

6.5

Name (print first and last) \_\_\_\_\_ Per \_\_\_\_\_ Date: 2/11 due 2/12

6.5 Polygons: Coordinate Slope Midpoint and Pythagorean Theorem Geometry Regents 2013-2014 Ms. Lomac

SLO: I can find the midpoint, length (distance between) and slope, of a segment on a grid.

Midpoint (**location** on a segment that is equidistant from the segment's endpoints)  B is the midpoint of segment AC

Distance (**measure** of length or 1 dimensional change between 2 **locations** or points)

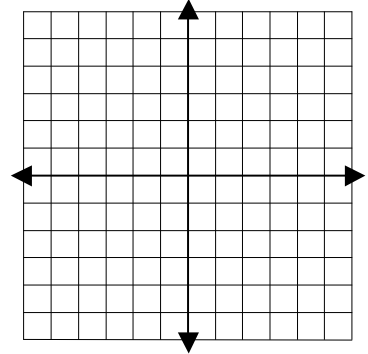
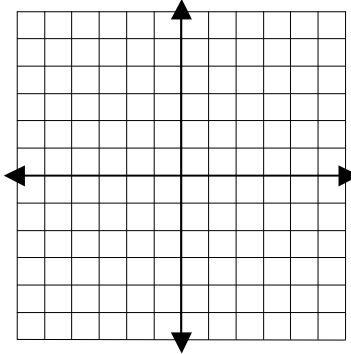
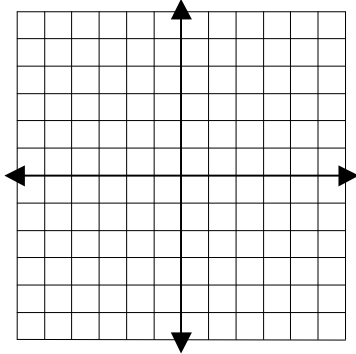
Slope (**relationship** of the **measures** of vertical and horizontal change that indicates the steepness of a line)

(1)  Graph, label, and connect each pair of points. Check with all of your group members before moving to #2.

(a) V(4,5) & U(-2,-1)

(b) X(-5,-5) & W(-5,3)

(c) Z(0,0) & Y(0,4)



(2)  Use the graph in #1 to help you find the **midpoint** for each pair of points and mark the **midpoint** on the graph. If you are not able to find the **midpoint**, just put a small question mark in the blank and move on.

(a) V(4,5) & U(-2,-1) \_\_\_\_\_ (b) X(-5,-5) & W(-5,3) \_\_\_\_\_ (c) Z(0,0) & Y(0,4) \_\_\_\_\_

Which was the easiest **midpoint** to find? \_\_\_\_\_ Why? \_\_\_\_\_

Which was the hardest **midpoint** to find? \_\_\_\_\_ Why? \_\_\_\_\_

(3)  Use the graph in #1 to help you find the **distance** between each pair of points. If you are not able to find the **distance**, just put a small question mark in the blank and move on.

(a) V(4,5) & U(-2,-1) \_\_\_\_\_ (b) X(-5,-5) & W(-5,3) \_\_\_\_\_ (c) Z(0,0) & Y(0,4) \_\_\_\_\_

Which was the easiest **distance** to find? \_\_\_\_\_ Why? \_\_\_\_\_

Which was the hardest **distance** to find? \_\_\_\_\_ Why? \_\_\_\_\_

(4)  Use the graph in #1 to help you find the **slope** for each pair of points. If you are not able to find the **slope**, just put a small question mark in the blank and move on.

(a) V(4,5) & U(-2,-1) \_\_\_\_\_ (b) X(-5,-5) & W(-5,3) \_\_\_\_\_ (c) Z(0,0) & Y(0,4) \_\_\_\_\_

Which was the easiest **slope** to find? \_\_\_\_\_ Why? \_\_\_\_\_

Which was the hardest **slope** to find? \_\_\_\_\_ Why? \_\_\_\_\_

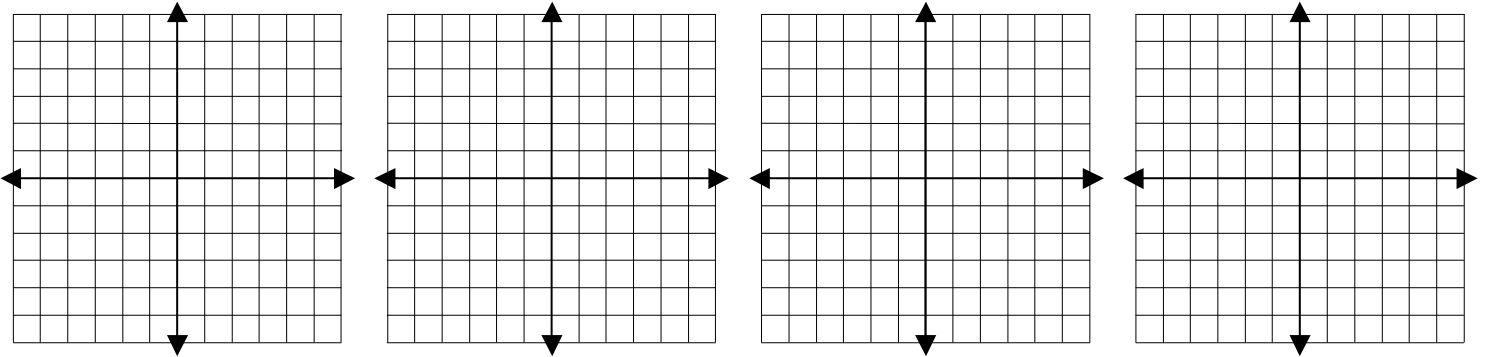
**CAN WE find the midpoint of a “slanted” segment by finding the midpoints of horizontal and vertical segments?**

(5)  (a) Graph and label each pair of points and connect them with a line segment.

(b) Find the midpoint of each segment. Highlight the point on the graph and write the coordinates in the table.

Example:

Practice:



A (3, 5) B (-5, -1)	C (-6, 5) D (0,1)	E (-4, -6) F (2, -4)	G (-6,6) H (0, 5)
Midpoint (____,____)	Midpoint (____,____)	Midpoint (____,____)	Midpoint (____,____)

(6)  The midpoint formula directs us to add the x coordinates and divide the sum by 2 and add the y coordinates and divide the sum by 2. Use the midpoint formula for the four segments above to verify that the formula works.

AB	CD	EF	GH

(7)  Complete the table

Line segment	Endpoint 1	Endpoint 2	Midpoint $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$ Formula OR Sketch	Co-ordinates of midpoint
GH	G (2, 2)	H (-2, -2)		
JK	J (-1, -4)	K (2, 6)		
LM	L(6, 11)			(7, 20)
NO		O(8, 15)		(-3, 11)

6.5

(8)  **Distance:** We can use the Pythagorean theorem to find the **length** of a side of a right triangle. Can we use that to find the **distance** between 2 points?

To use the Pythagorean Theorem, we must have a \_\_\_\_\_.

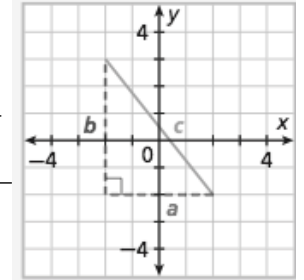
The formula for the Pythagorean Theorem is \_\_\_\_\_.

Example: The distance between the points in the diagram is represented by the \_\_\_\_\_ of a right triangle.

How can you find the length of  $a$ ? \_\_\_\_\_  $a =$  \_\_\_\_\_

How can you find the length of  $b$ ? \_\_\_\_\_  $b =$  \_\_\_\_\_

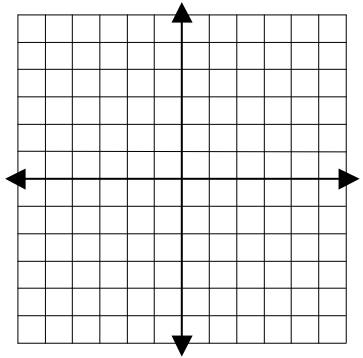
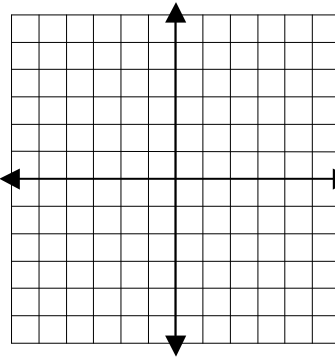
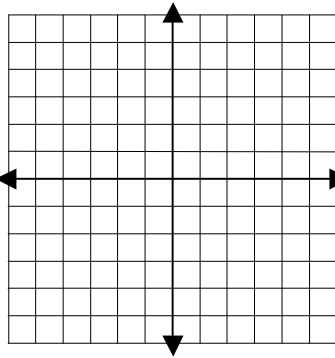
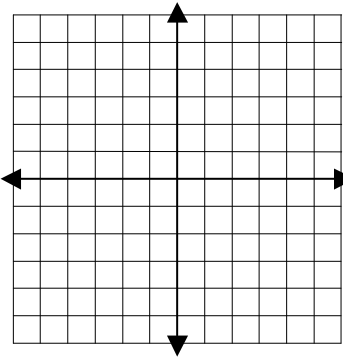
How can you find the length of  $c$ ? \_\_\_\_\_  $c =$  \_\_\_\_\_



(9)  Graph and label each pair of points and connect them with a line segment. Find the length of each segment. Show a right triangle on each grid. Show equations and calculations in the table.

Example:

Practice:

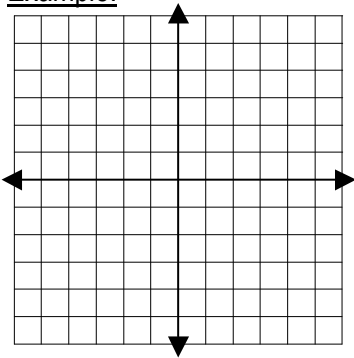


A (3, 5) B (-5, -1)	C (-6, 5) D (0, 1)	E (-4, -6) F (2, -4)	G (-6, 6) H (0, 5)
The distance between ___ & ___ is _____	The distance between ___ & ___ is _____	The distance between ___ & ___ is _____	The distance between ___ & ___ is _____

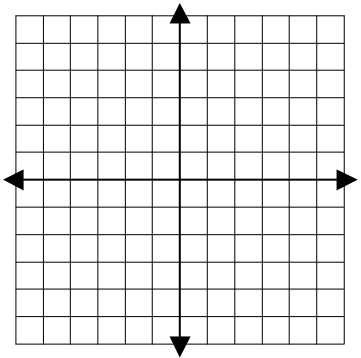
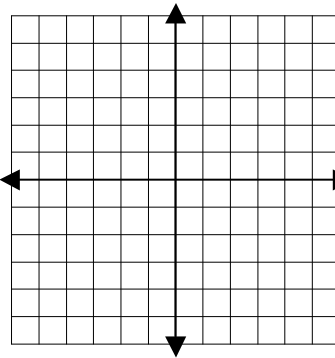
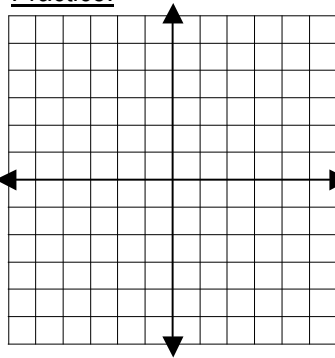
6.5

(10)  **Slope** is a relationship of the measures of the vertical change (rise) and horizontal change (run). Graph and label each pair of points and connect them with a line segment. Find the slope of each segment. Show a right triangle on each grid. Show equations and calculations in the table.

Example:



Practice:



A (3, 5) B (-5, -1)	C (-6, 5) D (0, 1)	E (-4, -6) F (2, -4)	G (-6, 6) H (0, 5)

(11)  Find the midpoint, distance, and slope for each pair of points. Show work in the table.

A (3, 5) B (5, 5)	C (-4, 1) D (-1, 5)	E (-5, 4) F (1, -4)	G (3, -2) H (-2, -5)
Midpoint (____, ____) Distance _____ Slope _____	Midpoint (____, ____) Distance _____ Slope _____	Midpoint (____, ____) Distance _____ Slope _____	Midpoint (____, ____) Distance _____ Slope _____