Finding a Percent

Of a Number

To find a percent of a number, set up equivalent fractions using the template below and then simplify the fractions as needed to find the missing value.

The template is

$$\frac{part}{whole} = \frac{is}{of} = \frac{\%}{100}.$$

For example, let's solve the problem "What number is 45% of 50?"

Using the template above, I can set up the equivalent ratios $\frac{x}{50} = \frac{45}{100}$. The number with the percent sign always goes above the 100. The number closest to the "is," that is without the % sign, goes in the top left spot as the part. The number closest to the "of," that is without the % sign, goes in the bottom left spot as the whole. We use variables for the missing information, in this case, the part.

Now that I have my equivalent ratios, I should realize that I can divide 100 by 2 to get 50. So I can divide 45 by 2 to get x, which is 22.5. So the answer is x = 22.5.

Let's do another example. Let's answer the question "60% of what number is 90?"

Using the template above, I can set up the equivalent ratios $\frac{90}{x} = \frac{60}{100}$. I should see right away that 60 does not go into 90 evenly. So this time, I must do something to the fraction $\frac{60}{100}$ until I can do something to the numerator to get to my other numerator, which is 90. So let's simplify the fraction by dividing the numerator and denominator by the GCF of 60 and 100, which is 20. So doing this yields $\frac{60}{100} = \frac{60 \div 20}{100 \div 20} = \frac{3}{5}$. Now I can see that 3 goes into 90 exactly 30 times. So I can multiply the numerator and denominator by 30 to find my missing value, x. So,

$\frac{3}{5} = \frac{3 \cdot 30}{5 \cdot 30} = \frac{90}{150}$. So, after a small amount of manipulation, we have the equivalent ratios as follows:

$\frac{60}{100} = \frac{3}{5} = \frac{90}{150} = \frac{90}{x}$. So by comparing the last two ratios, x has to be 150.