

## Tips, Tricks and Strategies: Help Solving Word Problems

If you need help solving word problems you've come to the right place. Math has always been a fascinating subject to me because of how logical and precise it is. It's similar to learning another language and, in the case of solving word problems, very much like solving a mystery. If you are going to become good at solving word problems, you have to be a good investigator and be able to pick up on clues that will help you solve the mystery. Working with word problems requires reading comprehension as well as the ability to solve math equations. With that said, the purpose of this article is to offer help solving word problems and to provide aspiring mathematicians with a strategy for solving these problems.

The length of an NBA basketball court is 44 feet more than it is wide. Express the length of the court in terms of its width.

The first step to working with word problems is simple, but crucial. Read the entire problem... then read it again! As basic as this may sound, this is where reading comprehension skills come in to play. It is during this crucial time that you must do the following things:

1. Identify the information that you have:

The court is 44 feet longer than it is wide.

2. Identify the information that you don't have (and still need):

The length of the court.

3. Determine what the word problem is asking for:

An equation expressing length in terms of width.

The next step is to begin organizing your clues. Start by first assigning variable names to pieces of information you have and do not have. The name(s) should be clear and meaningful. So we will assign the length of the basketball court the variable name "L" and the width the variable name "W".

One thing that has always helped me in understanding concepts is drawing them out on paper. Typically, when one can visualize a concept, he or she has an easier time understanding it, whether it's mathematics or anything else. So after you identify the information that you have and assign your unknown variables, draw a picture. Be sure to label it with known info and unknown variables.

The last step is to search the word problem for keywords. Some words will tell you what mathematical operation is needed or at work in finding the solution. Listed in the table below are a few of these terms:

Addition: Total, sum, increased by, more than, altogether/together, combined, in all, or plus.

Subtraction: Difference, less/fewer than, decreased by, minus, or less.

Multiplication: Multiplied by, times, of, or product.

Division: per, a, out of, ratio of, quotient of, or percent.

Equals: Is, are, was, were, gives, or yields.

Using our basketball court example, we are told that the length of the court is 44 feet more than it is wide. There are 2 keywords/clues we can identify in this statement; “more than” which indicates that addition (+) will be the mathematical operation that will be at work here and “is” which can be translated as “equals” or “=”.

Here is where we must make our translation from English terms to mathematical terms to come up with an equation. We are asked to express the length of the court in terms of its width. We need to come up with an algebraic equation showing the length “L” written in terms of the width “W”.

Here is the translation:

$$L = 44 + W$$

The Length “is” 44 feet “more than” the width.

So the answer to our word problem is the algebraic expression  $L=W+44$ .

Now just for kicks and giggles, let’s look at a few more simple examples of translating from English to mathematical equations after identifying keywords.

Example #1 Write the sum of y and 16 as an algebraic expression.

This can be written as “y + 16”

Example #2 Write the difference between 2x and y as an algebraic expression.

This can be written as “2x – y”

Example #3 Write the ratio of 6 more than 2 times y to x as an algebraic expression.

This can be written as “(2y + 6) / x”

The key to help solving word problems is developing the ability to identify keywords and

translate phrases and sentences into mathematical equations. As with everything else in mathematics, this skill will only be sharpened after doing lots and lots of these problems. After that, whenever you come across a word problem you will be confident in your ability to tackle it instead of looking at it and thinking to yourself...."Word Problems...Ughh!!!"

Happy problem solving!