

Name: \_\_\_\_\_

Writing Linear Equations Word Problems

1) 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. Identify the variables:  $x =$  \_\_\_\_\_  $y =$  \_\_\_\_\_

b. What are the two points?

c. What is the rate of change (slope)?

d. Write the equation.

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

2) Jill has been working at the same company for 6 years. In 2006 when she started she made \$35,000. In 2012 she made \$38,000. Her pay is a linear function of the number of years she works.

a. Identify the variables:  $x =$  \_\_\_\_\_  $y =$  \_\_\_\_\_

b. What are the two points?

c. What is the rate of change (slope)?

d. Write the equation.

e. If she continues on the same pay plan, what will she be making in 2018?

3) George and Gerard each use the same construction company for debris removal. The company charges a flat fee plus an hourly rate. George's bill was \$195 for 9 hours and Gerard's bill was \$150 for 6 hours.

a. Identify the variables:  $x =$  \_\_\_\_\_  $y =$  \_\_\_\_\_

b. What are the two points?

c. What is the rate of change (slope)?

d. Write an equation.

e. How many hours did it take if the bill is \$240?

4) A candle burns at a consistent rate. After 2 hours of burning it is 5 inches tall. After 8 hours it is 2 inches tall.

a. Identify the variables:  $x =$  \_\_\_\_\_  $y =$  \_\_\_\_\_

b. What are the two points?

c. What is the rate of change (slope)?

d. Write an equation.

e. How tall was the candle before it was burned?

5) The population of Pine Bluff in 2005 was 6791, and in 2010 it was 6721. The population seems to be decreasing at a linear rate.

a. Identify the variables:  $x =$  \_\_\_\_\_  $y =$  \_\_\_\_\_

b. What are the two points?

c. What is the rate of change (slope)?

d. Write an equation.

e. If it continues at this rate what will be the population in 2015?

6) Jack and Jill both took their cars to the same repair shop. Jack's bill was \$150 for 4 hours of work. Jill's bill was \$112.50 for 2.5 hours of work. Assume the pay rate is linear.

a. Identify the variables:  $x =$  \_\_\_\_\_  $y =$  \_\_\_\_\_

b. What are the two points?

c. What is the rate of change (slope)?

d. Write an equation.

e. What is the flat fee for the repair shop?