

WA7MNAUN9

Understanding number

Core + Challenge

Introducing Ratios

I can use ratios and fractions to compare quantities, simplify ratios and find equivalent ratios.

Name: _____ Date: _____ Score: _____ / 56

Key idea

A **ratio** compares quantities. A bar has 4 blue and 6 green parts: blue : green = $4 : 6 = 2 : 3$ (part : part)
blue : whole = $4 : 10 = 2 : 5$, so blue is $\frac{2}{5}$ of the bar (part : whole $\leftrightarrow$ fraction).

Simplify by dividing every part by the HCF. **Same units first:** 2 g : 0.8 kg = 2 : 800 = 1 : 400

Equivalent ratios multiply every part by the same number: 3 : 5 = 12 : 20 ($\times 4$).

A Fluency *practise the skill*

/ 16 marks

Q1–13: simplify each ratio. Q14–16: find the missing number.

1. Simplify 4 : 6 _____

9. Simplify 1.2 : 0.8 _____

2. Simplify 10 : 25 _____

10. Simplify $\frac{1}{2} : \frac{1}{3}$ _____

3. Simplify 8 : 12 _____

11. Simplify 50 cm : 2 m _____

4. Simplify 18 : 24 _____

12. Simplify 2 g : 0.8 kg _____

5. Simplify 35 : 14 _____

13. Simplify 45 min : 1.5 h _____

6. Simplify 45 : 60 _____

14. $3 : 5 = 12 : \square$

7. Simplify 16 : 40 : 24 _____

15. $7 : 4 = 21 : \square$

8. Simplify 0.5 : 2 _____

16. $2 : \square = 10 : 35$

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B**Core** *apply the skill to problems*

/ 21 marks

- 1 The bar below has 10 equal parts: 4 shaded and 6 unshaded. Write in simplest form: [3 marks]
(a) shaded : unshaded (b) shaded : whole (c) the fraction that is unshaded



- 2 A class has 12 girls and 16 boys. Write the ratio of girls to boys in simplest form, and the fraction of the class that are girls. [2 marks]

Answer: _____

- 3 Cordial is mixed with water in the ratio 1 : 4. How much water is needed for 250 mL of cordial? What is the total volume? [2 marks]

Answer: _____

- 4 A recipe for 4 people uses 300 g of flour. How much flour is needed for 6 people? [2 marks]

Answer: _____

- 5 Cheese A costs \$3.75 per 100 g. Cheese B costs \$42 per kilogram. Which is the better buy? Show your working. [2 marks]

Answer: _____

- 6 A map has a scale of 1 : 50 000. Two towns are 4 cm apart on the map. How far apart are they in real life, in kilometres? [2 marks]

Answer: _____

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- 7 Share \$570 between Ali and Ben in the ratio 2 : 1. [2 marks]

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Answer: _____

- 8 Concrete uses sand and cement in the ratio 5 : 2. How much sand is needed with 14 kg of cement? [2 marks]

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Answer: _____

- 9 A school has 1 teacher for every 24 students. How many teachers are needed for 312 students? [2 marks]

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Answer: _____

- 10 Paint is mixed blue : yellow = 3 : 2. Will 9 : 6 make the same colour? Will 10 : 8? Explain. [2 marks]

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Answer: _____

C Reasoning *explain, justify and check*

/ 9 marks

- 1 Explain why the ratio 2 : 3 is not the same as 3 : 2. Use an example. [2 marks]

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- 2 A bag has red and blue marbles in the ratio 2 : 3. Explain why the fraction of red marbles is $\frac{2}{5}$, not $\frac{2}{3}$. [3 marks]

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- 3 Tim simplified 12 : 18 to 6 : 9 and stopped. Is he finished? Explain. [2 marks]

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- 4 Explain why $50 \text{ cm} : 2 \text{ m}$ is not $50 : 2$ in simplest form.

[2 marks]

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D Challenge *multi-step and problem-solving*

/ 10 marks

- 1 A childcare centre needs 1 adult for every 3 children. There are 26 children. How many adults are needed? Explain your rounding.

[2 marks]

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Answer:

- 2 The ratio of boys to girls in a club is $3 : 5$. There are 12 more girls than boys. How many members are there?

[3 marks]

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Answer:

- 3 $a : b = 2 : 3$ and $b : c = 4 : 5$. Find $a : b : c$ in whole numbers.

[3 marks]

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Answer:

- 4 Jug A has water : juice = $1 : 3$. Jug B has water : juice = $1 : 1$. Equal amounts from each jug are mixed. What is the new water : juice ratio?

[2 marks]

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Answer:

How did I go?

Fluency ____ / 16 Core ____ / 21 Reasoning ____ / 9 Challenge ____ / 10 **Total** ____ / 56

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