



PERCENTAGES

Think of percentages as fractions with a denominator of 100. *In fact, percentage means "per hundred."*

The basic percent equation is the following:

$$\frac{\text{is}}{\text{of}} = \frac{\%}{100}$$

The placement of numbers in the equation depends on what the question asks.

Example 1

What percent of 40 is 20?

The 20 fills in the 'is' portion, while 40 fills in the 'of.' The question asks for the percent, so that will be x, the unknown. The equation is set up as:

$$\frac{20}{40} = \frac{x}{100}$$

Solving the equation by cross-multiplying, the problem becomes $40x = 20(100)$. Solving for x gives the answer: $x = 50$. *50 percent of 40 is 20.*

Percentages and Decimals

Since a percentage is based on "*per hundred*," decimals and percentages can be converted by multiplying or dividing by 100.

$$35\% = 0.35$$

$$66.5\% = 0.665$$

$$12.34\% = 0.1234$$

$$425\% = 4.25$$

To convert a percentage to a decimal, move the decimal point two places to the left and remove the % sign. To convert a decimal to a percentage, move the decimal point two places to the right and add a "%" sign.

Percentages and Fractions

Remember: "*per hundred*." Because a percentage is a number *per hundred*, it can be converted into a fraction by making the number in the percentage the numerator and putting 100 as the denominator:

$$19\% = \frac{19}{100}$$

$$81\% = \frac{81}{100}$$

Think of a percentage like 51% as being 51 over (or 'out of') 100. To convert a percentage into a fraction, follow the same logic. If the fraction happens to have 100 in the denominator, it becomes very easy: just take the numerator and add a percent symbol (ie. $28/100$ becomes 28%).

If the denominator is not 100, simply divide the numerator by the denominator to get a decimal, then convert to a percentage:

$$\frac{12}{16} = 0.75 = 75\%$$