**Percent and Rates per 100**

**Percent** is defined in many ways, below are some of them:

* It is a number expressed as a fraction of 100
* It means parts per 100
* It is a ratio that tells us “out of 100.
* It is a ratio where the second is 100.

The figure tells us that:

* there are “12 parts per 100”
* a ratio of 12 out of 100
* a ratio expressed as 12:100





The percent symbol “**%**” is used as an easy way to write a fraction with a common denominator of 100.

So instead of writing “12 out 100”, we can write it as 12%.

**Percent is a Rate per 100!**

**Percent can be expressed in many ways…**

As a fraction: $\frac{12}{100}$

As a ratio: 12:100

As a decimal: 0.12

Using the percent symbol: 12%

**Sample Problem 1:**

**Express the following quantities as percent.**

a**.** 18 out of 100 b. 35 out of 100

 Solution: 18% Solution: 35%

**Writing Percent as Fractions Over 100**

Expressing percent as a fraction is very easy! Remember that percent means “part of the whole”.

**So 30% expressed as a fraction over 100 is** $\frac{30}{100}$ **.**

**Sample Problem 2:**

**Write the following as fractions over 100.**

a. 25% b. 67%

 Solution: $\frac{25}{100}$ Solution: $\frac{67}{100}$

**Writing Percent to a Decimal** (to the hundredths place)

There are a number of ways to express percent to decimals.

1. **Dividing by 100**

Step 1: Express the given percent as a fraction of 100

Step 2: Divide the resulting fraction.

**Example: Express 46% in decimal.**

Step 1: $\frac{46}{100}$

 Step 2: 0.46

 46% = 0.46

1. **Move the Decimal**

One of the easiest ways to convert a percent to a decimal is by simply moving it two places to the left!

**Example: Express 35% in decimal.**

 35% = 0 . 3 5

1. **Multiplying the Given Percent by 0.01**

**Example: Express 24% in decimal.**

24% x 0.01 = 0.24

**Sample Problem 3:**

**Express the given percent into decimal** (to the nearest hundredths).

1. 33% b. 51% c. 75. 6873%

Solution: 0.33 Solution: 0.51 Solution: 0.76

**Finding the Percent of a Given Number**

To find the percent of a given number follow the steps below:

Step 1: Change the given percent to decimal.

Step 2: Multiply the quantities.

Example: What is 20% of 70?

Step 1: 20% = 0.20

Step 2: (0.20)(70) = 14

 20% of 70 is 14

**Sample Problem 4:**

What is 15% of 20

Solution: (0.15)(20) = 3