

Scale and proportion

Pearson Edexcel GCSE Mathematics 1MA1

Foundation and Higher • L014

Number and proportion • Review v0.9

The goal and the evidence

Connect & Check → Share → Present → Apply → Recall & Review

Use proportional relationships for recipes and scale.

Keep units consistent and check the relationship.

Starting-point diagnostic

R1–R3 • Attempt without notes

12:18; share 50 in ratio 2:3

3 m to cm; 1500 g to kg

$\frac{3}{2}$ of 300

Recipes in proportion

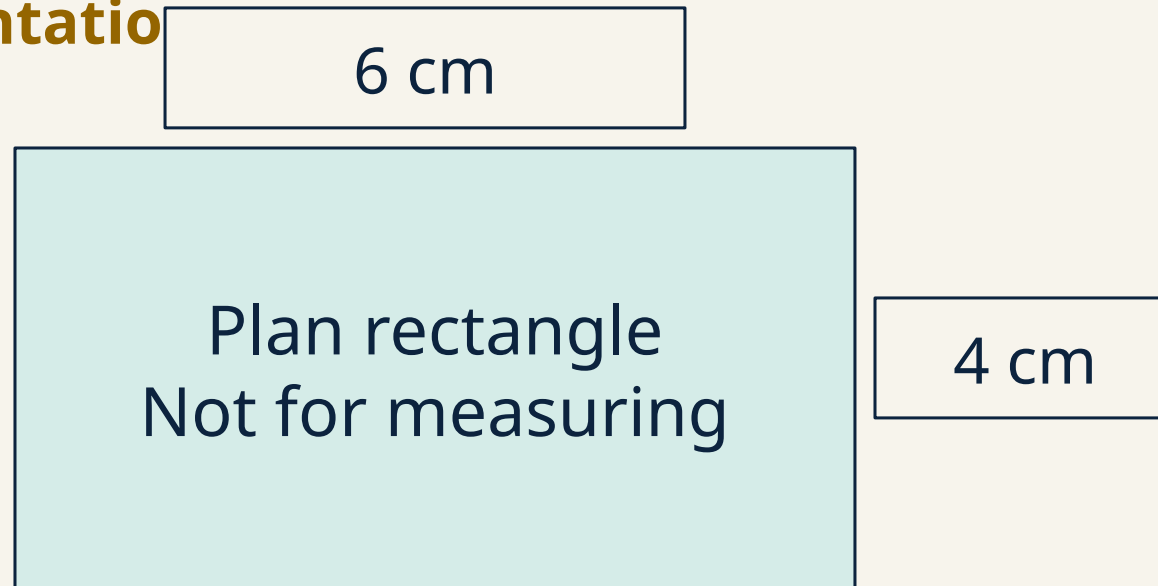
4 people $\rightarrow$ 300 g; 6 people $\rightarrow$ 450 g

Both quantities multiply by $\frac{6}{4}$.

Your turn: 8 people $\rightarrow$ 600 g; 10 $\rightarrow$?

Read the labelled scale

Explain the representation



1:500 → real dimensions 30 m × 20 m

A constant ratio

$2 \rightarrow 5; 4 \rightarrow 10; 6 \rightarrow 15$

Second $\div$ first = 2.5 each time.

Your turn: $10 \rightarrow ?$

Drawing to real length

Scale 1:500: 2 cm $\rightarrow$ 1000 cm $\rightarrow$ 10 m

Your turn: 7 cm on the plan

The ratio uses matching units.

Real length to drawing

$$20 \text{ m} = 2000 \text{ cm}; 2000 \div 500 = 4 \text{ cm}$$

Your turn: 15 m at 1:500

Divide by the scale denominator.

MATCH UNITS; KEEP THE RATIO CONSTANT

Drawing $\times$ scale denominator = real length.

Use labelled lengths if a page is resized.

Diagnostic pause

Choose and explain before moving on.

At 1:500, 3 cm represents?

A 15 m B 1500 m C 1.5 m

Careful variation

A1 • Explain your decisions

At scale 1:500, find real lengths for 1 cm, 3 cm and 6 cm. Explain the pattern.

Show your method and check the result.

Independent application

A2 • Without prompts

A recipe uses 240 g for 6 people. Find the amount for 9 people. At scale 1:200, find drawing length for 8 m.

Show your method and check the result.

Use the method in context

A3 • Explain your decisions

A rectangular garden has plan lengths 6 cm and 4 cm at scale 1:500. Find real length, width and perimeter. Use labelled lengths, not a ruler.

Show your method and check the result.

Intentional practice feedback

Read after attempting A3

30 m; 20 m; perimeter 100 m.

Check the interpretation as well as the arithmetic.

A claim to test

C1 • Explain your decisions

Taxi A charges £3 per kilometre. Taxi B charges £4 plus £3 per kilometre. Which cost is directly proportional to distance? Explain with zero and a doubling test.

Show your method and check the result.

Deepen the reasoning

C2 • Explain your decisions

A 1:500 plan is enlarged to twice its original printed width and height. What scale does the new print have? Explain why measuring a resized worksheet can mislead.

Show your method and check the result.

Retrieval without notes

Q1–Q6 • Use full prompts in your workbook

Q1–Q3

2 cm at 1:500 → real m
12 m at 1:400 → plan cm
4 people:200 g; 6
people:?

Q4–Q6

5 people:300 g; one:?
2.5 m → cm
42 shared 2:5: first?

Independent exit evidence

P1 • 2 marks • Without notes

A recipe needs 200 g for 4 people. Find the amount for 7, showing a method. [2]

Show working. Teacher review follows.

Independent exit evidence

P2 • 2 marks • Without notes

At scale 1:400, 5 cm represents what real length in metres? Show units. [2]

Show working. Teacher review follows.

Feedback and next steps

P3 • Completion is not mastery

Name one decision you can now explain.

Choose a fresh question and a delayed check.

Before the next lesson

L015: Unit rates and best buys

Complete F1 tomorrow without notes.

Read and attempt F2; bring one question.

Optional stretch

A scale drawing is 1:25,000. What actual distance does 8 cm represent?

Show a method. Explain a check or counterexample.

Optional deep challenge

Similar shapes have length factor 1.5. Compare their area factor and explain.

Show a method. Explain a check or counterexample.

L014 Recall & Review



Scale and proportion

Fresh evidence: prove the objective

Solve a new question without prompts. Explain one check, then correct one error in your working.

Objective: Use constant multiplicative relationships for recipes and length scales, with consistent units and checks.

Write the next practice step before you leave. It must test the method again, not simply copy today's example.

Feedback language

Use the full phrases before the abbreviations.



What Went Well (WWW)

I selected a suitable representation or multiplier and kept the reference amount clear.

Point to the method, representation, reasoning or check that improved.

Even Better If (EBI)

I will state the whole/part, show each operation and check that the size of my answer is reasonable.

Set one precise next-step action and test it on a fresh question.

Extension route



Choose this route only after the core evidence is secure.

Stretch

A scale drawing is 1:25,000. What actual distance does 8 cm represent?

Deep challenge

Similar shapes have length factor 1.5. Compare their area factor and explain.

Explain your reasoning clearly enough that another learner could check it.