

Ratio and Proportion

ANSWERS

Calculator | 30 minutes | Total marks: 39

Name

Class

1 Write each ratio in its simplest form.

(a) 24 : 40

Answer 3 : 5 (1) [1 mark]

(b) 750 ml : 2 litres

750 : 2000 (1)

Answer 3 : 8 (1) [2 marks]

2 Share £60 in the ratio 7 : 5

60 ÷ 12 = 5 (1)

Answer £35 and £25 (1) [2 marks]

3 (a) The ratio of red counters to blue counters in a bag is 3 : 7

What fraction of the counters are red?

Answer $\frac{3}{10}$ (1) [1 mark]

(b) In a different bag, $\frac{2}{5}$ of the counters are red and the rest are blue.

Write down the ratio of red counters to blue counters.

Answer 2 : 3 (1) [1 mark]

4

6 pens cost £4.20

Work out the cost of 10 pens.

$$4.20 \div 6 = 0.70 \text{ (1)}$$

Answer £ 7.00 (1)

[2 marks]

5

A crumble topping uses flour and butter in the ratio 5 : 2

Jo uses 350 g of flour.

How much butter does Jo need?

$$350 \div 5 = 70 \text{ (1)}$$

Answer 140 (1)

g

[2 marks]

6

(a) A school has 1134 students and 54 teachers.

Write the ratio of students to teachers in the form $n : 1$

$$1134 \div 54 \text{ (1)}$$

Answer 21 : 1 (1)

[2 marks]

(b) The ratio of the width to the height of a screen is 16 : 9

Write this ratio in the form $n : 1$ Give n correct to 2 decimal places.Answer 1.78 : 1 (1)

[1 mark]

- 7 The ratio of boys to girls in a choir is 5 : 3

There are 12 more boys than girls.

Work out the total number of students in the choir.

$$2 \text{ parts} = 12, \text{ so } 1 \text{ part} = 6 \text{ (1)}$$

$$8 \times 6 \text{ (1)}$$

Answer 48 (1)

[3 marks]

- 8 A straight line goes through the points (0, 0) and (6, 21).

(a) For every point (x, y) on the line, write $x : y$ in its simplest form.

Answer 2 : 7 (1)

[1 mark]

(b) Write an equation for the line, giving y in terms of x.

Answer $y = 3.5x$ (1)

[1 mark]

(c) For a different pair of numbers, $3x = 2y$

Work out the ratio $x : y$

$$\frac{x}{y} = \frac{2}{3} \text{ (1)}$$

Answer 2 : 3 (1)

[2 marks]

9

A recipe for 8 pancakes uses 200 g of flour and 300 ml of milk.

Sam has 700 g of flour and 900 ml of milk.

Work out the greatest number of pancakes Sam can make.

flour: $700 \div 200 = 3.5$, so 28 pancakes (1)

milk: $900 \div 300 = 3$, so 24 pancakes (1)

Answer 24 (1)

[3 marks]

10

6 machines take 10 hours to fill an order. All the machines work at the same rate.

(a) How long would 4 machines take to fill the same order?

$6 \times 10 = 60$ machine hours (1)

$60 \div 4$

Answer 15 (1)

hours

[2 marks]

(b) How many machines are needed to fill the order in 5 hours?

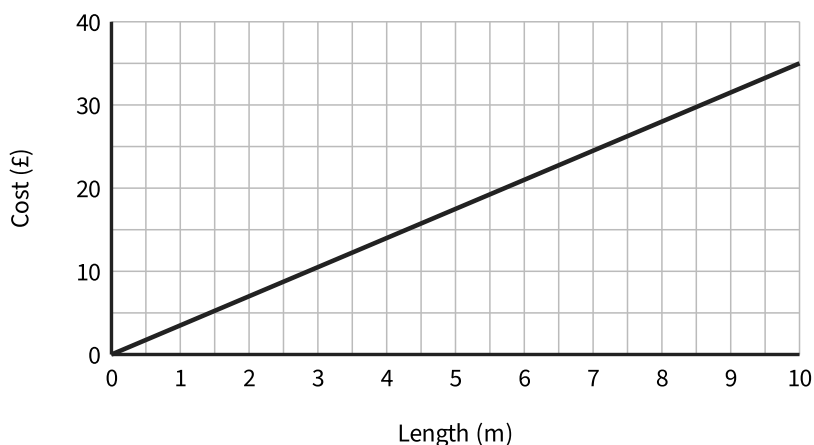
$60 \div 5$ (1)

Answer 12 (1)

[2 marks]

11

The graph shows the cost of ribbon from a shop.



(a) How does the graph show that the cost is directly proportional to the length?

Answer a straight line through (0, 0) (1) [1 mark]

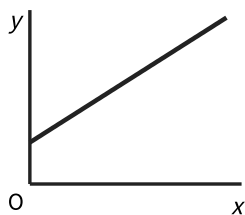
(b) Work out the cost of 25 m of ribbon.

$$35 \div 10 = \text{£}3.50 \text{ per metre (1)}$$

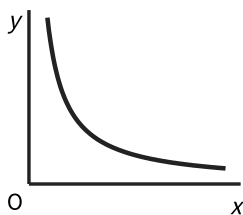
Answer £ 87.50 (1) [2 marks]

12

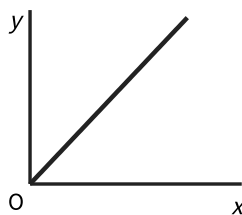
Each sketch shows how y changes as x changes.



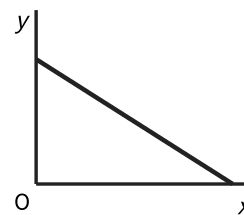
A



B



C



D

Write the letter of each graph in the right place. Use every letter once.

y is directly proportional to x	C
y is inversely proportional to x	B (1)
y is not proportional to x	A and D (1)

[2 marks]

13

 $a : b = 2 : 3$ and $b : c = 4 : 5$ Work out $a : b : c$

Give your answer in its simplest form.

$$a : b = 8 : 12 \text{ (1)}$$

$$b : c = 12 : 15 \text{ (1)}$$

Answer $8 : 12 : 15 \text{ (1)}$

[3 marks]

14

Ali and Bea share some money in the ratio 3 : 5

Bea gives Ali £12

They now have the same amount of money.

Work out how much money they shared.

$$\text{each ends with 4 parts, so 1 part} = \text{£}12 \text{ (1)}$$

$$8 \times 12 \text{ (1)}$$

Answer £ 96 (1)

[3 marks]

Question	Topic	RAG
1	I can simplify a ratio, converting units first	
2	I can share an amount in a ratio	
3	I can link ratios and fractions	
4	I can solve a direct proportion problem	
5	I can find a missing amount from a ratio	
6	I can write a ratio in the form $n : 1$	
7	I can use a difference to find a total	
8	I can link ratios and linear functions	
9	I can solve a recipe problem with a limiting ingredient	
10	I can solve inverse proportion problems	
11	I can use a direct proportion graph	
12	I can match graphs to direct and inverse proportion	
13	I can combine two ratios	
14	I can solve a problem where a ratio changes	