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 ÷ 5 = 2.4 litres. White paint is 3 parts: 3 × 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 ÷ 6 = EUR 0.70 and 6.50 ÷ 10 = EUR 0.65, so the pack of 10 is better value.

4 d) GBP 12.00

One metre costs 7.50 ÷ 5 = GBP 1.50, so 8 m cost 8 × 1.50 = GBP 12.00. GBP 10.50 comes from adding 3 to the price instead of scaling it.

5 c) 3 km

6 cm × 50,000 = 300,000 cm. There are 100 cm in a metre, so that is 3,000 m, which is 3 km.