Knowing what "percent" means will help a lot.

Elementary algebra
Class notes
Percent and Mixture Problems (section 2.6)

"Percent" means "per 100" or "part of 100"

For example, 20% means "20 parts out of every 100 parts". We could write 20% as $\frac{20}{100}$ or .20 (if we do that division).

Do you remember the shortcut for turning percents into decimals?

expl 1: What number is 16% of 70?

These problems can usually be directly translated.

Percent problems compare parts to the whole. Imagine you have a whole 70 dollars or meters or frogs or whatever. And, 16% of that 70 (or 11.2 dollars, meters, frogs, etc.) would be a **part of that whole**. The trick is to figure out what is the part and what is the whole in these problems.

$$percent = {}^{part}\!/_{whole}$$

or

$$percent \cdot whole = part$$

Alternatively,

$$\frac{percent\ number}{100} = \frac{part}{whole}$$

expl 2: The number 45 is 25% of what number?

Identify the part and the whole. Use x to make an equation.

Check yourself! Does your answer make sense?

expl 3: The number 14.8 is what percent of 60?

Identify the part and the whole. Use *x* to make an equation.

expl 4: Solve. Round to the nearest cent.

A music store is advertising a 25%-off sale. Find the discount and sales price of a CD that sells regularly for $13.

Make sure you answer the question.

expl 5: Solve. Round to the nearest whole percent.

The cost of attending a private college rose from $19,000 in 2000 to $22,200 in 2006. Find the percent increase.

Identify the part and the whole. Use *x* to make an equation.

Mixture Problems:

Some people swear by setting up a table for mixture problems. You may also find thinking about the physical situation and the verbal models below will help. I imagine the **pure substance** (pure antibiotics, in example 6 below) settling to the bottom of each bottle of solution. This is pure, 100% concentrate. Then I picture these amounts of pure substance combining when I pour the two solutions together.

[amount of **pure substance** in first solution] + [amount of **pure substance** in second solution] = [amount of **pure substance** in **final** solution]

[amount of **pure substance** in a given solution] = [percent concentration (decimal form)] * [amount of **total solution**]

expl 6: Solve. Complete the table to help with calculations.

How many cubic centimeters (cc) of a 25% antibiotic solution should be added to 10 cc of 60% solution in order to get a 30% antibiotic solution?

Let x be what you are asked to find.

	Number of cc *	Antibiotic Strength =	Amount of **Pure** Antibiotic
25% Solution			
60% Solution			
30% (Final) Solution			

Always use decimal forms of percentages in calculations.

expl 7: The owner of a chocolate shop wants to make a new trail mix. How many pounds of chocolate-covered peanuts worth \$5 a pound should be mixed with 10 pounds of granola bites worth \$2 a pound to make a mixture that will sell for \$3 a pound?