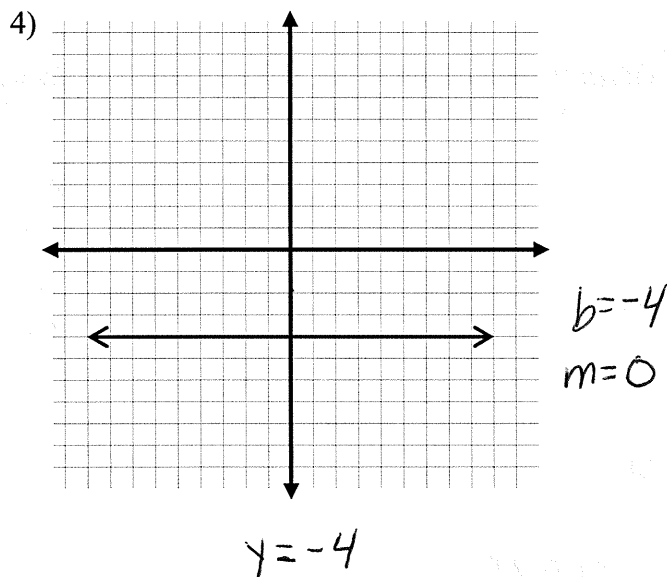
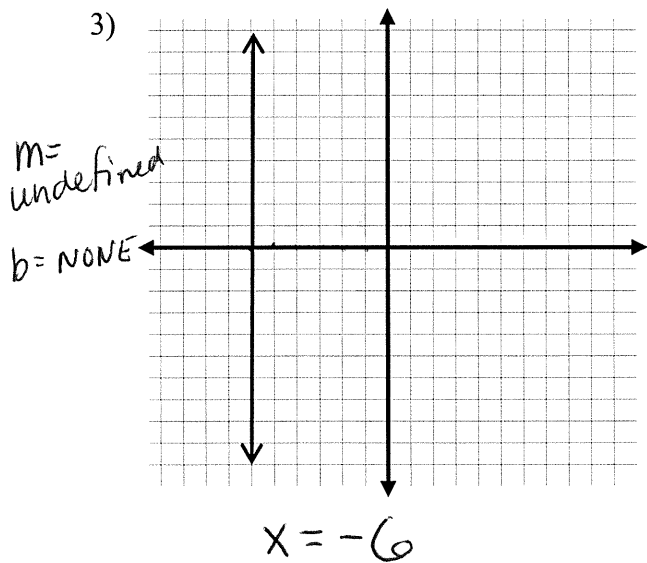
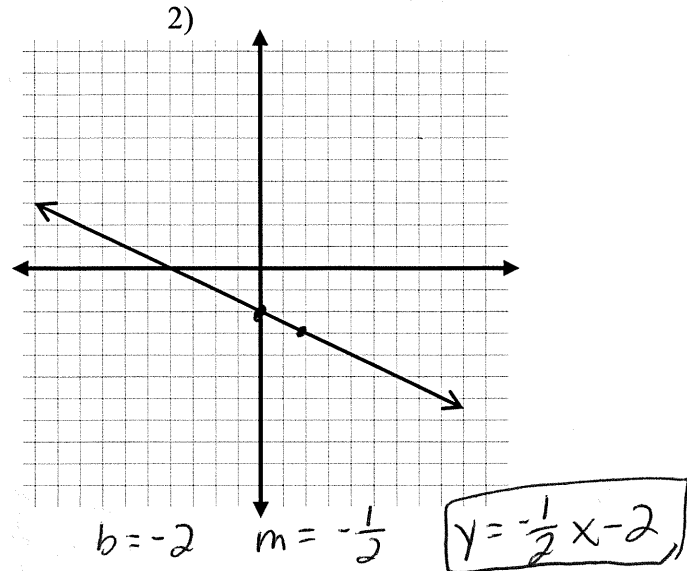
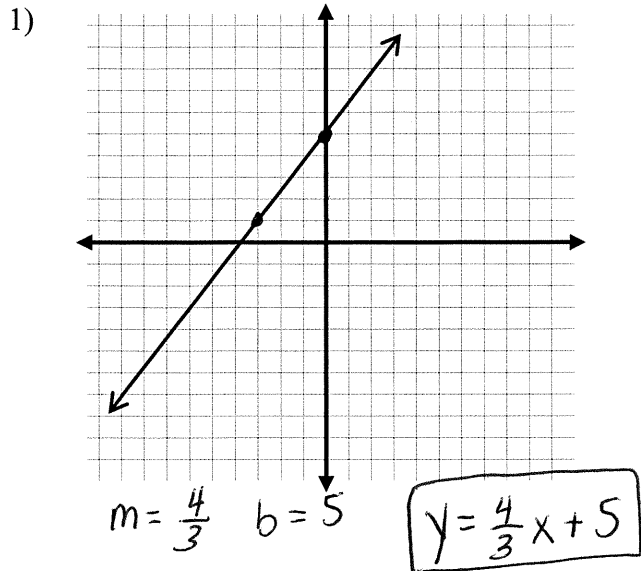


Algebra Unit 4B Assessment Review – Linear Functions

F.LE.A.2 – I can construct a linear function from a table, graph, or a description.

Write an equation in slope-intercept form for each line below. (I can write a linear equation from a graph.)



Write an equation in slope-intercept form for the line described in the table below.

(I can write a linear equation from a table.)

5)

X	Y
-6	2
-3	0
0	-2
3	-4
6	-6

$m = \frac{-2 - 0}{0 - (-3)} = \frac{-2}{3}$
 $(0, -2)$
 $y = mx + b$
 $-2 = \frac{-2}{3}(0) + b$
 $-2 = b$
 $y = -\frac{2}{3}x - 2$

6)

X	Y
7	15
2	13
-3	11
-8	9
-13	7

$m = \frac{13 - 15}{2 - 7} = \frac{-2}{-5}$
 $m = \frac{2}{5}$ (2, 13)
 $y = mx + b$
 $13 = \frac{2}{5}(\frac{2}{1}) + b$
 $13 = \frac{4}{5} + b$
 $12\frac{1}{5} = \frac{61}{5} = b$
 $y = \frac{2}{5}x + \frac{61}{5}$

Given the slope, or y-intercept, and a point on the line, write an equation for each line below in slope-intercept form. (I can write a linear equation given slope or y-int. and a point on the line.)

$$7) b = -3, (3, -2)$$

$$y = mx + b$$

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

$$+3 \quad +3$$

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

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

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

$$8) m = \frac{1}{3}, (1, -3)$$

$$y = mx + b$$

$$-3 = \frac{1}{3}(1) + b$$

$$-3 = \frac{1}{3} + b$$

$$-\frac{1}{3} \quad -\frac{1}{3}$$

$$-3\frac{1}{3} = b$$

$$-\frac{10}{3} = b$$

$$y = \frac{1}{3}x - \frac{10}{3}$$

$$9) m = 4, (1, 1)$$

$$y = mx + b$$

$$1 = 4(1) + b$$

$$-4 \quad -4$$

$$-3 = b$$

$$y = 4x - 3$$

Given two points on a line, write an equation for each line below in slope-intercept form. (I can write a linear equation given two points on the line.)

$$10) (3, -1), (6, 4)$$

$$x_1 \quad y_1 \quad x_2 \quad y_2$$

$$m = \frac{4 - (-1)}{6 - 3} = \frac{5}{3}$$

$$m = \frac{5}{3} \quad (3, -1)$$

$$x \quad y$$

$$y = mx + b$$

$$-1 = \frac{5}{3}(\frac{3}{1}) + b$$

$$-1 = 5 + b$$

$$-5 \quad -5$$

$$-6 = b$$

$$y = \frac{5}{3}x - 6$$

$$11) (2, -4), (1, -3)$$

$$x_1 \quad y_1 \quad x_2 \quad y_2$$

$$m = \frac{-3 - (-4)}{1 - 2} = \frac{1}{-1}$$

$$m = -1 \quad (1, -3)$$

$$y = mx + b$$

$$-3 = -1(1) + b$$

$$-3 = -1 + b$$

$$+1 \quad +1$$

$$-2 = b$$

$$y = -x + (-2)$$

$$y = -x - 2$$

$$12) (-3, 4), (1, 4)$$

$$x_1 \quad y_1 \quad x_2 \quad y_2$$

$$m = \frac{4 - 4}{1 - (-3)} = \frac{0}{4} = 0$$

$$m = 0 \quad (1, 4)$$

$$4 = 0(1) + b$$

$$4 = b$$

$$y = 4$$

13.) Tom went sky diving and jump out of the plane at 10,000 feet. After falling for 10 seconds he was at a height of 9000 feet, and after 30 seconds he was at a height of 7000 feet. Assume that he is traveling at a constant speed.

a.) What information is being given in the problem? (Slope & Y-intercept; Slope & a point, Two points)

b.) Write a linear equation in slope-intercept form to model the situation.

$$b = 10,000$$

$$(10, 9000)$$

$$(30, 7000)$$

$$m = \frac{7000 - 9000}{30 - 10} = \frac{-2000}{20} = -200$$

$$m = -200 \quad (10, 9000)$$

x y

$$y = -100x + 10,000$$

$$y = mx + b$$

$$9000 = -200(10) + b$$

$$9000 = -2000 + b$$

$$\begin{array}{r} +1000 \\ +1000 \\ \hline 10,000 = b \end{array}$$

c.) Explain what the rate of change, (slope), in the model means.

$m = -100$ he's falling 100 feet per second

d.) Explain what the initial y-intercept in the model means.

$b = 10,000$ he starts at a height of 10,000 feet

e.) At this rate, when will he reach the ground?

$$y = 0 \quad 0 = -100x + 10,000$$

$$\begin{array}{r} -10,000 \\ \hline -100 \end{array} \quad \begin{array}{r} -10,000 \\ \hline -100 \end{array}$$

$$\frac{-10,000}{-100} = \frac{-100x}{-100}$$

$$100 = x$$

$$100 \text{ seconds}$$

14.) Suppose you have an order for 300 computers. You have already built 45. Every hour you build 5 computers.

a.) What information is being given in the problem? (Slope & Y-intercept; Slope & a point, Two points)

b.) Write a linear equation in slope intercept form to model the situation

$$m = 5$$

$$b = 45$$

$$y = 5x + 45$$

c.) Explain what the rate of change, (slope), in the model means.

$m = 5$ you build 5 computers every hour

d.) Explain what the initial value, (y-intercept), in the model means.

$b = 45$ you have already built 45

e.) How many computers will you have in 10 hours? $y = 5x + 45$

$$x = 10$$

$$y = 5(10) + 45$$
$$y = 50 + 45 = 95 \text{ computers}$$

f.) How many hours will it take to finish the order for the computers?

$$y = 300$$

$$300 = 5x + 45$$
$$\begin{array}{r} -45 \\ \hline \end{array}$$

$$\frac{255}{5} = \frac{5x}{5}$$

$$x = 51 \text{ hours}$$

15.) A 10-liter bottle is half way full. Water flows from a faucet at 2 Liters per minute.

a.) What information is being given in the problem? (Slope & Y-intercept; Slope & a point, Two points)

Slope, y-intercept

b.) Write a linear equation in slope intercept form to model the situation

$$m = 2$$

$$b = 5$$

$$y = 2x + 5$$

c.) Explain what the rate of change, (slope), in the model means.

$m = 2$ the amount of water increases 2 Liters per minute

d.) Explain what the initial value, (y-intercept), in the model means.

$b = 5$ there was already 5 Liters in the bottle

e.) How long will it take to fill the bottle?

$$y = 10$$

$$10 = 2x + 5$$
$$\begin{array}{r} -5 \\ \hline \end{array}$$

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

$$x = 2.5 \text{ minutes}$$

Answers:

1. $y = \frac{4}{3}x + 5$

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

3. $x = -6$

4. $y = -4$

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

6. $y = \frac{2}{5}x + \frac{61}{5}$

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

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

9. $y = 4x - 3$

10. $y = \frac{5}{3}x - 6$

11. $y = -x - 2$

12. $y = 4$

13. a. Two points

b.

$$y = -100x + 10000$$

c. Tom falls 100 feet each second.

d. At time zero, Tom was at a height of 10000 feet.

e. 100 seconds

14. a. Slope and Y-intercept

b. $y = 5x + 45$

c. The number of computers increases by 5 every hour.

d. At time zero, there are 45 computers.

e. 95 computers.

f. 51 hours.

15. a. Slope and Y-intercept

b. $y = 2x + 5$

c. The amount of water increases by 2 liters every minute.

d. The bottle began with 5 liters of water.

e. 2.5 minute