

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

Date: \_\_\_\_\_

Mr. Williams

Class: \_\_\_\_\_

Writing and Solving Multi-step Equations-

Let's Review Vocabulary

$Y = mx + b$

$y =$  \_\_\_\_\_

$M =$  \_\_\_\_\_

$X =$  \_\_\_\_\_

$b =$  \_\_\_\_\_

**Example #1:** A cell phone company charges a monthly fee plus \$0.25 for each text message you send. The monthly fee is \$30.00 and your bill comes out to be \$60.50 for the month of November. How many text messages did you send?

(Variable) Let  $x =$  \_\_\_\_\_

Coefficient: \_\_\_\_\_

Constant: \_\_\_\_\_

Fill in the empty spaces below with appropriate information.

$Y = mx + b$

\_\_\_\_\_ = \_\_\_\_\_  $x$  + \_\_\_\_\_

Solve:

**Answer:** \_\_\_\_\_ text messages

**Example #2:** Lexi's taxi company charges \$2.25 plus \$2 for every mile traveled. On Saturday night Mr. Williams used Lexi's taxi company and paid \$10.75. Write an equation to determine,  $x$ , the number of miles Mr. Williams traveled.

Let  $x =$  \_\_\_\_\_

$Y = mx + b$

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

Solve the equation and determine the number of miles Mr. Williams traveled.

**Answer:** Mr. Williams traveled \_\_\_\_\_ miles.

Guided Practice: **Example #4**

To convert a temperature from degrees Fahrenheit to degrees Celsius, first subtract 32. Then multiply the result by  $\frac{5}{9}$ . An outdoor thermometer showed a temperature of  $-10^{\circ}\text{C}$ . Write and solve an equation that represents the temperature in degrees Fahrenheit.

Let  $x =$  \_\_\_\_\_

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

**Answer:** The temperature was \_\_\_\_\_.

Group Work: **Example #5**

A rectangular picture frame has a perimeter of 58 inches. The height of the frame is 18 inches. Write and solve equation to determine the width of the frame.

Let  $x =$  \_\_\_\_\_

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

**Answer:** The width is \_\_\_\_\_ inches.

**Example**

The ages of three sisters are consecutive integers. The sum of their ages is 45. Calculate their ages.

a. ~~Use a tape diagram to find their ages.~~ USE NUMBER LINE

b. If the youngest sister is  $x$  years old, describe the ages of the other two sisters in terms of  $x$ , write an expression for the sum of their ages in terms of  $x$ , and use that expression to write an equation that can be used to find their ages.

c. Determine if your answer from part (a) is a solution to the equation you wrote in part (b).

**Exercise**

Sophia pays a \$19.99 membership fee for an online music store.

- a. If she also buys two songs from a new album at a price of \$0.99 each, what is the total cost?
  
  
  
  
  
  
  
  
  
  
- b. If Sophia purchases  $n$  songs for \$0.99 each, write an expression for the total cost.
  
  
  
  
  
  
  
  
  
  
- c. Sophia's friend has saved \$118 but is not sure how many songs she can afford if she buys the membership and some songs. Use the expression in part (b) to write an equation that can be used to determine how many songs Sophia's friend can buy.
  
  
  
  
  
  
  
  
  
  
- d. Using the equation written in part (c), can Sophia's friend buy 101, 100, or 99 songs?

**Relevant Vocabulary**

**VARIABLE (DESCRIPTION):** A *variable* is a symbol (such as a letter) that represents a number (i.e., it is a placeholder for a number).

**EQUATION:** An *equation* is a statement of equality between two expressions.

**NUMBER SENTENCE:** A *number sentence* is a statement of equality between two numerical expressions.

**SOLUTION:** A *solution* to an equation with one variable is a number that, when substituted for the variable in both expressions, makes the equation a true number sentence.