







c) slope  $\frac{5}{4}$  and point  $(-8, 0)$

Equation: \_\_\_\_\_

d) slope  $-3$  and point  $(2, 0)$

Equation: \_\_\_\_\_

e) slope  $-\frac{1}{5}$  and point  $(5, 7)$

Equation: \_\_\_\_\_

f) slope  $1$  and point  $(3, 6)$

Equation: \_\_\_\_\_

: Find an equation of the line containing the two points.

a)  $(1, 2)$  and  $(3, -8)$

Equation: \_\_\_\_\_

b)  $(2, -3)$  and  $(4, -2)$

Equation: \_\_\_\_\_

: When you have a physical exam, your doctor draws blood for your cholesterol test. Your cholesterol count is measured in milligrams per deciliter (mg/dL). A woman's total cholesterol  $y$  is related to her age  $x$  by the following linear equation:

$$y = 1.1x + 157$$

- a) Determine and interpret the slope of the equation.

The slope is  $\frac{1.1}{1}$

Interpretation: The total cholesterol of a female increases by 1.1 mg/dL as age increases by 1 year.

- b) Determine and interpret the y-intercept of the equation.

The y-intercept is (0, 157).

The total cholesterol of a newborn girl is 157 mg/dL.

- c) Estimate the total cholesterol of a female at age 30. Interpret this in a complete sentence.

$$y = 1.1(30) + 157 = 190$$

The total cholesterol of a 30 year old woman is 190 mg/dL.

: The temperature dropped rapidly overnight. Starting at 80°F at midnight, the temperature dropped 3°F per minute. The temperature  $T$  is related to the number of minutes  $x$  can be represented by the following linear equation:

$$T = -3x + 80$$

- a) Determine and interpret the slope of the equation.

The slope is -3.

Interpretation: The temperature decreases by 3°F as time increases by 1 minute.

- b) Determine and interpret the y-intercept of the equation.

The y-intercept is (0, 80).

The temperature is 80°F at midnight.

- c) Estimate the temperature when it is 12:10am. Interpret this in a complete sentence.

$$T = -3(10) + 80 = 50$$

The temperature is 50°F at 12:10am.

: Some costs involved in owning a car are affected by the number of miles driven (gas and maintenance) Suppose the annual cost  $y$  of operating a Toyota Camry is related to the number of miles driven  $x$ . The annual cost of operating a Toyota Camry is \$0.25 per mile plus \$2000 by the following linear equation:

$$y = 0.25x + 2000$$

- a) Determine and interpret the slope of the equation.

The slope is  $\frac{\$0.25}{1}$

Interpretation: The annual cost of owning a Camry increases by \$0.25/mile as the mileage increases by 1 mile.

b) Determine and interpret the y-intercept of the equation.

The y-intercept is (0, 2000).

Interpretation: The annual cost of a Toyota Camry is \$2000 when 0 miles are driven.

c) Estimate the annual cost of a Toyota Camry when 500 miles are driven. Interpret this in a complete sentence.

$$y = 0.25(500) + 2000 = 2125$$

Interpretation: The annual cost of a Toyota Camry is \$2125 when 500 miles are driven.

: The cost per minute of talk time for cell phone users has gone down over the years. In 1995, cell phone users paid, on the average, \$0.56 per minute. In 2011, they paid \$0.05 per minute. Assuming that the rate of decline of the cost per minute was constant, the cost per minute can be calculated by the equation

$y = -0.031875x + 0.56$ , where  $x$  represents the number of years after 1995 and  $y$  represents the cost per minute of cell phone usage in dollars.

$$y = -0.031875x + 0.56$$