}$	
$x$	$y$
-3	
-2	
-1	

$\overline{P'Q'}$	
$x'$	$y'$
	-3
	-2
	-1

- b. What do you notice about the coordinates for point P and point P'? Does the pattern continue for the other points in the table?

- c. Draw the line  $y = x$ .

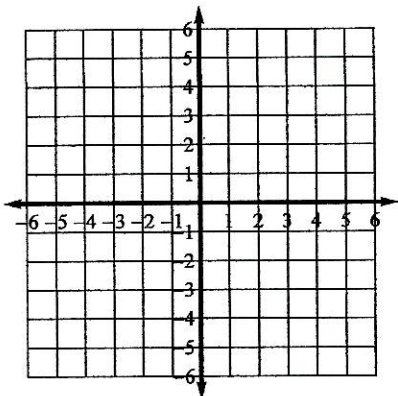
- d. Fold the graph on the line  $y = x$ . Which transformation was used to map  $\overline{PQ}$  onto  $\overline{P'Q'}$ ?

6. a. Complete the table of values for the reflection  $\overline{C'D'}$  using the pattern from question 5b.

$\overline{CD}$	
$x$	$y$
-6	1
-2	2
2	3

$\overline{C'D'}$	
$x'$	$y'$

- b. Graph  $\overline{CD}$  and  $\overline{C'D'}$  on the grid.



c. Confirm that  $\overline{C'D'}$  is a reflection of  $\overline{CD}$  over the line  $y = x$ . Explain your process.

d. The ordered pair for point C is  $(-6, 1)$ . What is the ordered pair for point  $C'$ ?

e. If the ordered pair for point C is expressed as  $(a, b)$ , write the ordered pair for  $C'$  in terms of  $a$  and  $b$ .

f. Without graphing, complete the table. Segment  $\overline{AB}$  is reflected over the line  $y = x$  to create  $\overline{A'B'}$ .

$\overline{AB}$	
$x$	$y$
-3	51
2	-9
5	-45

$\overline{A'B'}$	
$x'$	$y'$

7. Using the values in the table for line segment  $\overline{AB}$ , determine whether the values in each table for  $\overline{A'B'}$  represent a reflection of  $\overline{AB}$  over the  $x$ -axis, the  $y$ -axis, or the line  $y = x$ .

$\overline{AB}$	
$x$	$y$
-7	20
1	8
5	-4

Reflection over:

$\overline{A'B'}$	
$x'$	$y'$
20	-7
8	1
-4	5

a. \_\_\_\_\_

$\overline{A'B'}$	
$x'$	$y'$
-7	-20
1	-8
5	4

b. \_\_\_\_\_

$\overline{A'B'}$	
$x'$	$y'$
7	20
-1	8
-5	-4

c. \_\_\_\_\_