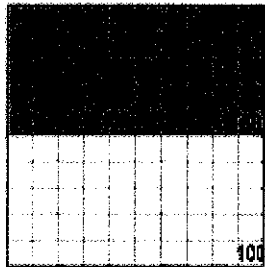


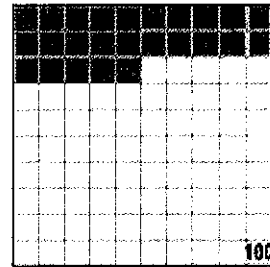
Percentages (%)

When you say "Percent" you are really saying "per 100"

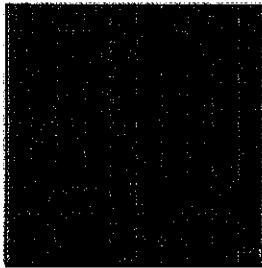


So **50%** means 50 per 100
(50% of this box is green)

And **25%** means 25 per 100
(25% of this box is green)



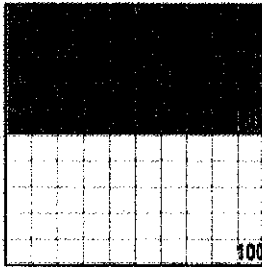
Examples:



100% means all.

Example:

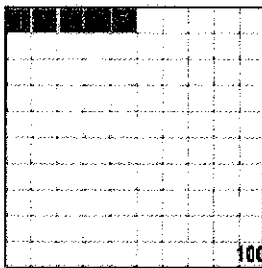
$$100\% \text{ of } 80 \text{ is } \frac{100}{100} \times 80 = 80$$



50% means half.

Example:

$$50\% \text{ of } 80 \text{ is } \frac{50}{100} \times 80 = 40$$



5% means $\frac{5}{100}$ ths.

Example:

$$5\% \text{ of } 80 \text{ is } \frac{5}{100} \times 80 = 4$$

Using Percent

Because "Percent" means "per 100" think:

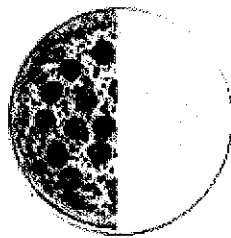
"this should be divided by 100"

So **75%** really means $\frac{75}{100}$

And **100%** is $\frac{100}{100}$, or exactly **1** (100% of any number is just the number, unchanged)

And **200%** is $\frac{200}{100}$, or exactly **2** (200% of any number is twice the number)

A Percent can also be expressed as a *Decimal* or a *Fraction*



A Half can be written...

As a percentage: 50%

As a decimal: 0.5

As a fraction: $\frac{1}{2}$

Read more about this at [Decimals, Fractions and Percentages](#).

Some Worked Examples

Example: Calculate 25% of 80

$$25\% = \frac{25}{100}$$

$$\text{And } \frac{25}{100} \times 80 = \mathbf{20}$$

So 25% of 80 is **20**

Example: 15% of 200 apples were bad. How many apples were bad?

$$15\% = \frac{15}{100}$$

$$\text{And } \frac{15}{100} \times 200 = 15 \times \frac{200}{100} = 15 \times 2 = \mathbf{30 \text{ apples}}$$

30 apples were bad

Example: if only 10 of the 200 apples were bad, what percent is that?

As a fraction, $10/200 = 0.05$

As a percentage it is: $(10/200) \times 100 = 5\%$

5% of those apples were bad



**Example: A Skateboard is reduced 25% in price in a sale.
The old price was \$120.
Find the new price.**

First, find 25% of \$120:

$$25\% = \frac{25}{100}$$
$$\text{And } \frac{25}{100} \times \$120 = \mathbf{\$30}$$

25% of \$120 is \$30

So the **reduction** is \$30

Take the reduction from the original price

$$\$120 - \$30 = \$90$$

The Price of the Skateboard in the sale is **\$90**

The Word

"Percent" comes from the latin *Per Centum*. The latin word *Centum* means 100, for example a Century is 100 years.

Percent vs Percentage

My Dictionary says "Percentage" is the "result obtained by multiplying a quantity by a percent". So 10 **percent** of 50 apples is 5 apples: the 5 apples is the **percentage**.

But in practice people use both words the same way.