

## 6 Word Problem Solving Strategies to Help Reduce Math Anxiety

<http://www.tutorfi.com/Math/Solvemathwordproblems>

Many students fear and despise the mathematics story problems (word problems) that they encounter in their classes and could use a few word problem solving strategies to help solve them. Math anxiety is a real life experience and is usually made worse by the thought of having to solve a story problem. The truth is, life itself is made up of a long series of story problems and those that require the use of our math skills to solve are not difficult once a few simple strategies are learned. Below are a few word problem solving strategies that may help to reduce math anxiety.

Story problems usually contain key words or phrases that tell what operation(s) need to be performed with the numbers. Learn to look for these word clues:

ADDITION: add (to), sum, plus, more than, increased by

SUBTRACTION: subtract (from), difference, minus, less than, decreased by, how many more?

MULTIPLICATION: multiply, product, times, twice, three (four, five, etc.) times, percent

DIVISION: divide, quotient, share equally

When attempting to solve word problems, if an appropriate mathematical operation is not obvious – just try something. If the wrong method is selected, one will at least learn what does not work. After all, if something isn't tried, nothing will be learned.

Here is a basic procedure to follow:

- Read the problem carefully and find out what is being asked for. Don't try to understand the whole problem the first time through, just determine what the main question is.
- Go back and re-read the problem to see what information has been given that will be helpful in answering the main question.
- Draw an appropriate figure or diagram that might be helpful.
- Find any word clues that will help determine what operations are needed.
- Perform the required operations.
- Finally, mentally check the answer to see if it makes sense and is reasonable. Be especially aware of the given units of measure (ft., in., lb., oz., gal., etc.) and be sure the answer is expressed in the correct units.

Below are six additional and proven word problem solving strategies that will be helpful in solving story problems:

Word Problem Solving Strategies Tip #1- Draw a Figure or Diagram

This is the basic strategy to use when help is needed to visualize what is wanted in a problem and a sure-fire way to clear out any mental fog that exists. Labeling the figure with all the known information will keep everything straight and avoid getting lost in the words.

#### Word Problem Solving Strategies Tip #2- Put Data in a Table

Look for patterns, a table is a great method for organizing information and once the information is in the table, it is a lot easier to find a pattern in the data.

#### Word Problem Solving Strategies Tip # 3- Cut and Try Method

This method involves taking a guess at the answer and checking it against the desired answer and then adjusting the first guess (and any subsequent guesses) to get closer to the desired result.

An example of this method is used in zeroing an artillery piece on its target. An observer gives his best guess of the target coordinates, a round is fired, the location of the hit is observed and the coordinates adjusted accordingly. The process is repeated until a hit is registered on the target.

#### Word Problem Solving Strategies Tip # 4- Solve a Simpler Problem

Using a simpler version of a problem can be helpful in suggesting a problem solving approach.

A well-known example of this method involves deciding how many fence posts are needed for a fence of given length if the posts are to be spaced at 10 foot intervals. Draw a diagram of a fence with two or three posts, observe the pattern and apply it to the longer fence in the problem.

#### Word Problem Solving Strategies Tip # 5- Work Backward

Solving problems by working backward is exactly what we do when solving linear equations.

For example: The equation  $9x - 13 = 32$  means that 13 subtracted from the product of  $x$  multiplied by 9 results in 32. So we reverse those operations to find  $x$ . Add 13 to each side of the equation and then divide both sides by 9.

#### Word Problem Solving Strategies Tip # 6- Dimensional Analysis

Dimensional Analysis is one of the most useful methods for solving story problems. The great thing about specifying the units of the measurements (besides clarifying what we are talking about) is that they act just like numbers in arithmetic operations. All we do to solve a problem is put the units in the right order to produce the correct units for the answer.

For example: If a car traveled 395 kilometers in 210 minutes, what was the average mph?

Put the units in order so that cancellations will result in the desired combination:

$$\text{Km/min} \times \text{mi/km} \times \text{min/hr} = \text{mi/hr}$$

Next, plug in the given information and carry out the arithmetic operations.

$$395 \text{ km}/210 \text{ min} \times 0.621 \text{ mi/km} \times 60 \text{ min/hr} = 70 \text{ mi/hr or } 70 \text{ mph}$$

In summary, if students afflicted with “math anxiety” can take a deep breath and approach the story problems with calmness and the outlined word problem solving strategies, life will take on a new beauty and serenity. Just remember to:

- Read the problem carefully
- Look for the operations key words
- Pick a logical strategy from the list above to find the solution

Don't forget to make your work neat and logical and have some fun – story problems are just puzzles to solve.