

Ratio and proportion

To achieve the expected standard, you need to:

- ★ use simple **ratio** to compare quantities
- ★ estimate the distance on a map using a simple scale.



What you need to know

- **Ratio** is the relationship between two or more quantities. It compares 'part with part' (e.g. the ratio 3:1 means 3 for every 1).
- **Proportion** is the relationship between part of something and the whole thing. It compares 'part with whole' (e.g. 1 out of 4 is the same as 2 out of 8). Think of proportion as a **fraction** ($\frac{1}{4} = \frac{2}{8}$). We can also write this proportion as 0.25 or 25%.

Let's practise



A necklace is made using 2 blue beads for every 3 red beads. There are 35 beads altogether. How many red beads are used?



1 Read the question and read it again. What is it asking?

2 Picture the necklace.

3 So how many patterns will there be in the complete necklace, using 35 beads?

4 How many red beads will there be?

5 How can you check your answer?

Work out the number of red beads in the necklace using proportion.

The pattern is repeated every 5 beads.



$35 \div 5 = 7$
There will be 7 patterns.

$7 \text{ (patterns)} \times 3 \text{ (beads)} = 21$

By counting the blue beads too.
 $7 \times 2 = 14, 14 + 21 = 35$

Try this

1 Jaime baked some cupcakes. For every 6 cupcakes Jaime baked, only 4 cupcakes were iced. Altogether, 20 cakes were iced.

How many cakes did Jaime bake? cakes

2 A drink is made using water and orange squash in the ratio 5:1.

How much water will be added to 50ml of orange squash? ml

Top tip

- Don't forget to include units in your answer.

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1 In Class 2W there are 3 girls to every 2 boys.

There are 18 girls in the class.

How many boys are there? boys

1
(1 mark)

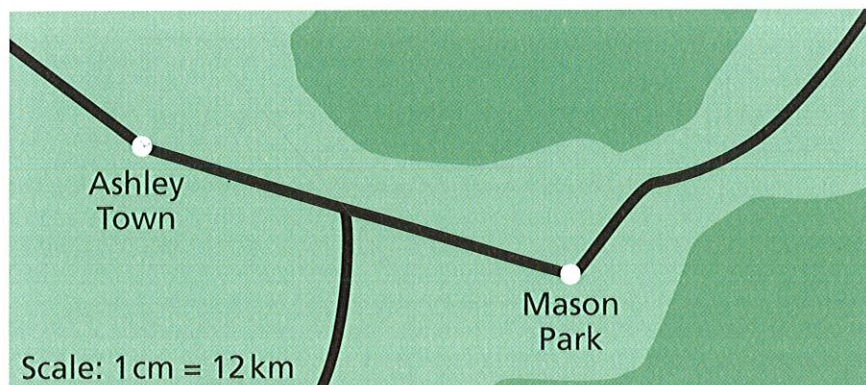
2 A recipe uses 100 ml milk for every 250 g flour.

How much milk is needed for 1 kg of flour? ml

2
(1 mark)

3 What is the real distance between Ashley Town and Mason Park?

km



3
(2 marks)

4 In a group of 20 people, 3 people are left-handed.

What **proportion** of the group is **not** left-handed?

4
(1 mark)

5 A total of 160 points was scored in a quiz.

The Red team scored 5 points **for every** 3 points scored by the Blue team.

How many points were scored by each team?

Red team

Blue team

5
(2 marks)

Top tip

- Use your knowledge of multiplication facts to solve direct proportion problems.
- Use factors to help simplify ratios.

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