

fs4u

Percentages

‘How To’ Booklet 25

Percentages

One amount as a percentage of another amount.

Example

- 1 Find 12 as a percentage of 20

$$\text{Percentage} = \frac{12}{20} \times 100 = 60\%$$

- 2 Find 20p as a percentage of £2

NB both amounts must be in the same units so in this case the question becomes 20p as a percentage of 200p.

$$\text{Percentage} = \frac{20}{200} \times 100 = 10\%$$

A percentage of an amount

Example

Find 15% of £240

$$\text{Find 15\% of £240} = \frac{15}{100} \times £240 = £36$$

A ratio, fraction or decimal as a percentage

To convert a ratio, fraction or decimal to a percentage just multiply by 100

Examples

- 1 Write 7:25 as a percentage 7:25 can be written as $\frac{7}{25}$ 25
- $$\text{Percentage} = \frac{7}{25} \times 100 = \mathbf{28\%}$$

- 2 Write $\frac{3}{4}$ as a percentage
- $$\text{Percentage} = \frac{3}{4} \times 100 = \mathbf{75\%}$$

- 3 Write 0.62 as a percentage
- $$\text{Percentage} = 0.62 \times 100 = 62\%$$

Percentage profit and percentage loss

First find the profit or loss and then express this amount as a percentage of the cost price. (What you bought it for before you sold it).

Examples

- 1 Find the percentage profit when an article is bought for £20 and sold for £26.

$$\text{Profit} = £26 - £20 = £6$$

$$\text{Percentage profit} = \frac{6}{20} \times 100 = \mathbf{30\%}$$

- 2 Find the percentage loss when an article is bought for £40 and sold for £35

$$\text{Loss} = £40 - £35 = £5$$

$$\text{Percentage loss} = \frac{5}{40} \times 100 = 12 \frac{1}{2}\%$$

Simple Interest

Simple interest is calculated using the formula – $I = \frac{PRT}{100}$

where **I** is the interest

P is the principal (the initial amount invested)

R is the rate (percentage rate)

T is the time (in years)

Example

Find the simple interest when £600 is invested for 4 years at 5%.

$$P = £600 \quad R = 5\% \quad t = 4 \text{ years}$$

Substituting these values in the formula above

$$I = \frac{600 \times 5 \times 4}{100}$$

$$I = 120$$

The interest accrued after 4 years is £120.

Activity

- 1 Express the first amount as a percentage of the second amount.

- a 6 of 10 b 12 of 25 c 45 of 60
d 85p of £4 e 1500m of 10km

- 2 Find

- a 10% of 70 b 20% of 75 c 14% of 350
d 37% of £1050 e 62% of £174

- 3 Convert the following to percentages

- a 0.37 b 0.06 c 0.7 d 0.125
e 0.015 f $\frac{1}{4}$ g $\frac{3}{5}$ h $\frac{9}{10}$
i $\frac{5}{8}$ j $\frac{5}{6}$ k 4:5 l 6:25
m 11:20 n 3:8 o 85:120

- 4 Find the percentage profit or percentage loss in the following, where the first amount is the cost price and the second amount is the selling price (state in each case whether it is a profit or a loss).

- a £20, £26 b £15, £12 c £120, £125
d £150, £123 e £87, £92.50

- 5 Using the formula $I = \frac{PRT}{100}$ and setting your work out as in the example,
copy and complete the table below when you have obtained each answer.

	I	P	R	T
a		£100	3%	2 years
b		£500	4½%	5 years
c		£1200	7%	2 years
d		£870	3½%	2 years
e		£875	6½%	2 years