

4.4 Slope-Intercept Form p. 168

* RPJ p. 83 ~ use T-charts and graph equations a, b, c, d

- Then write the slope + intersection of y-axis

$$y = mx + b$$

↑
slope

↑
y-intercept

(0, ^b#)

* now use the slope and y-intercept to graph the rest of the equations on RPJ p. 83

* think of "b" for begin, then use the slope to find additional points on the line

Identify the slope and y-intercept:

a) $y = -4x - 2$
 $m = -4$ y-intercept = -2

b) $y - 5 = \frac{3}{2}x$

$$y = \frac{3}{2}x + 5$$

$$m = \frac{3}{2} \quad \text{y-intercept} = \frac{3}{2}$$

c) $y = 3x - 7$

$$m = 3 \quad \text{y-intercept} = -7$$

d) $y - 1 = -\frac{2}{3}x$

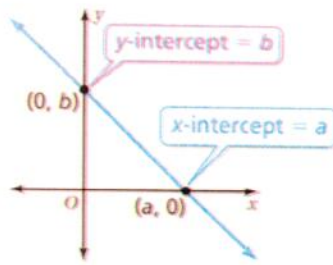
$$y = -\frac{2}{3}x + 1 \quad m = -\frac{2}{3} \quad \text{y-intercept} = 1$$

Key Ideas

Intercepts

The **x-intercept** of a line is the x -coordinate of the point where the line crosses the x -axis. It occurs when $y = 0$.

The **y-intercept** of a line is the y -coordinate of the point where the line crosses the y -axis. It occurs when $x = 0$.



Study Tip

Linear equations can, but do not always, pass through the origin. So, proportional relationships are a special type of linear equation in which $b = 0$.

Slope-Intercept Form

Words A linear equation written in the form $y = mx + b$ is in **slope-intercept form**. The slope of the line is m , and the y -intercept of the line is b .

Algebra

$$y = mx + b$$

slope y-intercept

Graph $y = -3x + 3$. Identify the x -intercept.

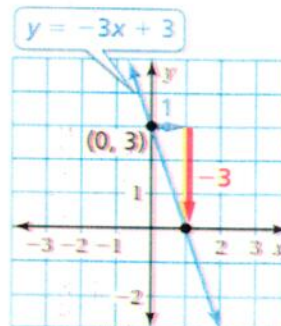
To find the x -intercept, make $y = 0$ and solve the equation.

$$0 = -3x + 3$$

$$-3 = -3x$$

$$1 = x$$

The line crosses the x -axis at $(1, 0)$. So the x -intercept is 1.



Graph $y = x - 4$. Identify the x -intercept.