Lesson 1.3.1: True and False Equations

Targets:
1. I can explain what an equation is.
2. I can determine whether an equation is true or false.
3. I can find values for variables that make equations true.

Warm Up

1. Consider the statement: "The President of the United States is a United States citizen."
   a. Is the statement a grammatically correct sentence?
   b. What is the subject of the sentence?
   c. What is the verb in the sentence?
   d. And what is the object of the sentence?
   e. And finally, is the sentence true?

2. Consider the statement: "The President of France is a United States citizen."
   a. Is the statement a grammatically correct sentence?
   b. What is the subject of the sentence?
   c. What is the verb in the sentence?
   d. And what is the object of the sentence?
   e. And finally, is the sentence true?

3. Consider the statement: "$2 + 3 = 1 + 4$." This is a sentence.
   a. What is the verb of the sentence?
   b. What is the subject of the sentence and what is the object?
   c. Is the sentence true?

4. Consider the statement: "$2 + 3 = 9 + 4$."
   a. Is this statement a sentence?
   b. And if so, is the sentence true or false?

Vocabulary 1

Watch the video and take notes here:
1. <u>Number Sentence</u>:

True or False

Determine whether the following number sentences are TRUE or FALSE.

a. $4 + 8 = 10 + 5$

b. $\frac{1}{2} + \frac{5}{8} = 1.2 - 0.075$

c. $(71 \cdot 603) \cdot 5876 = 603 \cdot (5876 \cdot 71)$

d. $13 \times 175 = 13 \times 90 + 85 \times 13$

e. $(7 + 9)^2 = 7^2 + 9^2$

f. $\pi = 3.141$

Vocabulary 2

Watch the video and take notes here:

    2. <u>Algebraic Equation</u>:

Analyzing Algebraic Equations

Watch this video and take notes:

Write Your Own Equations

In the last video I gave you examples of equations that have "All Solutions", "Some Solutions," or "None". Now it's your turn to write an equation for each of the three different types.

All Solutions	Some Solutions	No Solution

Practice 1

Fill in the blanks with the appropriate values that complete the statements.

a. Let _____. Then $7 + x = 12$ is true.

b. Let _____. Then $3r + 0.5 = \frac{37}{2}$ is true.

c. $m^3 = -125$ is true for _____.

d. A number x and its square, x^2, have the same value when _____.

e. The average of 7 and n is -8 if _____.

f. Let _____. Then $2a = a + a$ is true.

g. $q + 67 = q + 68$ is true for _____.

Exit Ticket

Determine whether the following number sentences are true or false.

1.) $(123 + 54) \cdot 4 = 123 + (54 \cdot 4)$

2.) $(2 \cdot 2)^2 = \sqrt{256}$

In the following equations, let $x = -3$ and $y = \frac{2}{3}$. Determine whether the following equations are true or false.

3.) $x + 3y = -1$

4.) $\frac{y}{x} = -2$

Find the value of x to make the statement true.

5.) $x + 2 = 9$

Fill in the blank with the variable term so that the given value of the variable will make the equation true. For example, your answer might say "x" or maybe "5x".

6.) _____ $+ 4 = 12; x = 4$

Fill in the blank with a constant term so that the given value of the variable will make the equation true.

7.) $4y -$_____ $= 100; y = 25$

8.) Generate an equation that is true when $x = 4$.