

Ratio and Proportion: Lesson Slides & Worksheet

Ages 11–14 · Maths

Name _____ Class _____ Date _____

A Key terms: match each term to its meaning

Write the letter of the correct meaning in the box next to each term.

- | | |
|----------------------------|--|
| 1 Ratio | ☐ A The amount of one quantity for one unit of another, such as km per hour or price per kilogram. |
| 2 Simplest form | ☐ B A relationship where two quantities change by the same factor; $y = kx$ and the graph is a straight line through the origin. |
| 3 Unit rate | ☐ C A ratio whose parts are whole numbers with no common factor other than 1. |
| 4 Direct proportion | ☐ D The ratio of a length on a drawing or map to the real length, such as 1 : 25,000. |
| 5 Unitary method | ☐ E A comparison of the sizes of two or more quantities, written with colons, such as 3 : 2. |
| 6 Scale | ☐ F Solving a proportion problem by first finding the value of one unit, then multiplying. |

B Quick quiz

Circle the best answer, write its letter, then explain your choice in a few words.

- 1** What is $18 : 24$ in its simplest form?

- a) 9 : 12 b) 3 : 4
c) 4 : 3 d) 6 : 8

Answer: _____ Why? _____

- 2 Blue and white paint are mixed in the ratio 2 : 3 to make 12 litres. How much white paint is used?**

- a) 7.2 litres b) 4.8 litres
c) 8 litres d) 18 litres

Answer: _____ Why? _____

- 3 Which is the better buy: 6 pens for EUR 4.20 or 10 pens for EUR 6.50?**

- a) 6 pens for EUR 4.20
b) 10 pens for EUR 6.50
c) They are the same value
d) You cannot tell without more information

Answer: _____ Why? _____

- 4** 5 m of rope costs GBP 7.50. The cost is in direct proportion to the length. How much do 8 m cost?

- a) GBP 10.50 b) GBP 4.69
c) GBP 15.00 d) GBP 12.00

Answer: _____ Why? _____

- 5** On a map with scale 1 : 50,000, two villages are 6 cm apart. How far apart are they in real life?

- a) 30 km b) 300 m
c) 3 km d) 50 km

Answer: _____ Why? _____

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Answer key for teachers · Ages 11–14 · Maths

A Key terms

1 Ratio	E	A comparison of the sizes of two or more quantities, written with colons, such as 3 : 2.
2 Simplest form	C	A ratio whose parts are whole numbers with no common factor other than 1.
3 Unit rate	A	The amount of one quantity for one unit of another, such as km per hour or price per kilogram.
4 Direct proportion	B	A relationship where two quantities change by the same factor; $y = kx$ and the graph is a straight line through the origin.
5 Unitary method	F	Solving a proportion problem by first finding the value of one unit, then multiplying.
6 Scale	D	The ratio of a length on a drawing or map to the real length, such as 1 : 25,000.

B Quick quiz

1 b) 3 : 4

The highest common factor of 18 and 24 is 6. Dividing both parts by 6 gives 3 : 4. The ratios 9 : 12 and 6 : 8 are equivalent but not fully simplified.

2 a) 7.2 litres

There are $2 + 3 = 5$ parts, so one part is $12 \div 5 = 2.4$ litres. White paint is 3 parts: $3 \times 2.4 = 7.2$ litres. Blue paint is the other 4.8 litres.

3 b) 10 pens for EUR 6.50

Find the cost of one pen. $4.20 \div 6 = \text{EUR } 0.70$ and $6.50 \div 10 = \text{EUR } 0.65$, so the pack of 10 is better value.

4 d) GBP 12.00

One metre costs $7.50 \div 5 = \text{GBP } 1.50$, so 8 m cost $8 \times 1.50 = \text{GBP } 12.00$. GBP 10.50 comes from adding 3 to the price instead of scaling it.

5 c) 3 km

$6 \text{ cm} \times 50,000 = 300,000 \text{ cm}$. There are 100 cm in a metre, so that is 3,000 m, which is 3 km.