

1 Fraction of an amount



- a) Work out $\frac{5}{8}$ of £76
- b) $\frac{3}{7}$ of a number is 54. What is the number?

$$\begin{aligned} \text{a) } 76 \div 8 \times 5 &= \pounds 47.50 \\ \text{b) } 54 \div 3 &= 18, 18 \times 7 \\ \hline \text{b) } 126 \end{aligned}$$

2 Percentage of an amount



- a) Work out 17.5% of 360 kg.
- b) Which is more, 35% of £84 or $\frac{2}{5}$ of £72?
Show how you know.

$$\begin{aligned} \text{a) } 0.175 \times 360 &= 63 \text{ kg} \\ \text{b) } 0.35 \times 84 &= \pounds 29.40, 72 \div 5 \times 2 = \pounds 28.80 \\ \hline \text{b) } 35\% \text{ of } \pounds 84 \end{aligned}$$

3 One number as a percentage of another



- a) Write 39 as a percentage of 650.
- b) A phone has 128 GB of storage. 84.8 GB is used.
What percentage of the storage is free?

$$\begin{aligned} \text{a) } 39 \div 650 \times 100 &= 6\% \\ \text{b) } 128 - 84.8 &= 43.2 \text{ GB} \\ \hline \text{b) } 43.2 \div 128 \times 100 &= 33.75\% \end{aligned}$$

4 Percentage change



- a) Increase £1250 by 8.5%
- b) A school's electricity use fell from 2400 kWh to 2034 kWh in a month. Work out the percentage decrease.

$$\begin{aligned} \text{a) } 1250 \times 1.085 &= \pounds 1356.25 \\ \text{b) } 366 \div 2400 \times 100 \\ \hline \text{b) } 15.25\% \end{aligned}$$

5 Reverse percentages



- a) A printer costs £174 including VAT at 20%. Work out its price without VAT.
- b) A price goes up by 25%. Later it comes down by 10%. It is now £81. What was it at the start?

$$\begin{aligned} \text{a) } 174 \div 1.2 &= \pounds 145.00 \\ \text{b) } 1.25 \times 0.9 &= 1.125 \\ \hline \text{b) } 81 \div 1.125 &= \pounds 72.00 \end{aligned}$$



Percentages, growth and decay

revision mat answers

Higher A

6 Simple interest



- a) £2400 is invested at 3.5% simple interest a year. Work out the interest after 4 years.
- b) £1800 is invested at 4% simple interest a year. After how many years is it worth £2160?

$$\begin{aligned} \text{a) } 2400 \times 0.035 &= 84, 84 \times 4 = \pounds 336.00 \\ \text{b) } 4\% \text{ of } 1800 &= 72 \text{ a year, } 360 \div 72 \\ \hline \text{b) } 5 \text{ years} \end{aligned}$$

7 Compound growth



- a) £5000 is invested at 3.2% compound interest a year. Work out its value after 6 years.
- b) Another account pays 3.5% simple interest a year. Which account is worth more after 6 years?

$$\begin{aligned} \text{a) } 5000 \times 1.032^6 &= \pounds 6040.16 \\ \text{b) } 5000 + 6 \times 175 &= \pounds 6050.00 \\ \hline \text{b) } \text{the simple interest account} \end{aligned}$$

8 Compound decay



The amount of a medicine in the blood falls by 18% each hour. At the start there are 250 mg.

- a) How much is left after 4 hours?
- b) After how many whole hours is there first less than 40 mg?

$$\begin{aligned} \text{a) } 250 \times 0.82^4 &= 113.0 \text{ mg} \\ \text{b) } 250 \times 0.82^9 &= 41.9, 250 \times 0.82^{10} = 34.4 \\ \hline \text{b) } 10 \text{ hours} \end{aligned}$$