Proudly Completed By:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Objective: Investigate, justify and apply properties of the Midpoint Formula**

1. On the graph, plot the following points: A(8, 1) and B(4, 3)
2. Draw segment.
3. Counting boxes, find the midpoint of . Write your answer below.

\_\_\_\_(6, 2)\_\_\_\_\_\_\_\_\_\_

1. Look at the x-value of the point above. How could you combine the x-values from A and B to get the result above?

\_\_\_\_\_\_\_\_\_\_\_\_Adding and dividing by 2\_\_\_\_\_\_

1. Look at the y-value of the point above. How could you combine the y-values from A and B to get the result above?

Adding and dividing by 2

1. Using what you know about finding the values of A and B, write out your version of the midpoint formula below.

Midpoint Formula = $\frac{x\_{2}+x\_{1}}{2}$ , $\frac{y\_{2}+y\_{1}}{2}$

1. Use your midpoint formula to find the midpoint between points X(1, 3) and Y(-1, -1). Plot the points above to check your work.

Midpoint of XY: (0, 1)

1. Use your midpoint formula to find the midpoint between points Q(2, 5) and P(5, 6). Plot the points above to check your work. What do you notice about the number results?

Midpoint of QP: $\left(\frac{7}{2},\frac{11}{2}\right)$

**Use the Midpoint Formula to solve.**

1. Find the midpoint of (3, –2) and (–11, 12).

Midpoint = (-4, 5)

1. Find the coordinates of the midpoint of the segment connecting *H*(3, –2) and *K* (–15, 16).

Midpoint of HK = (-6, 7)

1. Line segment *AB* has endpoints *A*(2,-3) and *B*(-4,6). What are the coordinates of the midpoint of *AB*?



Midpoint of AB = $\left(-1,\frac{3}{2}\right)$

1. Square *LMNO* is shown in the diagram below. What are the coordinates of the midpoint of diagonal *LN* ?

Midpoint of LN = ($\left(-\frac{5}{2},\frac{9}{2}\right)$

1. AG is the diameter of circle S. If the coordinates of *A* are (-9, 2) and the coordinates of *G* are (3, 14), what are the coordinates of the center of circle S?

Center of S = (-3, 8)

1. The midpoint of *AB* is (−1,5) and the coordinates of point *A* are (−3,2). What are the coordinates of point *B*?

Point B = (1, 8)

1. A line segment on the coordinate plane has endpoints (2,4) and (4,*y*). The midpoint of the segment is point (3,7). What is the value of *y*?

y = 10