FULL NAME _____ PERIOD _____ DATE _____

MATHEMATICS 8 · HANDSWORTH 2026–27 · UNIT 2

Guided notes · supplement

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Keep with your Unit 2 notes

Three-term ratios SAME RULE, THREE PARTS

A ratio can compare three amounts, written a : b : c. Simplify it exactly as you simplify a two-term ratio, by dividing every part by a common factor. The factor has to divide **all three** parts, so 9 : 15 : 24 will not take a 2.

> WORKED EXAMPLE, SIMPLIFY A THREE-TERM RATIO
> Write 9 : 15 : 24 in lowest terms.
> All three parts divide by 3.
> **= 3 : 5 : 8**

> WORKED EXAMPLE, SHARING IN A RATIO
> Three cousins share $90 in the ratio 2 : 3 : 4.
> Count the parts first: 2 + 3 + 4 = 9 parts. One part is 90 ÷ 9 = $10.
> **= $20, $30, $40 (and they add back to $90)**

CHECK YOURSELF

1. Write 15 : 25 : 35 in lowest terms.
2. Write 24 : 36 : 60 in lowest terms.
3. A paint mix uses white, blue and black as 180 mL : 120 mL : 60 mL. Write it in lowest terms.
4. Share $140 in the ratio 2 : 2 : 3.

> ANSWERS
> **1. 3 : 5 : 7 2. 2 : 3 : 5 3. 3 : 2 : 1 4. 7 parts, one part $20, so $40, $40, $60**

Scale and similar shapes A PROPORTION IN DISGUISE

A scale tells you what one unit on the drawing stands for in real life. Written as a ratio, 1 : 40 means the real object is 40 times the model, so model to real you multiply, and real to model you divide. Similar shapes keep the same ratio of width to height, so an enlargement is just a proportion with one part missing.

> WORKED EXAMPLE, A MAP SCALE
> A map uses 1 cm to 25 km. Two towns are 275 km apart. How far apart on the map?
> Divide the real distance by what 1 cm stands for: 275 ÷ 25.
> **= 11 cm**

> WORKED EXAMPLE, A SCALE WRITTEN AS A RATIO
> A model is built to a scale of 1 : 40 and is 15 cm long. How long is the real object?
> Real is 40 times the model: 15 × 40 = 600 cm.
> **= 600 cm, which is 6 m**

> WORKED EXAMPLE, SIMILAR SHAPES
> A photo 8 cm wide and 12 cm tall is enlarged to 20 cm wide. How tall is it?
> Width to height stays the same: $\frac{8}{12} = \frac{20}{h}$, so 8h = 240.
> **h = 240 ÷ 8 = 30 cm**

CHECK YOURSELF

1. A scale of 1 : 500 shows a path 4 cm long. What is the real length in metres?

2. A 1 : 20 model boat is 35 cm long. What is the real length in metres?

3. A drawing uses 1 cm to 1.5 m. A hall is 12 m long. How long is it on the drawing?

4. Two similar rectangles: the first is 5 by 8, the second is 15 wide. How tall is it?

> ANSWERS
> **1. 4 × 500 = 2000 cm = 20 m 2. 35 × 20 = 700 cm = 7 m 3. 12 ÷ 1.5 = 8 cm 4. 15 ÷ 5 = 3, so 8 × 3 = 24**