Geometry Regents Lomac 2015-2016 **Date** 3/8 **due** 3/9 | **Coordinate Plane: Directed Line Segment 8.3R**

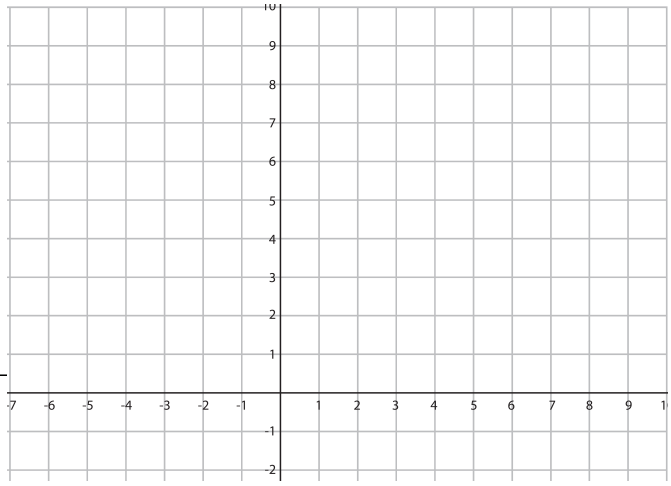
Name _____ **Per**_____

LO: I can find the coordinates of points that divide a directed line segment into a given ratio.

☐ **DO NOW** On the back of this packet

☐ (1) calculator **Coordinates along a directed line segment**

To find the midpoint of **directed line segment** AB,



☐ (a) Plot label and connect A(–7,1) and B(9,9)

☐ (b) Draw a slope triangle and label the right angle C.

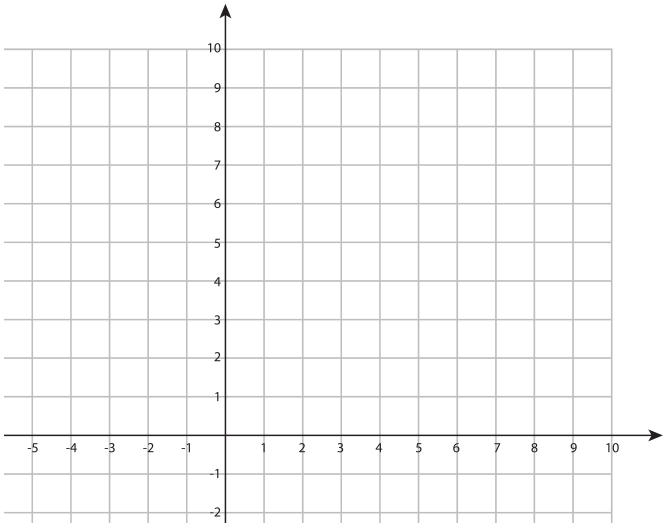
☐ (c) How long is AC?_____ BC?_____.

☐ (d) How long is half of AC?_____ Half of BC?_____

☐ (e) How can we use the coordinates of AB and the measures in part (d) to find the midpoint of AB?

☐ (f) The midpoint of AB is _____.

☐ (g) How can we use this idea to find the point that is $\frac{3}{8}$ of the way from point A to point B?



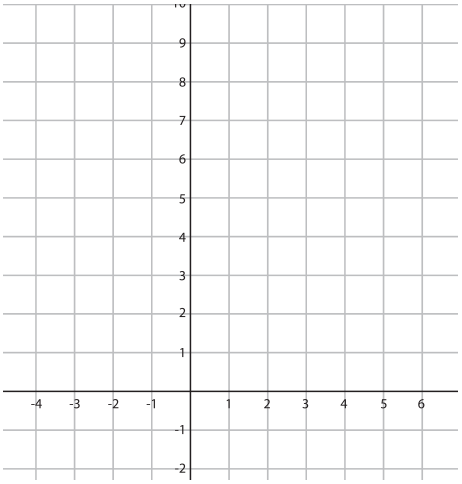
☐ (h) What are the coordinates of the point that is $\frac{3}{8}$ of the way from point A to point B? _____

Label this point R.

☐ (g) Point R divides segment AB in the ratio 3:5. Explain why finding a point $\frac{3}{8}$ of the way from point A to point B is the same as dividing it in the ratio 3:5. (3:5 can be read "3 parts to 5 parts" which would give us how many total parts?)

☐ (2) calculator **Coordinates that divide a directed line segment in a given ratio**

Find the point on the directed segment from (–2,0) to (5,8) that divides it in the ratio of 1:3



☐ (3) calculator **Coordinates that divide a directed line segment in a given ratio**

Given $\overline{PQ}$ and point R that lies on $\overline{PQ}$ such that point R lies $\frac{7}{9}$ of the length of $\overline{PQ}$ from point P along $\overline{PQ}$.

(a) Sketch the situation described.

(b) Is point R closer to P or closer to Q? How do you know?

(c) Use the given information to determine the following ratios:

PR:PQ_____ RQ:PQ_____ PR:RQ_____ RQ:PR_____

(d) If the coordinates of point P are (0,0) and the coordinates of point R are (14,21), what are the coordinates of point Q?

☐ (4) calculator **Application of dividing a directed line segment in a given ratio**

A robot is at position A(40,50) and is heading toward the point B(2000,2000) along a straight line at a constant speed. The robot will reach point B in 10 hours.

(a) What is the location of the robot at the end of the third hour?

(b) If the robot keeps moving along the straight path at the same constant speed as it passes through point B, what will be its location at the 12^{th} hour?

(c) Compare the x-coordinate to the y-coordinate before, at, and after the robot passes point B.

(d) Could you have predicted the relationship that you noticed in part (c) based on the coordinates of points A and B?

☐ (5) calculator **Exit Ticket**

ON THE LAST PAGE

☐ (6) calculator **Homework**

Provide sufficient evidence for each response.

☐ (1) Given F(0,2) and G(2,6). If point S lies $\frac{5}{12}$ along $\overline{FG}$, closer to F than to G, find the coordinates of S.

☐ (2) Point C lies $\frac{5}{6}$ of the way along $\overline{BA}$, closer to B than to A. If the coordinates of point A are (12,5) and the coordinates of point C are (9.5, –2.5), what are the coordinates of point B?

☐ (3) Find the point on the directed segment from (–3,–2) to (4,8) that divides it into a ratio of 3:2

Exit Ticket Name_____ Date _____ Per_____ 8.3R

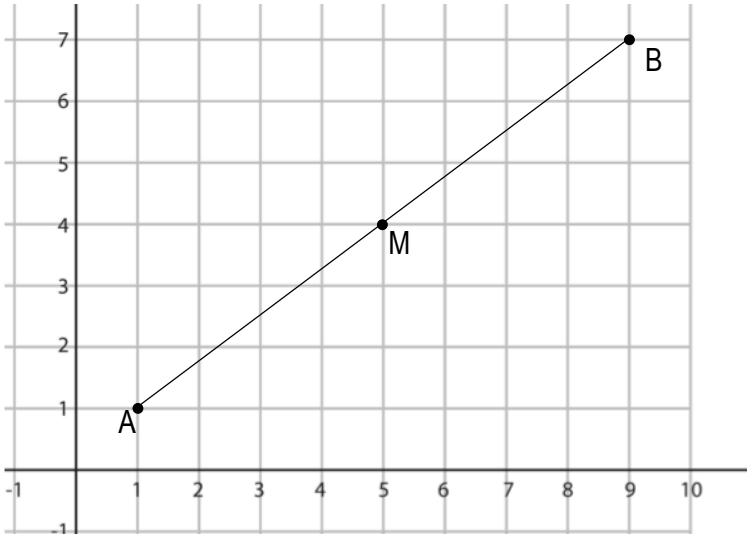
(1) The LO (Learning Outcomes) are written below your name on the front of this packet. Demonstrate your achievement of these outcomes by doing the following:

(1) Given points A(3,–5) and B(19,–1), find the coordinates of point C that sits $\frac{3}{8}$ of the way along $\overline{AB}$.

(2) Given A(3,–5) and B(19,–1), find the coordinates of point D such that $\frac{CB}{AC} = \frac{1}{7}$

DO NOW **Name**_____ **Date** _____ **Per**_____ **8.3R**

(1) Verify that on the graph, M is the midpoint of AB.



(2) Find the midpoint of segment AM and label it C.
Write the coordinates for point C _____

(3) Find the midpoint of segment MB and label it D.
Write the coordinates for point D _____

(4) Are AC, CM, MD, and DM all equal? Describe how you know.

(5) Write the ratio AC:AB. _____

(6) Write the ratio AC:CB. _____

(5) What about the cartoon below is supposed to make people smile?