

8. For each line, list one point on the line and the slope of the line. Then determine whether the pair of lines are parallel, perpendicular, coincide, or intersect. Provide an explanation.

a. $y = \frac{3}{4}x - 2$ point: $(0, -2)$ slope: $\frac{3}{4}$ AND $y = \frac{6}{8}x + 2$ point: $(0, 2)$ slope: $\frac{3}{4}$
 $m = \frac{6}{8}$

Parallel: Slopes are the same and y-intercepts are different

b. $y - 8 = \frac{2}{3}(x + 5)$ point: $(-5, 8)$ slope: $\frac{2}{3}$ AND $y - 1 = \frac{-3}{2}(x - 4)$ point: $(4, 1)$ slope: $-\frac{3}{2}$

Perpendicular: slopes are opposite reciprocals.

c. $y = 5x + 3$ point: $(0, 3)$ slope: $\frac{5}{1}$ AND $y + 3 = \frac{1}{5}(x + 2)$ point: $(-2, -3)$ slope: $\frac{1}{5}$

Intersect: Different points and different slopes

d. $y = -2x + 1$ point: $(0, 1)$ slope: $-\frac{2}{1}$ AND $2x + y = 1$ point: $(0, 1)$ slope: $-\frac{2}{1}$
 $y = -2x + 1$

Coincide (same line): -same y-int and same slope

9. \overline{AB} has coordinates A (5, 12) and B (-7, -10). For each question, list the formula used and show all work.

a. Find AB.

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$d = \sqrt{(-7 - 5)^2 + (-10 - 12)^2}$$

$$d = \sqrt{(-12)^2 + (-22)^2}$$

$$d = \sqrt{628}$$

$$d \approx 25.1$$

$$25.05992817$$

c. Find the midpoint of \overline{AB} .

$$\text{Midpt.} = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$= \left(\frac{5 + (-7)}{2}, \frac{12 + (-10)}{2} \right)$$

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

$$\boxed{\text{Midpt} = (-1, 1)}$$

b. Find the slope of \overline{AB} .

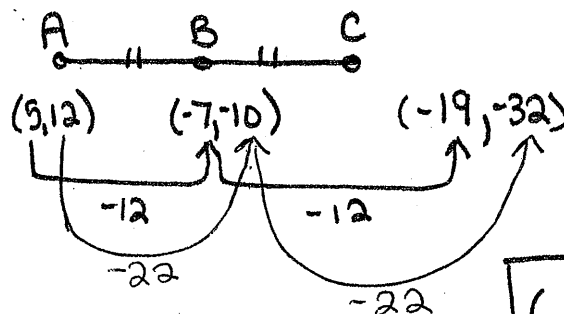
$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{-10 - 12}{-7 - 5}$$

$$m = \frac{-22}{-12}$$

$$\boxed{m = \frac{11}{6}}$$

D. B is the midpoint of \overline{AC} . Find the coordinates of C.



$$\boxed{(-19, -32)}$$