

Percentages

Type 2 — Finding the original value



This is the type that **most people get wrong** — but only because they **don't recognise** it as this type and don't apply this simple method:

- 1) Write the amount in the question as a **percentage of the original value**.
- 2) **Divide** to find **1%** of the original value.
- 3) **Multiply by 100** to give the original value (= 100%).

EXAMPLE:

A house increases in value by 20% to £72 000.
Find what it was worth before the rise.

Note: The **new**, not the original value is given.

- 1) An **increase** of 20% means £72 000 represents **120% of the original** value.
- 2) Divide by 120 to find **1%** of the original value.
- 3) Then multiply by 100.

$$\begin{array}{l} \div 120 \left\{ \begin{array}{l} \text{£72 000} = 120\% \\ \text{£600} = 1\% \end{array} \right. \\ \times 100 \left\{ \begin{array}{l} \text{£60 000} = 100\% \end{array} \right. \end{array}$$

If it was a **decrease** of 20%, then you'd put '£72 000 = 80%' and divide by 80 instead of 120.

So the original value was **£60 000**

Always set them out **exactly like this example**. The trickiest bit is deciding the top % figure on the right-hand side — the 2nd and 3rd rows are **always** 1% and 100%.

Type 3 — Simple Interest vs Compound Interest



- 1) There are two types of **interest** you could get asked about — **simple** and **compound**. Funnily enough, **simple interest** is the simpler of the two.
- 2) Simple interest means a certain percentage of the **original amount only** is paid at regular intervals (usually once a year). So the amount of interest is **the same every time** it's paid.

Compound interest is covered on the next page.

EXAMPLE:

Regina invests £380 in an account which pays 3% simple interest per annum.
How much interest will she earn in 4 years?

'Per annum' just means 'each year'.

- 1) Work out the amount of interest earned **in one year**:
 $3\% = 3 \div 100 = 0.03$
 $3\% \text{ of } \text{£}380 = 0.03 \times \text{£}380 = \text{£}11.40$
- 2) Multiply by 4 to get the **total interest** for **4 years**:
 $4 \times \text{£}11.40 = \text{£}45.60$

Fact: 70% of people understand percentages, the other 40% don't...

Learn the details for each type of percentage question, then turn over and write it all down.
Then try these Exam Practice Questions:

- Q1 A normal bottle of Kenny's Kiwi Juice contains 450 ml of juice. A special offer bottle contains 22% extra. How much juice is in the special offer bottle? [2 marks]
- Q2 Jenny bought a llama for £4500. She later sold it for £3285. Calculate Jenny's percentage loss. [3 marks]
- Q3 A car is reduced in price by 30% to £14 350. What did it cost before? [3 marks]
- Q4 Benny invests £1900 for 5 years in an account which pays simple interest at a rate of 2.2% per annum. How much interest will Benny earn in total? [3 marks]