

Spring 2014

AFM: Linear Application Practice

Name: Long

1. Tim earns \$7 an hour working at McDonald's. He also was given a signing bonus when he started of \$25. Write an equation that represents Tim's salary at McDonald's.

$$y = 7x + 25$$

2. The table below represents the cost of renting a movie for  $x$  amount of days. Write an equation that represents the cost of renting a movie.

Days Rented ( $x$ )	0	1	2	3	4
Cost to Rent ( $y$ )	12	15	18	21	24

$$y = 3x + 12$$

- b) What is the slope? What does it represent in the context of this problem?  
 \$3/day The cost to rent a movie increases by \$3 per day rented
3. Some scientists believe that the average surface temperature of the world has been rising steadily. The average surface temperature is given by  
 $T = 0.02t + 7.50$   
 where  $T$  is temperature in degrees Celsius and  $t$  is the time in years since 1990.

a. Find the slope. What does it represent?  
 0.02 °C/yr The average surface temp increases by .02 °C per year since 1990.

b. What does the 7.50 represent?  
 The surface temp in 1990 was 7.5 °C

4. A pool is being drained such that the amount of water (in gallons) at any given time (in min) can be found by  $y = 20000 - 400x$ .

a. What is the slope and what does the slope mean in terms of this application?  
 -400 gal/min Amount of water in pool is decreasing by 400 gallons every minute.

b. What is the  $y$ -intercept and what does it represent in this application?  
 There are 20,000 gallons in the pool at time 0 min.

$$0 = 20000 - 400x$$

$$x = 50 \text{ min}$$

After 50 min there is no water in the pool.

5. A small business buys a computer for \$4000. After 4 years the value of the computer is expected to be \$200. For accounting purposes, the business uses linear depreciation to assess the value of the computer at a given time. This means that if  $V$  is the value of the computer at time  $t$ , then a linear equation is used to relate  $V$  and  $t$ .

a. Find a linear equation that relate  $V$  and  $t$ .  
 $V = -950t + 4000$   
 $\$1150$

b. Find the depreciated value of the computer 3 years from the date of purchase.

6. A candy store owner finds that if she produces  $x$  lollipops in a month her production cost is given by the equation  $y = 0.4x + 1200$  (where  $y$  is measured in dollars).

a. What does the slope mean in terms of this application?  
 Production cost increases by \$0.40 for every 1011 pop produced

b. What does the  $y$ -intercept of the graph represent in terms of this application?  
 \$1200 is production cost if produce 0 lollipops.

7. The monthly cost of driving a car depends on the number of miles driven. Lynn found that in May her driving cost was \$380 for driving 480 miles and in June her cost was \$460 for 800 miles.

a. Express the monthly cost  $C$  in terms of the distance driven,  $d$  assuming that a linear relationship gives a suitable model.  
 $C = \frac{1}{4}D + 260 = .25D + 260$  (480, 380) (800, 460)

b. Use part (a) to predict the cost of driving 1500 miles per month.  
 $\$635$

c. What is the slope and what does the slope of the line represent?  
 Cost to drive increases by \$.25 per mile

d. What does the  $y$ -intercept of the graph represent?  
 Cost to drive 0 miles is \$260.