## Lesson 2: Truth and Equations

Let's use equations to represent stories and see what it means to solve equations.

### 2.1: Three Letters

1. The equation could be true or false.
   1. If is 3, is 4, and is 5, is the equation true or false?
   2. Find new values of , , and that make the equation true.
   3. Find new values of , , and that make the equation false.
2. The equation could be true or false.
   1. If is 3, is 4, and is 12, is the equation true or false?
   2. Find new values of , , and that make the equation true.
   3. Find new values of , , and that make the equation false.

### 2.2: Storytime

Here are three situations and six equations. Which equation best represents each situation? If you get stuck, consider drawing a diagram.

1. After Elena ran 5 miles on Friday, she had run a total of 20 miles for the week. She ran miles before Friday.
2. Andre’s school has 20 clubs, which is five times as many as his cousin’s school. His cousin’s school has clubs.
3. Jada volunteers at the animal shelter. She divided 5 cups of cat food equally to feed 20 cats. Each cat received cups of food.

### 2.3: Using Structure to Find Solutions

Here are some equations that contain a **variable** and a list of values. Think about what each equation means and find a **solution** in the list of values. If you get stuck, consider drawing a diagram. Be prepared to explain why your solution is correct.

List:

0.01

0.1

0.5

1

2

8.5

9.5

16.7

20

400

600

1400

#### Are you ready for more?

One solution to the equation is , , .

How many different whole-number solutions are there to the equation ? Explain or show your reasoning.

### Lesson 2 Summary

An equation can be true or false. An example of a true equation is . An example of a false equation is .

An equation can have a letter in it, for example, . This equation is false if is 3, because does not equal 8. This equation is true if is 7, because .

A letter in an equation is called a **variable**. In , the variable is . A number that can be used in place of the variable that makes the equation true is called a **solution** to the equation. In , the solution is 7.

When a number is written next to a variable, the number and the variable are being multiplied. For example, means the same thing as . A number written next to a variable is called a **coefficient**. If no coefficient is written, the coefficient is 1. For example, in the equation , the coefficient of is 1.



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