

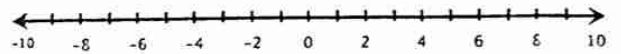
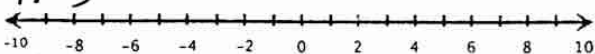
Name: _____

Date: _____

$$(x, y) = \left(\frac{bx_1 + ax_2}{b+a}, \frac{by_1 + ay_2}{b+a} \right)$$

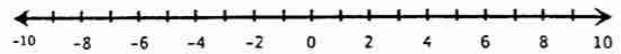
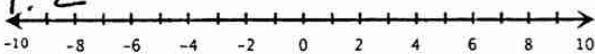
1. Given the points A(-1, 2) and B(7, 14), find the coordinates of the point P on directed line segment \overline{AB} that partitions \overline{AB} in the ratio 1:3.

$$\begin{matrix} -1, 2 \\ 7, 14 \\ 1:3 \end{matrix} \quad -1 + \frac{1}{4}(7+1), 2 + \frac{1}{4}(14-2) \quad (1, 5)$$



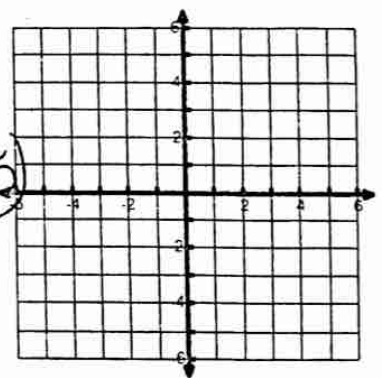
2. Given the points A(-2, 4) and B(7, -2), find the coordinates of the point P on directed line segment \overline{AB} that partitions \overline{AB} in the ratio 1:2.

$$\begin{matrix} -2, 4 \\ 7, -2 \\ 1:2 \end{matrix} \quad -2 + \frac{1}{3}(7+2), 4 + \frac{1}{3}(-2-4) \quad (1, 2)$$

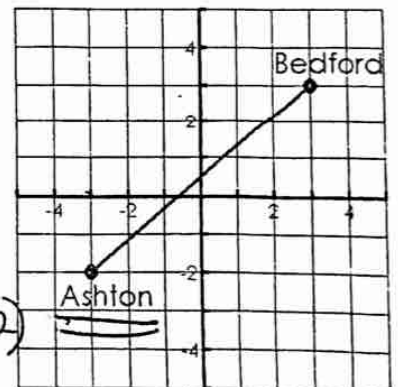


3. Given the points A(-5, -5) and B(5, 0), find the coordinates of the point P on directed line segment \overline{AB} that partitions \overline{AB} in the ratio 2:3.

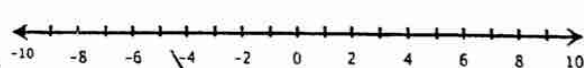
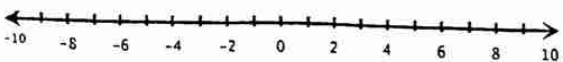
$$\begin{matrix} -5, -5 \\ 5, 0 \\ 2:3 \end{matrix} \quad -5 + \frac{2}{5}(5+5), -5 + \frac{2}{5}(0+5) \quad (-1, -3)$$



4. The map shows a straight highway between two towns. Highway planners want to build two new rest stops between the towns so that the two rest stops divided the highway into three equal parts. Find the coordinates of the point at which the **first** rest stop should be built.



$$\begin{matrix} \text{Ashton } (x_1, y_1) & -3, -2 \\ \text{Bedford } (x_2, y_2) & 3, 3 \end{matrix} \quad \begin{matrix} 1:2 \\ a:b \end{matrix} \quad -3 + \frac{1}{3}(3+3), -2 + \frac{1}{3}(3+2)$$



$$\left(-1, -\frac{1}{3} \right)$$

Formulas HW

Date _____

Period _____

Find the slope of the line through each pair of points.

1) $(-16, -6), (12, -12)$

$$\begin{array}{l} -16 \\ 12 \end{array} \begin{array}{l} -6 \\ -12 \end{array} \quad \frac{-12 + 6}{12 + 16} = \frac{-6}{28}$$

$$\frac{-3}{14}$$

2) $(-8, 0), (-20, -11)$

$$\begin{array}{l} -8, 0 \\ -20, -11 \end{array} \quad \frac{-11 - 0}{-20 + 8}$$

$$\frac{-11}{-12} = \frac{11}{12}$$

Find the midpoint of the line segment with the given endpoints.

3) $(1, 3), (9, -7)$

$$\begin{array}{l} 1, 3 \\ 9, -7 \end{array} \quad \frac{1+9}{2}, \frac{3-7}{2}$$

$$(5, -2)$$

4) $(-8, 0), (3, 1)$

$$\begin{array}{l} -8, 0 \\ 3, 1 \end{array} \quad \frac{3-8}{2}, \frac{1-0}{2}$$

$$\left(\frac{-5}{2}, \frac{1}{2} \right)$$

or

$$(-2.5, .5)$$

Find the distance between each pair of points.

5) $(0, -8), (2, -7)$

$$d = \sqrt{(2-0)^2 + (-7+8)^2}$$

$$4 + 1$$

$$\sqrt{5}$$

6) $(-8, 6), (5, 3)$

$$\begin{array}{l} -8, 6 \\ 5, 3 \end{array} \quad d = \sqrt{(5+8)^2 + (3-6)^2}$$

$$169 + 9$$

$$\sqrt{178}$$