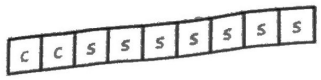
MASTER

8.2 Writing ratios

1 Real To make concrete to repair a path, you mix 2 buckets of cement with 7 buckets of sand.
The ratio of cement to sand is 2 : 7
I have 4 buckets of cement. How many buckets of sand do I need?

Guided



cement : sand

× 2 (2 : 7 / 4 : 14) × 2

I need 14 buckets.

A **ratio** is a way of comparing two or more quantities.

Find the multiplier. Multiply each part.

2 Tick the ratios which are equivalent to the ratio 1 : 4.

a 2 : 2

b 3 : 12 ✓

c 10 : 40 ✓

d 8 : 2

The ratios 2 : 5 and 4 : 10 are called **equivalent ratios**.
Equivalent ratios show the same proportion.
Both sides of a ratio are multiplied or divided by the same number to give an equivalent ratio.

3 STEM 50 ml of vinegar reacts with 25 ml of calcium carbonate solution. 50 : 25

a Write the ratio of vinegar to calcium carbonate solution. 2 : 1

b How much calcium carbonate solution is needed to react with 200 ml of vinegar? 100ml

c How much vinegar is needed to react with 75 ml of calcium carbonate solution? 150ml

4 Write each ratio in its simplest form.

a 4 : 8 1 : 2 **b** 20 : 2 10 : 1 **c** 15 : 35 3 : 7

Guided

÷ 4 (4 : 8 / 1 : 2) ÷ 4

You can make the numbers in a ratio as small as possible by **simplifying**. You simplify a ratio by dividing the numbers in the ratio by the **highest common factor.**

5 Real Sandra puts 1000 ml of petrol and 20 ml of oil into her chainsaw.
The recommended ratio of petrol to oil is 50 : 1.
Is Sandra's ratio of petrol to oil correct? Yes

1000 : 20 ÷ 20
÷ 20 → 50 : 1

6 Write each ratio in its simplest form.

a 2 : 4 : 8 1 : 2 : 4

b 10 : 20 : 15 2 : 4 : 3

c 8 : 16 : 100 2 : 4 : 25

The highest common factor of 2, 4 and 8 is 2.

7 Simplify these ratios.

a £5 : 70p

Guided

÷ 10 (500 : 70 / 50 : 7) ÷ 10

b 2 days : 10 hours

48hrs : 10hrs
24 : 5

c 3 km : 120 m

3000 : 120
300 : 12
150 : 6
25 : 1

Ratios in their simplest form do not have units. To simplify a ratio involving quantities, first convert the quantities to the same unit.

8 Write these ratios in their simplest form.

a 3 : 3.5 6 : 7

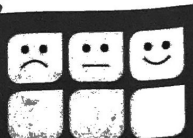
b 1 : $1\frac{1}{3}$ 3 : 4 — 1 : $\frac{4}{3}$

c 4 : $1\frac{1}{5}$ 20 : 6 — 10 : 3 — 4 : $\frac{6}{5}$

× 2 (3 : 3.5 / 6 : 7) × 2

For a ratio with fractions or decimals, first multiply both sides of the ratio to get whole numbers.

CHECK Tick each box as your **confidence** in this topic improves.



Need extra help? Go to page 80 and tick the boxes next to Q2, 3 and 4. Then have a go at it once you've finished 8.1–8.6.