

1 Simplifying ratios ☐

- a) Write 75 cm : 2.5 m in its simplest form.
b) Write 8 : 20 in the form 1 : n .

$$\begin{array}{l} 75 : 250 \\ \text{a) } 3 : 10 \\ \text{b) } 1 : 2.5 \end{array}$$

2 Sharing in a ratio ☐

£400 is shared by Ann, Ben and Cal in the ratio 2 : 3 : 5.

- a) How much does Cal get?
b) Cal gives a quarter of his share to Ann.
Write Ann : Ben : Cal now.

$$\begin{array}{l} 400 \div 10 = 40 \\ \text{a) } £200 \\ \text{b) } 130 : 120 : 150 \\ = 13 : 12 : 15 \end{array}$$

3 Ratios and fractions ☐

Cats : dogs at a rescue centre = 3 : 5.

- a) What fraction of the animals are cats?
b) The number of cats is what fraction of the number of dogs?

$$\begin{array}{l} 8 \text{ parts in all} \\ \text{a) } \frac{3}{8} \quad \text{b) } \frac{3}{5} \end{array}$$

4 Missing amounts ☐

A drink is juice : water = 2 : 9.
Jo uses 450 ml of water.

- a) How much juice does she use?
b) She adds more juice to make the ratio 1 : 3. How much juice does she add?

$$\begin{array}{l} \text{a) } 450 \div 9 \times 2 = 100 \text{ ml} \\ \text{b) } 450 \div 3 = 150, \\ 150 - 100 = 50 \text{ ml} \end{array}$$

5 Combining ratios ☐

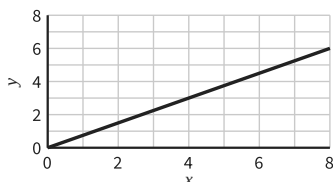
$a : b = 3 : 4$ and $b : c = 6 : 5$.

- a) Write $a : b : c$ in its simplest form.
b) $c = 40$. Find a .

$$\begin{array}{l} \text{a) } 9 : 12 \text{ and } 12 : 10, \text{ so } \\ 9 : 12 : 10 \\ \text{b) } 40 \div 10 = 4, a = 36 \end{array}$$

6 Ratios and linear functions ☐

- a) Write $y : x$ in its simplest form.
b) Find x when $y = 21$.



$$\begin{array}{l} \text{a) } 3 : 4, \text{ so } y = 0.75x \\ \text{b) } x = 21 \div 0.75 = 28 \end{array}$$

Ratio and proportion

revision mat answers



7 Direct proportion ☐

A car uses 6 litres of fuel to travel 80 km.

- a) How far can it travel on 15 litres?
b) Fuel costs £1.48 a litre. Find the cost of the fuel for 300 km.

$$\begin{array}{l} \text{a) } 80 \div 6 \times 15 = 200 \text{ km} \\ \text{b) } 300 \div 80 \times 6 = 22.5 \text{ litres} \\ 22.5 \times 1.48 = £33.30 \end{array}$$

8 Inverse proportion ☐

At 40 km/h a journey takes 3 hours.

- a) How long does it take at 60 km/h?
b) What speed is needed to take 1 hour 36 minutes?

$$\begin{array}{l} 40 \times 3 = 120 \text{ km} \\ \text{a) } 120 \div 60 = 2 \text{ hours} \\ \text{b) } 1 \text{ h } 36 \text{ min} = 1.6 \text{ h,} \\ 120 \div 1.6 = 75 \text{ km/h} \end{array}$$

9 Proportion formulae ☐

The extension, E cm, of a spring is directly proportional to the mass, m kg, hung on it. A 2.5 kg mass gives an extension of 6 cm.

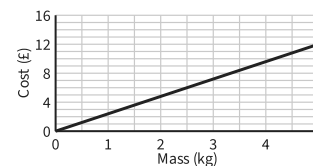
- a) Write a formula for E in terms of m .
b) The spring is safe up to 20 cm.
Find the greatest mass, to 1 decimal place.

$$\begin{array}{l} \text{a) } 6 \div 2.5 = 2.4, E = 2.4m \\ \text{b) } 20 \div 2.4 = 8.33..., \text{ so } 8.3 \text{ kg} \end{array}$$

10 Direct proportion graphs ☐

The cost of some nuts.

- a) Find the cost of 1 kg.
b) Find the cost of 12 kg.

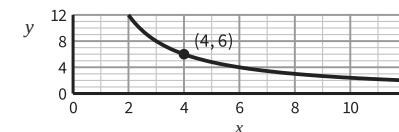


$$\begin{array}{l} \text{a) } 12 \div 5 = £2.40 \\ \text{b) } 12 \times 2.40 = £28.80 \end{array}$$

11 Inverse proportion graphs ☐

y is inversely proportional to x .

- a) Find a formula for y .
b) Find y when $x = 30$.



$$\begin{array}{l} \text{a) } k = 24, y = \frac{24}{x} \quad \text{b) } 0.8 \end{array}$$