

1. Marco spent \$7 per day. Knowing Marco, he probably spent it on Lotto scratchers. After 5 days, he had \$8 left.

a. What two pieces of information are you given? slope = -7 and point (5, 8)?

b. Write an equation in slope-intercept form for the situation.

$$y = -7x + 43$$

$$y = -7x + b$$

$$8 = -7(5) + b \Rightarrow b = 43$$

c. How much money did Marco have to start with?

$$43 \text{ dollars}$$

d. How much money did he have after the 3<sup>rd</sup> day?

$$y = -7(3) + 43 = 22 \text{ dollars}$$

2. Jenna works at a retail shop. She makes a flat amount of \$50, and \$3 for each item she sells.

a. What two pieces of information are you given? b = 50 and slope = 3?

b. Write an equation in slope-intercept form for the situation.

$$y = 3x + 50$$

c. How much money does she make if she sells 29 items?

$$y = 3(29) + 50 = 137 \text{ dollars}$$

d. How many items does she have to sell if she wants to make \$100 in a day? (Give an appropriate answer)

$$100 = 3x + 50$$

$$50 = 3x \quad x = 50/3$$

$$\text{Sell 17 items}$$

3. Justin goes to a local arcade one weekend. He starts out with a certain number of tokens and spends them on games at a consistent rate. After 15 minutes he had 50 tokens, and after 40 minutes he didn't have any tokens left.

a. What two pieces of information are you given? point (15, 50) and point (40, 0)?

b. Write an equation in slope-intercept form for the situation.

$$m = \frac{50 - 0}{15 - 40} = \frac{50}{-25} = -2$$

$$0 = -2(40) + b$$

$$80 = b$$

$$y = -2x + 80$$

c. How many minutes would it take him to use 36 tokens?

$$44 = -2x + 80$$

$$-36 = -2x$$

$$x = 18 \text{ minutes}$$

d. Explain why the slope is negative for this situation.

Justin is using (losing) tokens.

4. A gym is offering a deal to new members. Customers can sign up by paying a registration fee of \$200 and a monthly fee of \$39.

a. Write an equation in slope-intercept form for the situation.

$$y = 39x + 200$$

b. How much will this membership cost a member for an entire year?

$$y = 39(12) + 200 = \boxed{668 \text{ dollars}}$$

5. Conner has an initial amount in his bank account. Conner only spends \$1,500 each month, and does not put any money into his account. After 8 months Conner has \$13,000.

a. Write an equation in slope-intercept form for the situation.

$$m = -1500 \quad (8, 13000)$$

$$13000 = -1500(8) + b$$

$$25000 = b$$

$$y = -1500x + 25000$$

b. How much money did he have in his account initially?  $25000 \text{ dollars}$

c. How much time will it take for his bank account to reach \$2,000? (Give an appropriate answer)

$$2000 = -1500x + 25000$$

$$-23000 = -1500x$$

$$x = 15\frac{1}{3}$$

$15 \text{ months and}$   
 $\text{about } 10 \text{ days}$

6. While speaking on the phone to a friend in Oslo, Norway, you learned that the current temperature there was  $-23$  Celsius ( $-23^\circ\text{C}$ ). After the phone conversation, you wanted to convert this temperature to Fahrenheit degrees,  $^\circ\text{F}$ , but you could not find a reference with the correct formulas. You then remembered that the relationship between  $^\circ\text{F}$  and  $^\circ\text{C}$  is linear.

a. Using this and the knowledge that  $32^\circ\text{F} = 0^\circ\text{C}$  and  $212^\circ\text{F} = 100^\circ\text{C}$ , find an equation that computes Fahrenheit temperature in terms of Celsius; an equation of the form  $F =$  (HINT: use Celsius as "x" and Fahrenheit as "y")

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

$$y = 1.8x + 32$$

$$m = \frac{180}{100} = 1.8$$

b. How cold was it in Oslo in  $^\circ\text{F}$ ?

$$y = 1.8(-23) + 32 = \boxed{-9.4^\circ\text{F}}$$