

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

$$m = \frac{\text{rise}}{\text{run}}$$

$$y = \underline{m}x + b$$

↑ ↑
Slope y-intercept

Find the Missing Information
① (x_1, y_1) (x_2, y_2)
 $(4, -3)$ and $(0, 0)$ ← origin

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

$$m = \frac{0 - (-3)}{0 - 4}$$

$$m = \frac{3}{-4}$$

$$m = \left(-\frac{3}{4} \right)$$

$$\textcircled{a} \quad \overset{(x_1, y_1)}{(7, 4)} \text{ and } \overset{(x_2, y_2)}{(k, 3)} \quad m = \underline{\underline{-1}}$$

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

$$-1 = \frac{3 - 4}{k - 7}$$

$$\cancel{\frac{-1}{1}} = \cancel{\frac{-1}{k-7}}$$

$$\overset{\curvearrowright}{-1(k-7)} = 1(-1)$$

$$-k + 7 = -1$$

$$-k = -1 - 7$$

$$-k = -8$$

$$\boxed{k = 8}$$

③ $(2, -1)$ and $(7, 8)$ find m

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

$$m = \frac{8 - (-1)}{7 - 2}$$

$$m = \frac{9}{5}$$

$$\textcircled{4} \quad \begin{array}{l} \overbrace{2(y-1)}^{\text{distribute}} = 3x+4 \\ 2y-2 = 3x+4 \\ 2y = 3x+4+2 \end{array}$$

$$\frac{2y}{2} = \frac{3x}{2} + \frac{6}{2}$$

$$y = \left(\frac{3}{2}\right)x + 3$$

$$m = \frac{3}{2} \rightarrow \text{Perpendicular Slope} = \left(-\frac{2}{3}\right)$$

⑤ $(5, 1)$ and $(3k, 5)$, $m = -\frac{3}{2}$ perpendicular $m_{\perp} = \frac{2}{3}$

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

$$\frac{2}{3} = \frac{5 - 1}{3k - 5}$$

$$\frac{2}{3} = \frac{4}{3k - 5}$$

$$2(3k - 5) = 3(4)$$

$$6k - 10 = 12$$

$$6k = 12 + 10$$

$$\frac{6k}{6} = \frac{22}{6}$$

$$k = \frac{22}{6} = \frac{11}{3}$$

⑥ $(-3, 4)$ and $(4, 0)$, $m = ?$

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

$$m = \frac{0 - 4}{4 - (-3)}$$

$$m = \frac{-4}{7}$$

$$\textcircled{7} \quad (3k, 2) \text{ and } (5k, 6) \quad m = -\frac{1}{2}$$

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

$$-\frac{1}{2} = \frac{6-2}{5k-3k}$$

$$-\frac{1}{2} = \frac{4}{2k}$$

$$-1(2k) = 2(4)$$

$$\frac{-2k}{-2} = \frac{8}{-2}$$

$$\boxed{k = -4}$$

$$\textcircled{8} \quad (4, m) \text{ and } (-2m, 10)$$

$$m = -\frac{3}{4}$$

parallel

$$\boxed{m = -\frac{3}{4}}$$

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

$$-\frac{3}{4} = \frac{10 - m}{-2m - 4}$$

$$-3(-2m - 4) = 4(10 - m)$$

$$6m + 12 = 40 - 4m$$

$$6m + 4m = 40 - 12$$

$$\frac{10m}{10} = \frac{28}{10}$$

$$m = \frac{28}{10} = \frac{14}{5}$$

$$\textcircled{9} \quad (1, 2k) \text{ and } (-3k, 2)$$

$$m = \frac{1}{3}$$

perp.

$$m_{\perp} = -\frac{3}{1}$$

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

$$\frac{-3}{1} = \frac{2 - 2k}{-3k - 1}$$

$$-3(-3k - 1) = 1(2 - 2k)$$

$$9k + 3 = 2 - 2k$$

$$9k + 2k = 2 - 3$$

$$\frac{11k}{11} = \frac{-1}{11}$$

$$k = -\frac{1}{11}$$

$$\textcircled{10} \quad 5x - 8 = 5y + 2$$

$$-5y = -5x + 2 + 8$$

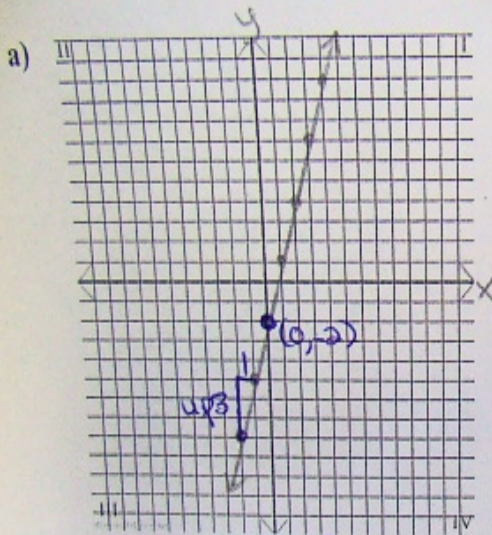
$$\frac{-5y}{-5} = \frac{-5x + 10}{-5}$$

$$y = 1x - 2$$

$m = 1 \longrightarrow$ Perpendicular slope = $\left(\frac{-1}{1}\right)$

10. State the slope perpendicular to the line $y = 2x - 3$.

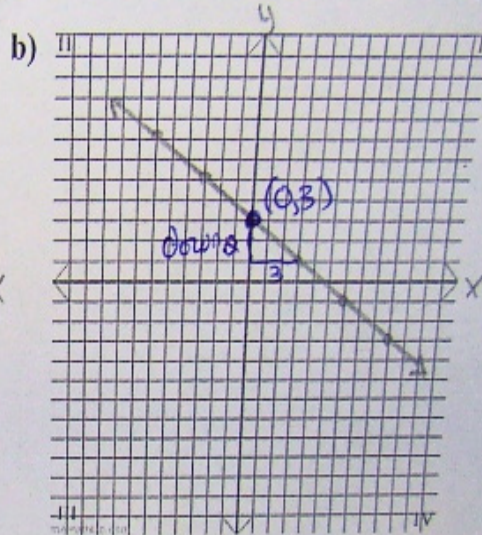
11. State the slope(m), the y-intercept, and write the equation.



Slope (m): $m = \frac{3}{1} = 3$

Y-intercept(b): $b = -2$

Equation: $y = 3x - 2$



Slope (m): $m = \frac{-3}{3}$

Y-intercept(b): $b = 3$

Equation: $y = \frac{-2}{3}x + 3$

12. State the slope, and y-intercept, then graph.

a)

$\frac{3y}{4} + 2 = 3x + 2$
 $\frac{3y}{4} = 3x$
 $\frac{3y}{3} = \frac{12x}{3}$
 $y = 4x$

$\frac{3}{4}y + 2 = 3x + 2$

Slope (m): $m=4$
 Y-intercept(b): $b=0$

b)

$3(2y+1) = 7x-7$
 $6y+3 = 7x-7$
 $\frac{6y}{6} = \frac{7x-10}{6}$
 $y = \frac{7x-10}{6}$
 $y = \frac{7x}{6} - \frac{5}{3}$

$3(2y + 1) = 7x - 7$

Slope (m): $m = \frac{7}{6}$
 Y-intercept(b): $b = -\frac{5}{3}$