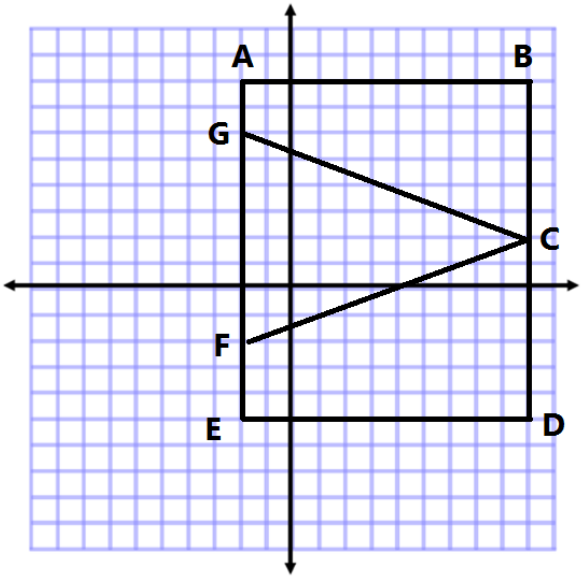
Lesson 7: Distance on the Coordinate Plane

Classwork

Example

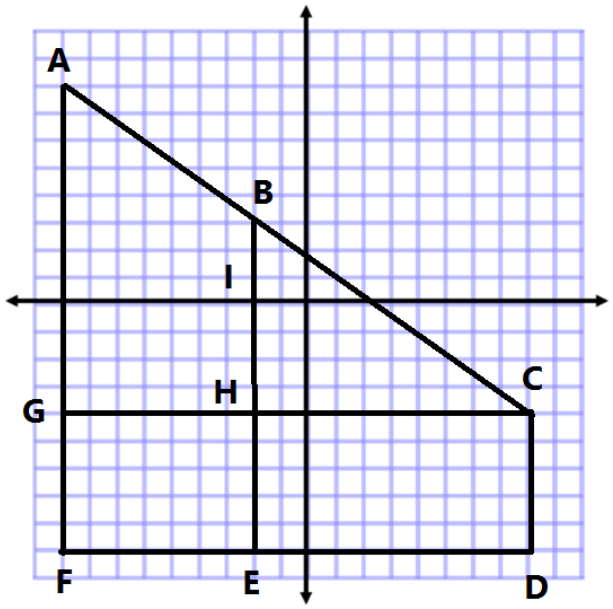
Determine the lengths of the given line segments by determining the distance between the two endpoints.

Line Segment	Point	Point	Distance	Proof
$\overline{AB}$				
$\overline{BC}$				
$\overline{CD}$				
$\overline{BD}$				
$\overline{DE}$				
$\overline{EF}$				
$\overline{FG}$				
$\overline{EG}$				
$\overline{GA}$				
$\overline{FA}$				
$\overline{EA}$				



Exercise

Complete the table using the diagram on the coordinate plane.



Line Segment	Point	Point	Distance	Proof
$\overline{BI}$				
$\overline{BH}$				
$\overline{BE}$				
$\overline{GH}$				
$\overline{HC}$				
$\overline{GC}$				
$\overline{CD}$				
$\overline{FG}$				
$\overline{GA}$				
$\overline{AF}$				

Extension

For each problem below, write the coordinates of two points that are 5 units apart with the segment connecting these points having the following characteristics.

a. The segment is vertical.

b. The segment intersects the x-axis.

c. The segment intersects the y-axis.

d. The segment is vertical and lies above the x-axis.

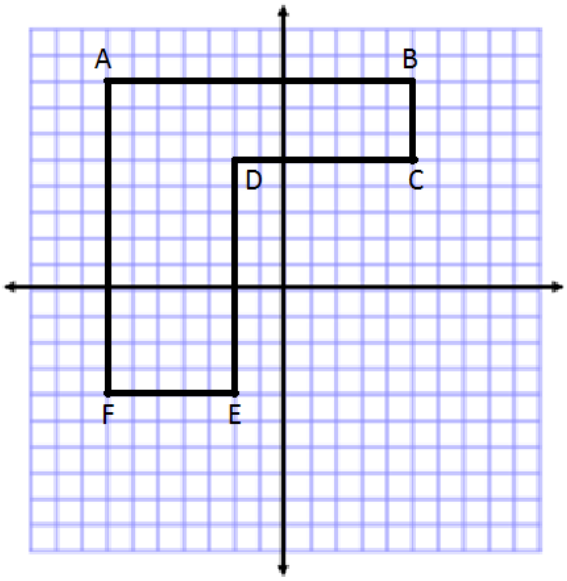
Problem Set

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.

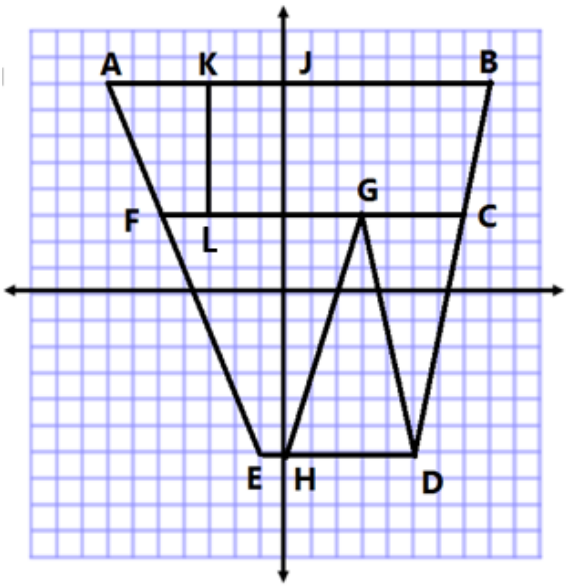
Line Segment	Point	Point	Distance	Proof
$\overline{AB}$	$(-3,5)$	$(7,5)$		
$\overline{CD}$	$(1,-3)$	$(-6,-3)$		
$\overline{EF}$	$(2,-9)$	$(2,-3)$		
$\overline{GH}$	$(6,1)$	$(6,16)$		
$\overline{JK}$	$(-3,0)$	$(-3,12)$		

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.