

Warm Up

February 15, 2019

1.) Which line has a greater y-intercept?

Line A: $2x - y = 4$

Line B $\frac{-2x}{-1} = \frac{-2x + 4}{-1}$
 $y = 2x - 4$

Line B: $3x - 6y = 12$

$$\frac{-3x}{-6} = \frac{-3x + 12}{-6}$$
$$y = \frac{1}{2}x - 2$$

2.) The total cost, in dollars, of membership in a basketball league is given by the function $c(m) = 14m + 30$, where m is the number of months a person is a member. In dollars, how much is the cost of a membership for 1 year?

$$c(12) = 14(12) + 30 \quad \text{12 months}$$

$$c(12) = 198$$

3.) Jim has four test scores of 86, 81, 80, and 75.

What score must Jim earn on his fifth test to earn an 80 in the course?

$$\frac{86 + 81 + 80 + 75 + x}{5} = 80$$

$$322 + x = 400$$
$$\frac{-322}{x} = \frac{-322}{78}$$
$$x = 78$$

LINEAR EQUATION WORD PROBLEMS

➤ SLOPE-INTERCEPT: Use when given a rate of change (m) and a starting point (b)

$$Y = mx + b$$

1. Evan is going to the county fair this weekend. The admission to the fair is \$5 and the cost per ride is 50¢. If his parents gave him \$20, write and solve a linear equation to find how many rides he can go on.

$$y = .50x + 5$$

X = # of rides

$$\begin{array}{r} 20 = .50x + 5 \\ -5 \quad -5 \\ \hline 15 = .50x \end{array}$$

X = 30 Rides

2. While visiting Crimson Lake, Sally decided to go kayaking. The rangers charge \$8.50 per hour in addition to a \$25.00 deposit to rent the kayak. If she rented the kayak from 11:30 a.m. to 2:30 p.m., write and solve a linear equation to find the total cost to rent the kayak.

$$y = 8.50x + 25$$

$$y = 8.50(3) + 25$$

$$y = 50.50$$

It costs Sally \$50.50 to rent the kayak.

$Y - Y_1 = m(X - X_1)$ Use when you are given rate of change and example point.

9. At Eagle Bay, it costs \$12 per hour to rent a canoe. Nate and his friends rented a canoe for 4 hours and paid \$68. Write and solve a linear equation to find the cost to rent the canoe for 7 hours.

$$m = 12$$

$$(4, 68)$$

$$y - 68 = 12(x - 4)$$

$$y - 68 = 12x - 48$$

$$\begin{array}{r} y - 68 = 12x - 48 \\ + 68 \qquad + 68 \\ \hline \end{array}$$

$$y = 12(7) + 20$$

$$y = 104$$

$$y = 12x + 20$$

The slope means that it costs 12 per hour to rent a canoe.
The y-intercept means that there is an initial rental fee of \$20.

10. A construction company charges \$18 per hour for debris removal plus a one-time fee for the use of the trash dumpster. The total fee for 8 hours of service was \$219. Write and solve a linear equation to find the one-time fee for the trash dumpster.

$$m = 18$$

$$(8, 219)$$

$$\rightarrow y\text{-int.}$$

$$y - 219 = 18(x - 8)$$

$$y - 219 = 18x - 144$$

$$\begin{array}{r} y - 219 = 18x - 144 \\ + 219 \qquad + 219 \\ \hline \end{array}$$

$$y = 18x + 75$$

The one time fee to rent the dumpster is \$75.

Slope --> Point Slope

What is the meaning of the slope?

What is the meaning of the y-intercept?

13. To surf the internet for 15 minutes at an airport, it costs \$4.05. For 40 minutes, it costs \$5.80. Write and solve a linear equation to find the cost for surfing the web for one hour.

$$(15, 4.05) \quad (40, 5.80)$$

$$m = \frac{5.80 - 4.05}{40 - 15} = \frac{1.75}{25}$$

$$m = 0.07$$

$$y - 4.05 = .07(x - 15)$$

$$y - 4.05 = .07x - 1.05$$

$$\begin{array}{r} +4.05 \qquad \qquad +4.05 \\ \hline y = .07x + 3 \end{array}$$

It costs \$0.07 per minute to surf the internet.

There is a \$3.00 connection fee.

$$y = .07(60) + 3$$

$$y = \$7.20$$

It costs \$7.20 to surf the web for one hour.

14. Water boils at 100° Celsius or 212° Fahrenheit. Water freezes at 0° Celsius or 32° Fahrenheit. If the weather forecaster says it will be 25° Celsius today, write and solve a linear equation to find what Fahrenheit temperature this is.

$$(100, 212) \quad (0, 32)$$

$$m = \frac{32 - 212}{0 - 100} = \frac{-180}{-100}$$

$$m = 1.8 \text{ OR } \frac{9}{5}$$

$$y = \frac{9}{5}x + 32$$

X = Celsius

y = Fahrenheit

$$y = \frac{9}{5}(25) + 32$$

The slope means that for every 9 degree increase in Fahrenheit temperature there is a 5 degree increase in Celsius temperature.

The y-intercept means that at 0 degrees Celsius, it is 32 degrees Fahrenheit.



now... YOU determine which type!

17. You are buying \$48 worth of two types of lawn seed. Ryegrass lawn seed sells for \$0.70 per pound and Fescue lawn seed sells for \$1.15 per pound. If you bought 25 pounds of Fescue lawn seed, write and solve a linear equation to find the amount of Ryegrass lawn seed purchased.

18. Jeff is keeping track of his weight over several weeks. After 2 weeks, he weighs 194 pounds. After 6 weeks, he weighs 186 pounds. Write and solve a linear equation to find Jeff's weight after 12 weeks.