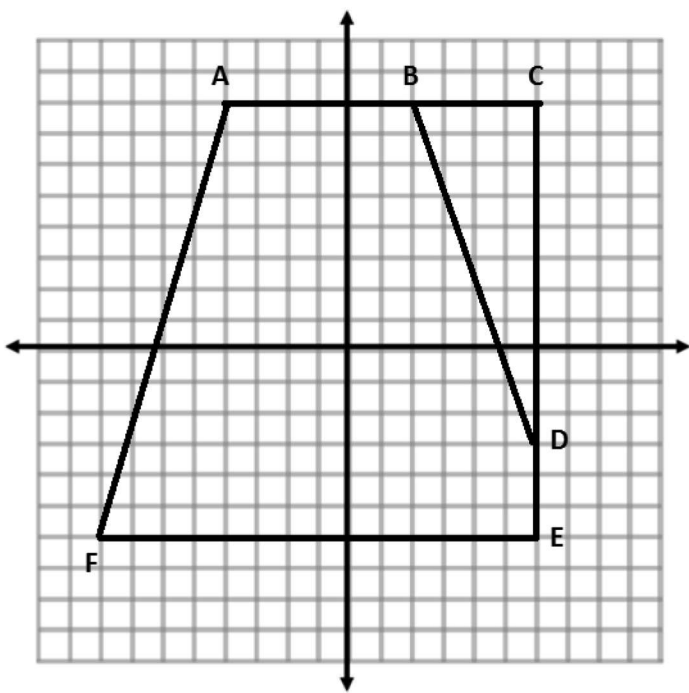Name _____   Date _____

Distance on the Coordinate Plane

Use absolute value to show the lengths of $\overline{AB}$, $\overline{BC}$, $\overline{CD}$, $\overline{DE}$, and $\overline{EF}$.
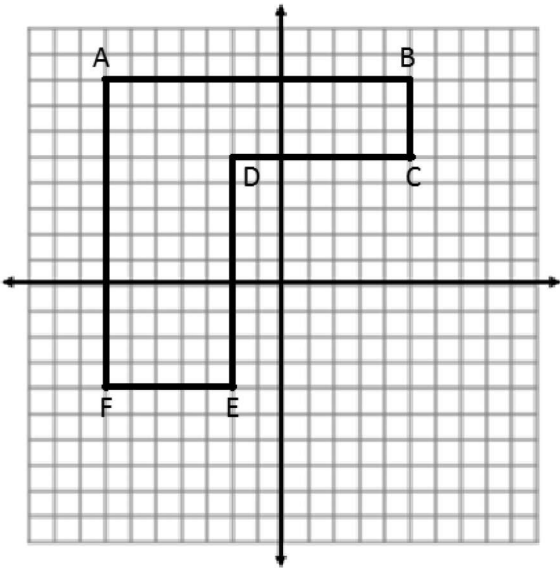

Line Segment	Point	Point	Distance	Proof
$\overline{AB}$				
$\overline{BC}$				
$\overline{CD}$				
$\overline{DE}$				
$\overline{EF}$				

1. Given the pairs of points, determine whether the segment that joins them will be horizontal, vertical, or neither.

   a. $X(3, 5)$ and $Y(-2, 5)$ _____

   b. $M(-4, 9)$ and $N(4, -9)$ _____

   c. $E(-7, 1)$ and $F(-7, 4)$ _____

2. Complete the table using absolute value to determine the lengths of the line segments.

Line Segment	Point	Point	Distance	Proof
$\overline{AB}$	$(-3, 5)$	$(7, 5)$		
$\overline{CD}$	$(1, -3)$	$(-6, -3)$		
$\overline{EF}$	$(2, -9)$	$(2, -3)$		
$\overline{GH}$	$(6, 1)$	$(6, 16)$		
$\overline{JK}$	$(-3, 0)$	$(-3, 12)$		

3. Complete the table using the diagram and absolute value to determine the lengths of the line segments.

Line Segment	Point	Point	Distance	Proof
$\overline{AB}$				
$\overline{BC}$				
$\overline{CD}$				
$\overline{DE}$				
$\overline{EF}$				
$\overline{FA}$				

4. Complete the table using the diagram and absolute value to determine the lengths of the line segments.
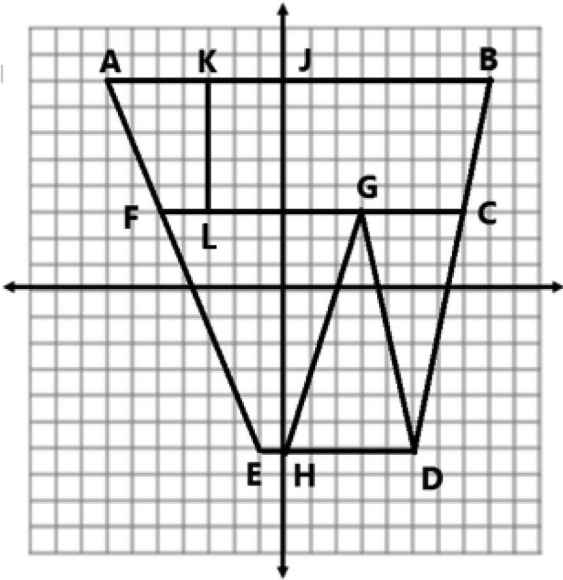
Line Segment	Point	Point	Distance	Proof
$\overline{AB}$				
$\overline{CG}$				
$\overline{CF}$				
$\overline{GF}$				
$\overline{DH}$				
$\overline{DE}$				
$\overline{HJ}$				
$\overline{KL}$				

5. Name two points in different quadrants that form a vertical line segment that is 8 units in length.

6. Name two points in the same quadrant that form a horizontal line segment that is 5 units in length.

Use absolute value to show the lengths of $\overline{AB}, \overline{BC}, \overline{CD}, \overline{DE},$ and $\overline{EF}$.
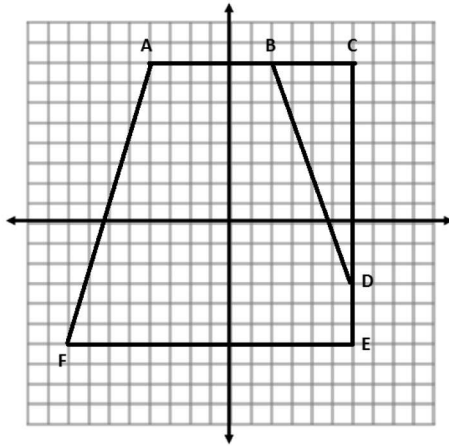
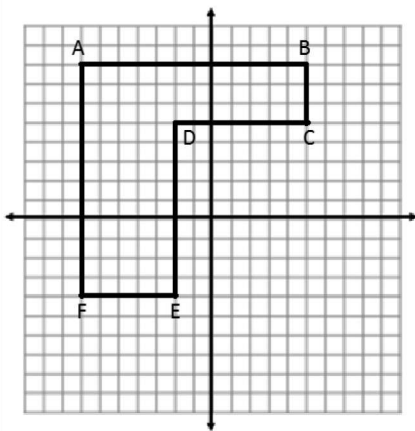| Line Segment	Point	Point	Distance	Proof
$\overline{AB}$	$(-4, 8)$	$(2, 8)$	6	$|-4| + |2|$
$\overline{BC}$	$(2, 8)$	$(6, 8)$	4	$|6| - |2|$
$\overline{CD}$	$(6, 8)$	$(6, -3)$	11	$|8| + |-3|$
$\overline{DE}$	$(6, -3)$	$(6, -6)$	3	$|-6| - |-3|$
$\overline{EF}$	$(6, -6)$	$(-8, -6)$	14	$|6| + |-8|$

1. Given the pairs of points, determine whether the segment that joins them will be horizontal, vertical, or neither.

   a. $X(3, 5)$ and $Y(-2, 5)$ _____Horizontal_____

   b. $M(-4, 9)$ and $N(4, -9)$ _____Neither_____

   c. $E(-7, 1)$ and $F(-7, 4)$ _____Vertical_____

2. Complete the table using absolute value to determine the lengths of the line segments.

Line Segment	Point	Point	Distance	Proof
$\overline{AB}$	$(-3, 5)$	$(7, 5)$	10	$|-3| + |7|$
$\overline{CD}$	$(1, -3)$	$(-6, -3)$	7	$|1| + |-6|$
$\overline{EF}$	$(2, -9)$	$(2, -3)$	6	$|-9| - |-3|$
$\overline{GH}$	$(6, 1)$	$(6, 16)$	15	$|16| - |1|$
$\overline{JK}$	$(-3, 0)$	$(-3, 12)$	12	$|12| + |0|$

3. Complete the table using the diagram and absolute value to determine the lengths of the line segments.

Line Segment	Point	Point	Distance	Proof
$\overline{AB}$	$(-7, 8)$	$(5, 8)$	12	$\lvert -7\rvert + \lvert 5\rvert$
$\overline{BC}$	$(5, 8)$	$(5, 5)$	3	$\lvert 8\rvert - \lvert 5\rvert$
$\overline{CD}$	$(5, 5)$	$(-2, 5)$	7	$\lvert 5\rvert + \lvert -2\rvert$
$\overline{DE}$	$(-2, 5)$	$(-2, -4)$	9	$\lvert 5\rvert + \lvert -4\rvert$
$\overline{EF}$	$(-2, -4)$	$(-7, -4)$	5	$\lvert -7\rvert - \lvert -2\rvert$
$\overline{FA}$	$(-7, -4)$	$(-7, 8)$	12	$\lvert -4\rvert + \lvert 8\rvert$

4. Complete the table using the diagram and absolute value to determine the lengths of the line segments.
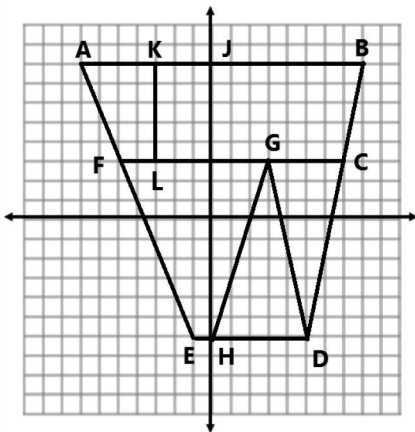
Line Segment	Point	Point	Distance	Proof
$\overline{AB}$	$(-7, 8)$	$(8, 8)$	15	$\lvert -7\rvert + \lvert 8\rvert = 15$
$\overline{CG}$	$(7, 3)$	$(3, 3)$	4	$\lvert 7\rvert - \lvert 3\rvert = 4$
$\overline{CF}$	$(7, 3)$	$(-5, 3)$	12	$\lvert 7\rvert + \lvert -5\rvert = 12$
$\overline{GF}$	$(3, 3)$	$(-5, 3)$	8	$\lvert 3\rvert + \lvert -5\rvert = 8$
$\overline{DH}$	$(5, -6)$	$(0, -6)$	5	$\lvert 5\rvert + \lvert 0\rvert = 5$
$\overline{DE}$	$(5, -6)$	$(-1, -6)$	6	$\lvert 5\rvert + \lvert -1\rvert = 6$
$\overline{HJ}$	$(0, -6)$	$(0, 8)$	14	$\lvert -6\rvert + \lvert 8\rvert = 14$
$\overline{KL}$	$(-3, 8)$	$(-3, 3)$	5	$\lvert 8\rvert - \lvert 3\rvert = 5$

5. Name two points in different quadrants that form a vertical line segment that is 8 units in length.

   Answers will vary. One possible solution is $(2, 5)$ and $(2, -3)$.

6. Name two points in the same quadrant that form a horizontal line segment that is 5 units in length.

   Answers will vary. One possible solution is $(-4, -11)$ and $(-9, -11)$.