

**T4-1:** I can graph equations using given information

**T4-2:** I can write linear equations in slope intercept form.

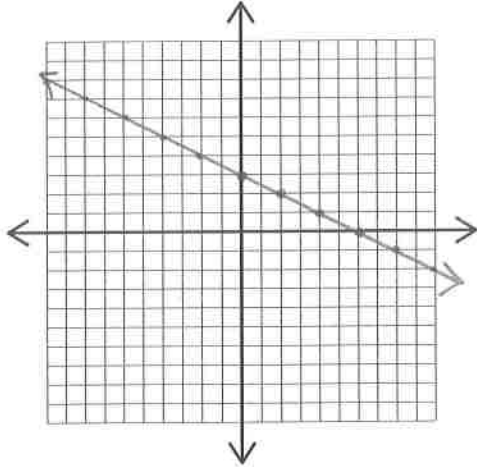
**T4-3:** I can write linear equation in point slope form.

Graph the following equations.

1.  $y = -\frac{1}{2}x + 3$

$m = -\frac{1}{2}$

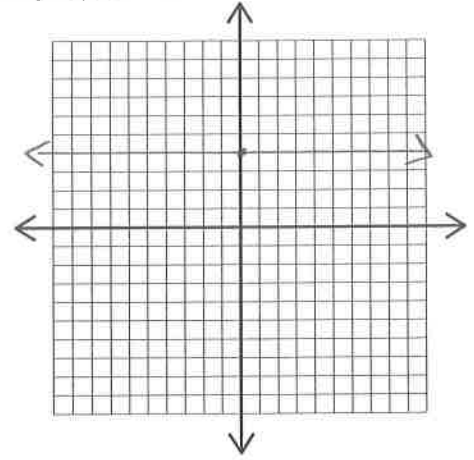
$b = 3$



2.  $y = 4$  horizontal line

$m = 0$

$b = 4$



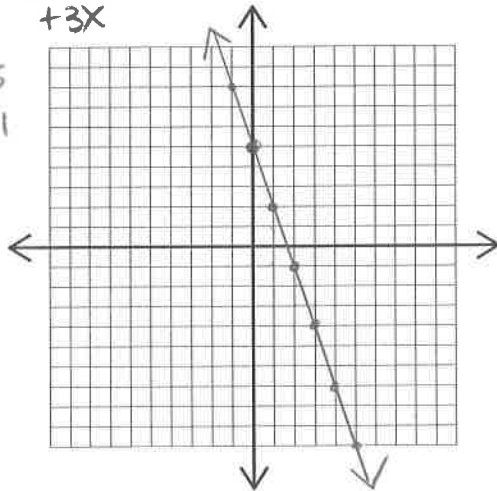
3.  $-3x - y = -5$   
 $+3x \quad +3x$

$\frac{-y}{-1} = \frac{3x-5}{-1}$

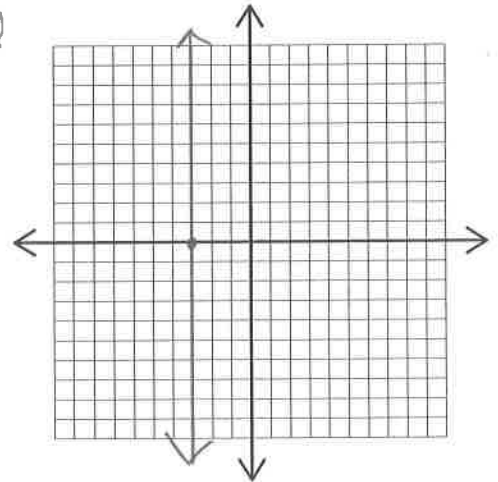
$y = -3x + 5$

$m = -3$

$b = 5$



4.  $x = -3$   
 undefined



Write an equation for the line in slope intercept form and then graph the equation.

5. Point = (3, 1)

Slope = 2

$y = mx + b \quad m = 2 \quad x = 3 \quad y = 1$

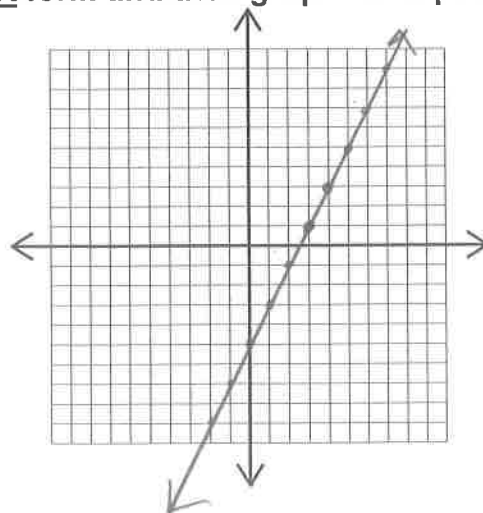
$1 = 2(3) + b$

$1 = 6 + b$

$-6 \quad -6$

$-5 = b$

$y = 2x - 5$



Write an equations for the line in slope intercept form and then graph the equation.

6.

X	Y
3	-1
5	0
7	1
9	2

$m = \frac{1}{2}$   $x = 5$   $y = 0$

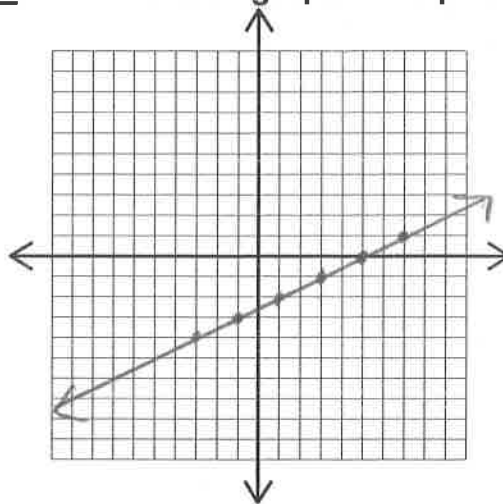
$0 = \frac{1}{2}(5) + b$

$0 = \frac{5}{2} + b$

$-\frac{5}{2} = -\frac{5}{2}$

$-\frac{5}{2} = b$

$y = \frac{1}{2}x - \frac{5}{2}$

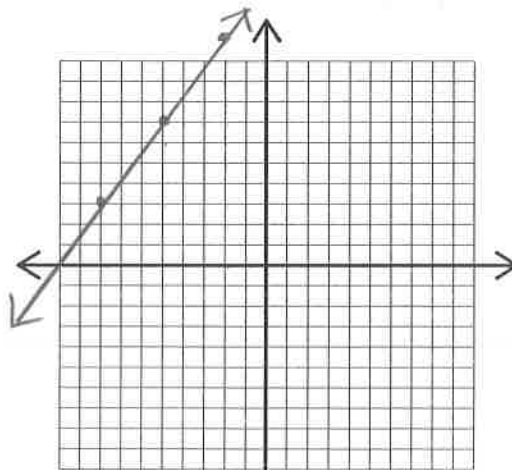


Write equations for the following lines in point slope form and then graph the equation.

7.  $m = \frac{4}{3}$  and  $(-2, 11)$

$y - 11 = \frac{4}{3}(x - (-2))$

$y - 11 = \frac{4}{3}(x + 2)$

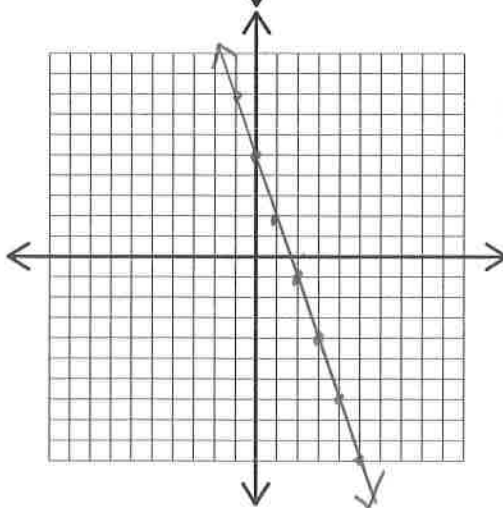


8.  $(5, -10)$  and  $(2, -1)$

$m = \frac{-10 - (-1)}{5 - 2} = \frac{-10 + 1}{3} = \frac{-9}{3} = -3$

$y - (-10) = -3(x - 5)$

$y + 10 = -3(x - 5)$



Manipulate problems 7 and 8 to slope intercept form.

7.  $y - 11 = \frac{4}{3}(x + 2)$       $11 = \frac{33}{3}$

$$y - 11 = \frac{4}{3}x + \frac{8}{3} + \frac{33}{3}$$

+11     (+11) ↗

$$y = \frac{4}{3}x + \frac{41}{3} \quad \leftarrow \text{leave as fraction}$$

8.  $y + 10 = -3(x - 5)$

$$y + 10 = -3x + 15$$

-10     -10

$$y = -3x + 5$$

Do not manipulate. What is the slope and the point showing in each equation?

9.  $y + 3 = \frac{2}{3}(x - 4)$

$y_1$       $x_1$

$m = \frac{2}{3}$  point (4, -3)

10.  $y - 5 = -8(x + 17)$

$m = -8$  point (-17, 5)

11.  $y + 10 = -2(x + 1)$

$m = -2$  point (-1, -10)

12.  $y - 5 = 6(x - 8)$

$m = 6$  point (8, 5)

13.  $y + 7 = -8(x + 5)$

$m = -8$  point (-5, -7)

14.  $y + 2 = -\frac{1}{2}(x - 6)$

$m = -\frac{1}{2}$  point (6, -2)

Write equations for the following situations. Use any form!

12. The number of copies of a movie rented at a video kiosk **decreased** at a constant rate of **5 copies per week**. There were **5 copies** of the movie rented in the **6<sup>th</sup> week** after the movie released.

a. Determine independent and dependent variables.

$x = \#$  of weeks (independent)

$y = \#$  of copies

b. Write an equation.

$$m = -5 \quad (6, 5)$$

$$\boxed{y - 5 = -5(x - 6)} \xrightarrow{\text{or}} \boxed{y = -5x + 35}$$

c. In what week will there only be 20 movie rentals? (Show algebraically)

$$\begin{array}{r} 20 = -5x + 35 \\ -35 \quad -35 \\ \hline -15 = -5x \\ \frac{-15}{-5} = \frac{-5x}{-5} \quad x = 3 \end{array}$$

$$y = 20$$

In week 3 there will be 20 movie rentals.

13. An airplane **30,000 feet** above the ground and **begins descending** at the **rate of 2000 feet per minute**. Assume the plane continues at the same rate of descent. The plane's height and minutes above the ground are related to each other.

a. Determine independent and dependent variables.

$x = \#$  of minutes (ind)

$y = \#$  of feet (dep)

b. Write an equation.

$$y = -2000x + 30,000$$

c. What height will the airplane be at after 5 minutes?

$$y = -2000(5) + 30,000$$

The plane will be 20,000 feet off the ground after 5 minutes.

14. Biologists have found that the number of chirps some crickets make per minute is related to temperature. The relationship is very close to being linear. When crickets chirp **124 times a minute**, it is about **68 degrees** Fahrenheit. When they chirp **172 times a minute**, it is about **80 degrees** Fahrenheit.

a. Determine independent and dependent variables.

$x$ : degrees (ind)

$y$ : chirps (dep)

b. Write an equation.

$$(68, 124) \quad (80, 172)$$

$$\frac{124 - 172}{68 - 80} = \frac{-48}{-12} = 4 \quad \boxed{y - 124 = 4(x - 68)}$$

or  $\boxed{y = 4x - 148}$

c. How warm is it when the crickets are chirping 150 times a minute?

$$\begin{array}{r} 150 = 4x - 148 \\ +148 \quad +148 \\ \hline 298 = 4x \end{array}$$

$$\frac{298}{4} = \frac{4x}{4}$$

$$x = 74.5$$

4 Review When chirps are at 150 the temp is 74.5 degrees.