Fractions to decimals to percents

In this lesson we'll learn how to convert between fractions, decimals, and percents. We can always use a proportion to help us.

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

We can also use these rules:

1. A percent means some indicated part out of 100. For instance, 4% means 4 out of every 100.

2. To change a percent to a decimal, divide by 100. For instance, to change 49% to a decimal, divide it by 100.

$$49\% = \frac{49}{100} = 0.49$$

3. To change a decimal to a percent, multiply by 100. For instance, to change 0.05 to a percent, multiply it by 100.

$$0.05 \cdot 100 = 5\%$$

4. To change a fraction to a percent, first change the fraction to a decimal, then change the decimal to a percent. For instance, to change $1/4$ to a percent, first change it to 0.25, and then multiply 0.25 by 100 to get the percent.

$$\frac{1}{4} = 0.25$$

$$0.25 \cdot 100 = 25\%$$

5. To find a percent of a number in decimal form, change the percent to a decimal and multiply it by that number. For instance, to find 6% of 99, convert 6% to a decimal by dividing by 100.

$$\frac{6}{100} = 0.06$$

Then multiply 0.06 by 99.

$$0.06 \cdot 99 = 5.94$$

6% of 99 is 5.94

Let's look at a few other examples of percent problems.

Example

Find a mixed number that represents the given value.

9% of 160

To find 9% of 160, we set it up as

$$\frac{9}{100} \cdot 160$$

$$\frac{9}{5} \cdot 8$$

$$\frac{72}{5}$$

5 goes into 72 fourteen times, with a remainder of 2, so we can change the improper fraction to a mixed number and get

$$14\frac{2}{5}$$

Let's look at one more example of converting fractions to percents.

Example

Convert the fraction to a percent.

$$\frac{120}{180}$$

First, since the fraction isn't already in lowest terms, we'll reduce it to lowest terms.

$$\frac{120 \div 60}{180 \div 60}$$

$$\frac{2}{3}$$

One way we can convert this fraction to a percent is to first convert it to a decimal using long division, and then convert the decimal to a percent by moving the decimal place, or we can set up the proportion

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

and use the variable x for the missing piece (the percent).

$$\frac{2}{3} = \frac{x}{100}$$

$$2 \cdot 100 = 3x$$

$$200 = 3x$$

$$x = \frac{200}{3}$$

$$x \approx 66.66...\%$$

We could round a repeating decimal to an indicated decimal place. For example, if we round $66.66...$ to the hundredths place (round it to two decimal places), we'll get 66.67%.