

# NAMING PROBLEMS AND WRITING OUT THE PROCEDURES

## NAMING A PROBLEM

Naming a problem helps you put math into words, think about the method being used to solve the problem, and what steps are involved every time you attempt to solve this type of problem.

When you encounter a new type of problem, create an index card with the NAME at the top, the METHOD in words, and an example on the back (you might even want to reference the page number from your book)

An example from basic math:

Problem:  $\frac{1}{2} + \frac{1}{3}$

Name: adding fractions

Method: Step 1: Find the least common denominator (LCD), if the denominators are not the same.  
Step 2: Rewrite each fraction using the LCD.  
Step 3: Add numerators (but not denominators).  
Step 4: Reduce resulting fraction, if possible.

You may want to go into more detail. For example, you might want to write down the process of finding the LCD.

An example from elementary algebra:

Problem:  $(-2) + (-5)$

Name: addition of integers

Method: Case 1: If the integers have the same sign, then add the unsigned numbers together and keep the sign.  
Case 2: If the integers have different signs, then subtract the unsigned numbers and keep the sign of the larger (unsigned number).

(Resource: Overcoming Math Anxiety by Davidson & Levitov, HarperCollins College Publishers, 1993)

## EXAMPLES OF NAMING PROBLEMS AND WRITING METHODS

1. Problem: Solve for  $x$ :  $2x + 4x - 3 = 3$

Name: solving a linear equation

Method: Step 1: Combine like terms on each side of the equation.  
Step 2: Add (or subtract) the same terms to both sides of the equation as necessary, to separate variable terms from the constant terms.  
Step 3: Multiply (or divide) the same factor on both sides of the equation, in order to isolate the variable completely.

Work the problem:  $2x + 4x - 3 = 3$

$$6x - 3 = 3$$

$$6x = 6$$

$$x = 1$$

The answer is  $x = 1$

2. Problem: Solve for  $x$ :  $2x^2 + 4x - 3 = 3$

Name: solving a quadratic equation

Method: Step 1: Put the equation in the form  $ax^2 + bx + c = 0$ , if it is not already.

Step 2: Factor the left side of the equation, if possible.

Step 3: If you can factor:

a. Set each factor equal to zero.

b. Solve each of the resulting linear equations for  $x$ .

Step 4: If you cannot factor, use the quadratic formula to solve for  $x$ . (You may want the formula her or on another card.)

Work the problem:  $2x^2 + 4x - 3 = 3$

$$2x^2 + 4x - 6 = 0$$

$$2(x^2 + 2x - 3) = 0$$

$$2(x - 1)(x + 3) = 0$$

$$2(x - 1) = 0 \text{ and } (x + 3) = 0$$

$$x = 1 \text{ or } x = -3$$

The answers are  $x = 1$  or  $x = -3$