

Three Ways to Look at Percent

Name: _____
Date: _____

There are really three types of problems involving percent. To understand these problems, you must first understand the proportion that is true for every percent problem:

$$\frac{\text{Part}}{\text{Whole}} = \frac{\text{Percent}}{100}$$

Remembering this proportion can help you solve just about any percent problem. Let's examine the three facts below that will be used to create the three types of percent problems:

1. There are 25 students in a class.
2. Of those students, 18 are helping in the library.
3. That means that 72% of the students are in the library.

These three facts can create the proportion below:

$$\begin{array}{l} \boxed{\text{Part}} \rightarrow \frac{18}{25} \\ \boxed{\text{Whole}} \rightarrow \end{array} = \frac{72}{100} \leftarrow \boxed{\text{Percent}}$$

The three types of percent problems that you will come across can be classified as:

1. Finding the Percent
2. Finding the Part
3. Finding the Whole

Type I: Finding the Percent

Example: 18 students are helping in the library.

What percent are in the library if there are 25 students in the whole class?

- Solution:
1. You are asked to find (part, whole, or percent ?)
 2. You need to set up the proportion:

$$\frac{18}{25} = \frac{?}{100}$$

3. To find the missing number, figure out the scale factor

$$\frac{18}{25} = \frac{?}{100} \quad \text{Scale factor is } \times 4$$
$$\frac{18 \times 4}{25 \times 4} = \frac{72}{100}$$

72% of the students are in the library.

Type II: Finding the Part

Example: There are 25 students in a class.

If 72% of them are in the library helping, what number is that?

- Solution:
1. You are asked to find (part, whole, or percent ?)
 2. You need to set up the proportion:

$$\frac{?}{25} = \frac{72}{100}$$

3. To find the missing number, figure out the scale factor

$$\frac{?}{25} = \frac{72}{100} \quad \text{Scale factor is } \div 4$$
$$\frac{18}{25} = \frac{72 \div 4}{100 \div 4}$$

18 students are in the library.

Type III: Finding the Whole

Example: *18 students are helping in the library.*

If this is 72% of the class that is helping, how many students are in the whole class?

Solution: 1. You are asked to find the (part, whole, or percent?)

2. You need to set up the proportion:

$$\frac{18}{?} = \frac{72}{100}$$

3. To find the missing number, figure out the scale factor

$$\frac{18}{?} = \frac{72}{100} \quad \text{Scale factor is } \frac{?}{72} = 4$$

$$\frac{18}{25} = \frac{72 \div 4}{100 \div 4}$$

25 students are in the whole class.