

PERCENTAGE



PERCENTAGE

Percentage is a relative value denoting one hundredth of any quantity. One percent (symbolized as 1%) is one hundredth of any number, quantity, etc.

Fractions as Percentages:

A fraction whose denominator is 100 is called a percentage and is equal to the same percentage as the numerator.

$$\begin{aligned}\text{i.e., } \frac{75}{100} &= 75 \times \frac{1}{100} \\ &= 75 \text{ hundredths} \\ &= 75\text{th part of } 100 \\ &= 75\%.\end{aligned}$$

Ratio as percentage:

A ratio in which the second term is 100 is also called percentage.

$$\text{E.g. } 9:100 = \frac{9}{100} = 9\%$$

Conversion of Percentage to Fraction:

To convert percentage to fraction, we remove the percent sign (%) and divide the remaining number by 100.

Remove the percent sign (i.e. %) and divide the number by 100.

$$\text{Thus, } x\% = \frac{x}{100}, \text{ i.e. } 36\% = \frac{36}{100} = \frac{9}{25}$$

Conversion of Fraction to Percentage:

To convert a fraction to percentage we multiply the fraction by 100.

Multiply the fraction by 100 to get the required percentage and add the percentage sign %.

$$\text{Thus, } \frac{a}{b} = \left(\frac{a}{b} \times 100 \right) \%$$

$$\text{For example: } \frac{4}{5} = \left(\frac{4}{5} \times 100 \right) \% = 80\%$$

Conversion of decimal to percentage and percentage to decimal:

To convert decimal to percentage, we shift the decimal point two places to the right.

$$\text{For example: } 0.037 = 0.037 = \frac{37}{1000} = \left(\frac{37}{1000} \times 100 \right) \% = 3.7\%$$

$$0.275 = \frac{275}{1000} = \left(\frac{275}{1000} \times 100 \right) \% = 27.5\%$$

What percent of one number is equal to another number?

Suppose a and b are two numbers and we want to know what percent of a is of b ?

Let $x\%$ of ' a ' is equal to ' b '. Then, $\frac{x}{100} \times a = b$

$$\Rightarrow x = b \times \frac{100}{a} \Rightarrow x = \frac{b}{a} \times 100$$

“ “ Thus: b is $\left(\frac{b}{a} \times 100 \right) \%$ of a .

Increased and Decreased Percentage:

$$\text{Percentage increase} = \frac{\text{Changed value}}{\text{Original value}} \times 100$$

$$\text{Percentage decrease} = \frac{\text{Changed value}}{\text{Original value}} \times 100$$

Example: Express 75 paise as a percentage of ₹5.

Solution: We know that ₹5 = 500 paise

Suppose $x\%$ of ₹5 is equal to 75 paise.

Then, $x\%$ of ₹5 = 75 paise

$x\%$ of 500 paise = 75 paise

$$\Rightarrow \frac{x}{100} \times 500 = 75$$

$$\Rightarrow x = \frac{75 \times 100}{500}$$

$$\Rightarrow x = 15$$

Hence, 15% of ₹5 is 75 paise.