Percent Problems

Objective 1

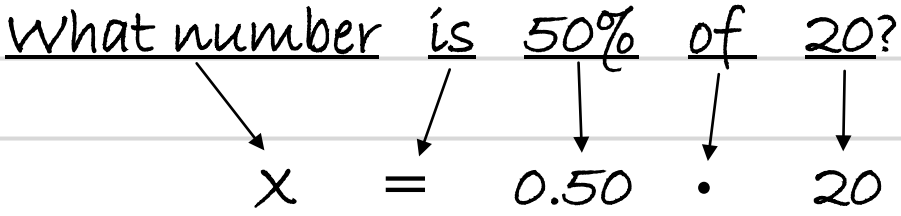
Solve a Basic Percent Problem

Basic percent problems are problems that are generally given as a simple word statement.

For example, suppose you were asked the question, "**what number is 50% of 20?**"

To solve this basic percent problem, we want to translate the given word statement into a mathematical equation using a variable to represent the unknown quantity. Then we solve the equation and answer the question.

Let's now translate the question "**what number is 50% of 20?**" into an equation.



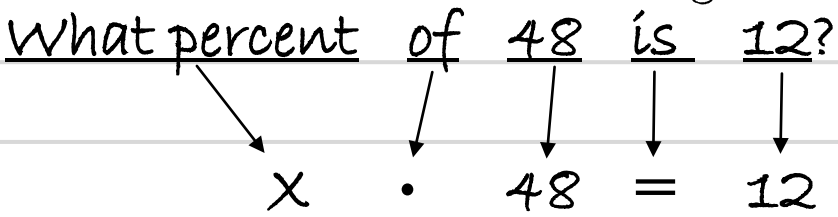
Notice that the unknown number is represented by **x**, the "is" by an **equals sign**, 50% by **0.50**, "of" by a **multiplication symbol**, and the 20 represents **itself**.

The equation $x = 0.50 \cdot 20$ tells us that $x=10$. So to properly answer the question, what number is 50% of 20, we should write:

10 is 50% of 20.

Example 1: What is 38% of 90?

Suppose we are asked to the question, **what percent of 48 is 12?** Again, we want to translate the given word statement into a mathematical equation using a variable to represent the unknown quantity.



Here we have the equation $x \cdot 48 = 12$ or $48x = 12$. Solving for x we get, $x = \frac{1}{4}$ or $x=0.25$.

Because x in this problem represents a percent, we convert the decimal number to a percent by moving the decimal point two places to the right. This gives us x=25%.

To properly answer the question, we write the following: **25% of 48 is 12.**

Example 2: What percent of 32 is 20?

Example 3: 29 is 4% of what number?

$$29 = 0.04 \cdot x$$

Example 4: 30% of 60 is what number?

$$0.30 \cdot 60 = x$$

Example 5: What percent of 91 is 52? Round your final answer to the nearest tenth of a percent.