Math 191 Fundamentals of Mathematics II
9.3 Equations for Different Purposes
April 16, 2014

Equations versus Expressions

An _____ is a _____ of _____. Grammatically, it is a _____.

On the other hand, an _____ is a _____ that one _____ is _____ another. Grammatically, it is a _____.

As sentences, equations can be _____ or _____. For example:

The equals sign tells us that the _____ and the _____ of the equation _____.

Students need to remember that when they use the equals sign, the two sides must be _____ _____ For example:

Different Kinds of Equations

- Equations can _____

  For example:

  Note: Make sure students don't think of the equals sign as meaning "calculate an answer." The equals sign means that

- Equations can be used in _____

  An _____ is a _____ that is _____. For example:

  We can use identities to simplify calculations. For example:

- Equations can _____

  An equation that relates _____ is sometimes called a _____. For example, we have seen:

- Equations can _____

  We commonly use equations and _____ to solve _____.

Writing Equations to Relate Quantities and for Word Problems

When writing equations for word problems or to relate quantities, we first must _____ _____. When we do this, we must make sure that we accurately describe what the variable stands for. The variable stands for a _____ and is NOT a label.

1. For each of the following situations, write the corresponding equation. Be sure to carefully define each variable.

(a) To make concrete, you need 3 times as much sand as cement.

(b) Markus took $\frac{1}{3}$ of the money out of his bank account last week and put \$200 back in his account this week. He has \$500 in his account now.

(c) Two-thirds of the water in a bathtub is drained out, and then another 2.5 liters is bailed out of the tub. When another quarter of the water is drained, 4 liters are left in the tub.

2. For each of the following equations, write a corresponding word problem. Be sure to define the variable x in each case.

(a) $x - \frac{1}{4}x + 30 = 150$

(b) $x - \frac{1}{4} + 30 = 150$

(c) $(x + 30) - \frac{1}{4}(x + 30) = 150$