

Proportion problems and repair

Pearson Edexcel GCSE Mathematics 1MA1

L016 • Foundation and Higher

60 minute lesson | learner resources

The goal and the evidence

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

Select and justify a proportion method. Diagnose whether the given amount is a total, a share or a difference.

Explain, apply and check independently.

Starting-point diagnostic

R1–R3 • Attempt without notes

Share 40 in the ratio 3:5.

Four servings use 200 g. Find the amount for six servings.

Find £/kg for 500 g costing £2.50.

Worked example and your turn

D1 • Explain each step

Model: total 35 shared 2:5 gives parts of 5, hence 10 and 25. Now share 56 in ratio 3:4.

Try the paired problem; check independently.

Worked example and your turn

D2 • Explain each step

Model: $A:B=2:5$ and $B=30$ gives one part 6, so $A=12$.
Now $A:B=3:7$ and $A=15$. Find B .

Try the paired problem; check independently.

Worked example and your turn

D3 • Explain each step

Model: $A:B=2:5$ and $B-A=12$ gives one part 4. Now $A:B=3:5$ and $B-A=14$. Find both.

Try the paired problem; check independently.

Worked example and your turn

D4 • Explain each step

Model: 4 servings need 300 g; 10 need 750 g. Now 6 servings need 450 g. Find the amount for 8.

Try the paired problem; check independently.

A method you can explain

Name what changes at each step.

Check against the original question.

Diagnostic pause

Choose and explain before moving on.

A:B=2:5; B exceeds A by 12. One part? A $12 \div 7$, B $12 \div 3$, C $12 \div 5$.

Use your explanation to decide the next step.

Careful variation

A1 • Show your reasoning

For $A:B=2:3$, find A when (i) total=40 (ii) $B=30$ (iii) $B-A=8$. Explain the different divisors.

Explain your decisions and check the result.

Independent application

A2 • Show your reasoning

Share £72 in ratio 5:4. Then find both shares for 5:4 when their difference is £12.

Explain your decisions and check the result.

Use the method in context

A3 • Show your reasoning

A drink uses syrup:water=1:4. Make 1.5 litres. You have 250 ml syrup. Is it enough? Explain.

Explain your decisions and check the result.

Intentional practice feedback

Read after attempting A3

Need 300 ml syrup and 1200 ml water; short by 50 ml.

Correct one step and explain the change.

A claim to test

C1 • Show your reasoning

$A:B=2:3$ and $B:C=4:5$. Can you write $A:C=2:5$? Repair the claim.

Explain your decisions and check the result.

Deepen the reasoning

C2 • Show your reasoning

A recipe is doubled but only the flour is doubled. Is it the same recipe? Explain using a ratio example.

Explain your decisions and check the result.

Retrieval without notes

Q1–Q6 • Numeric answers; units as requested

Q1–Q3

First share: 56 in ratio
3:4

$A:B=3:7$, $A=15$. Find B.

$A:B=3:5$, difference 14.
Find A.

Q4–Q6

Grams for 8 if 6 need
450

Millilitres in 1.5 litres
£/kg for 250 g costing
£1.20

Independent exit evidence

P1 • Without notes • Teacher review

A:B=4:7 and $B - A = 18$. Find A and B with a method.
[2]

Show working and check your answer.

Independent exit evidence

P2 • Without notes • Teacher review

Five servings need 350 g. Find the amount for eight, showing a method. [2]

Show working and check your answer.

Feedback and next steps

P3 • Completion is not mastery

Explain one error you have corrected.

Set a fresh question and a delayed check.

Before the next lesson

L017: Algebraic language and substitution

Complete F1 tomorrow without notes.

Attempt F2 and bring one question.

Optional stretch

Four workers complete a job in 15 hours at constant rate. How long would six workers take?

Show a method. Explain a check or counterexample.

Optional deep challenge

Explain why doubling workers may fail to halve time in a real job.

Show a method. Explain a check or counterexample.

L016 Recall & Review



Proportion problems and repair

Fresh evidence: prove the objective

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

Objective: Select and justify a proportion method. Diagnose whether the given amount is a total, a share or a difference.

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

Four workers complete a job in 15 hours at constant rate. How long would six workers take?

Deep challenge

Explain why doubling workers may fail to halve time in a real job.

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