

1 Simplifying ratios ☐

- a) Write $2\frac{1}{3} : 1.75$ in its simplest form.
b) $a : b = 3 : 5$.
Simplify $(2a + b) : (b - a)$.

$$a) \frac{7}{3} : \frac{7}{4}, \times 12:$$

$$28 : 21 = 4 : 3$$

$$b) a = 3t, b = 5t:$$

$$11t : 2t = 11 : 2$$

2 Sharing in a ratio ☐

Ria and Sam share some sweets in the ratio 5 : 3. Ria gives Sam 12 sweets, and then they have the same number.
How many sweets are there?

$$5p - 12 = 3p + 12$$

$$2p = 24, p = 12$$

$$8 \times 12 = 96 \text{ sweets}$$

3 Ratios and fractions ☐

$\frac{2}{3}$ of Ali's money is equal to $\frac{3}{4}$ of Bea's money.

- a) Find Ali : Bea in its simplest form.
b) Together they have £85.
Find the difference.

$$a) \frac{2A}{3} = \frac{3B}{4}, 8A = 9B, 9 : 8$$

$$b) 85 \div 17 = 5, \text{ so } \pounds 5$$

4 Missing amounts ☐

In a club, boys : girls = 4 : 7.
Then 6 boys join and 3 girls leave, and now boys : girls = 2 : 3.
How many members were there at first?

$$3(4k + 6) = 2(7k - 3)$$

$$12k + 18 = 14k - 6, k = 12$$

$$11 \times 12 = 132 \text{ members}$$

5 Combining ratios ☐

$x : y = 2 : 5$ and $x : z = 3 : 4$.

- a) Find $y : z$.
b) Find $(y - x) : (x + z)$.

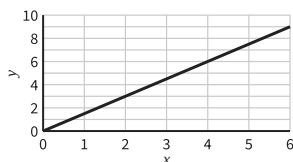
$$x : y : z = 6 : 15 : 8$$

$$a) 15 : 8$$

$$b) 9 : 14$$

6 Ratios and linear functions ☐

- a) Write an equation for y in terms of x .
b) The point $(2k, k + 10)$ is on the line.
Find k .



$$a) y = 1.5x$$

$$b) k + 10 = 3k, k = 5$$

Ratio and proportion

revision mat answers



7 Direct proportion ☐

A recipe for 6 people uses 450 g of flour and 3 eggs. Amy has 2 kg of flour and 10 eggs. What is the greatest number of people she can make it for?

$$\text{flour: } 2000 \div 75 = 26.6\dots, 26 \text{ people}$$

$$\text{eggs: } 10 \div 0.5 = 20 \text{ people}$$

20 people: the eggs run out first

8 Inverse proportion ☐

8 machines make 1200 parts in 5 hours.
The machines all work at the same rate.

- a) How long would 6 machines take to make 1800 parts?
b) How many machines are needed to make 3000 parts in 4 hours?

$$1200 \div 40 = 30 \text{ parts per machine hour}$$

$$a) 1800 \div (6 \times 30) = 10 \text{ hours}$$

$$b) 3000 \div (4 \times 30) = 25 \text{ machines}$$

9 Proportion formulae ☐

A is directly proportional to B , and B is directly proportional to C . When $C = 2$, $B = 7$. When $B = 21$, $A = 9$.

- a) Write a formula for A in terms of C .
b) Find C when $A = 12$.

$$B = 3.5C, A = \frac{3}{7}B$$

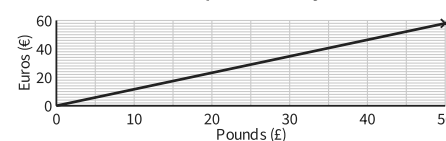
$$a) A = \frac{3}{7} \times 3.5C = 1.5C$$

$$b) 12 \div 1.5 = 8$$

10 Direct proportion graphs ☐

£ P is worth € E .

- a) Find a formula for E in terms of P .
b) A bag is €290 in Paris or £245 in London.
Where is it cheaper, and by how much?



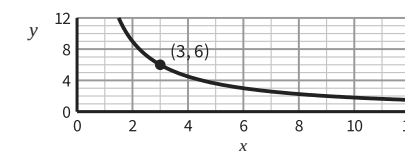
$$a) E = 1.16P$$

$$b) 290 \div 1.16 = \pounds 250: \text{London, } \pounds 5$$

11 Inverse proportion graphs ☐

y is inversely proportional to x .

- a) The point $(p, \frac{p}{2})$ is on the curve. Find p .
b) For which positive x is $y < 1.5$?



$$a) k = 18, p^2 = 36, p = 6$$

$$b) x > 18 \div 1.5, x > 12$$