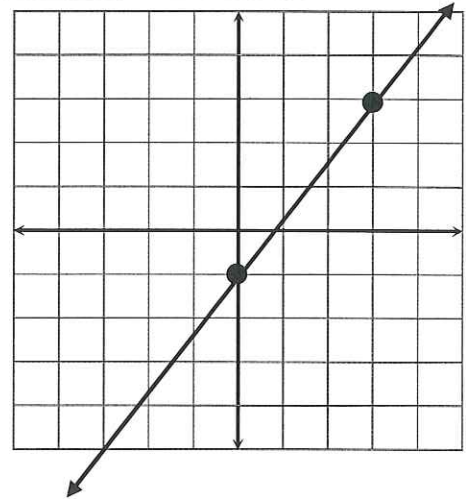


2.4 More About Linear Equations

How to Write an Equation of a Line	
Slope-Intercept Form When given the slope m and the y-intercept b use this equation:	
Point-Slope Form When given the slope m and a point (x_1, y_1) use this equation:	
Two Points When given two points (x_1, y_1) and (x_2, y_2) , use the slope formula. Then, use the point-slope form with this slope and one of the two given points.	

Example 1: Write an equation of the line shown below.



Example 2: Write an equation of the line that passes through $(-3, 4)$ and has a slope of $\frac{2}{3}$.

Example 3: Write an equation of the line that passes through $(1, 5)$ and $(4, 2)$.

STANDARD FORM: $Ax + By + C = 0$

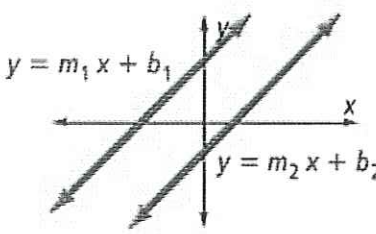
where A and $B \neq 0$.

Example 4: Write an equation of the line that passes through $(3, 0)$ and $(-3, 1)$ in standard form.

Take note

Key Concepts Parallel and Perpendicular Lines

The slopes of **parallel lines** are equal.

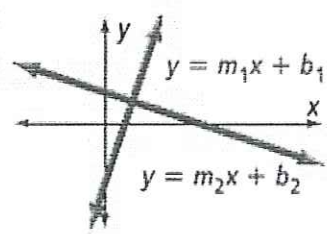


$y = m_1x + b_1$
 $y = m_2x + b_2$

$m_1 = m_2$
 $b_1 \neq b_2$

No line can be vertical.

The slopes of **perpendicular lines** are negative reciprocals of each other.



$y = m_1x + b_1$
 $y = m_2x + b_2$

$m_1 \cdot m_2 = -1$
 $m_1 = \frac{1}{m_2}$
 $m_2 = \frac{1}{m_1}$

m_1 and m_2 are negative reciprocals of each other.

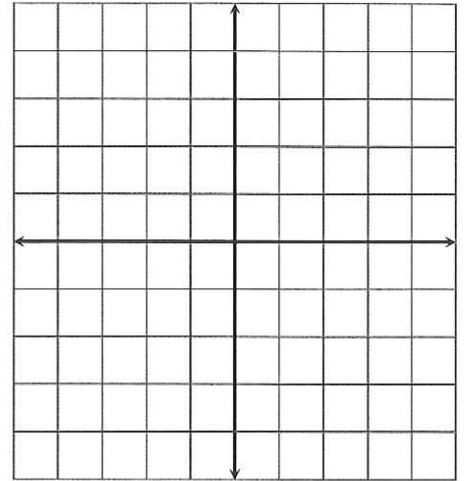
Example 5: Write an equation of the line that passes through $(1, -3)$ and is parallel to the line $y = 6x - 2$.

Example 6: Write an equation of the line that passes through $(8, -5)$ and is perpendicular to the line $y = -4x + \frac{2}{3}$.

X-INTERCEPT:

Y-INTERCEPT:

Example 7: Graph $x + 2y - 4 = 0$ using the x - and y -intercepts.



Example 8: The number of times a cricket chirps per minute depends on the temperature. The number of chirps in 2 seconds for two temperatures are shown at the right.

- a) What is the equation of the line in standard form?
 - a. Find the number of chirps per minute (x = temperature, y =chirps)
 - b. If the temperature is $70^{\circ}F$, how many times would a cricket be expected to chirp in one minute?

