

Teacher guide and workbook answers

Pearson Edexcel GCSE Mathematics 1MA1 • L016

60 minutes • Foundation and Higher • Teacher use only • Lesson resources

REACH FOR THE STAR | GCSE MATHEMATICS

Purpose and prerequisites

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

L013 sharing ratios; L014 scale and unitary method; L015 unit prices.

Selected specification content: R4 R5 R7 R10. These lessons revisit shared content; they do not complete every aspect of those statements.

Preparation and support

Prepare mini-whiteboards, printed fallbacks and a teacher calculator. Use ratio tables, algebra tiles, balance diagrams and number lines as appropriate. Confirm save/export/restore in the intended environment; browser QA remains pending. Distribute only the learner package.

Access: pre-teach vocabulary and read symbols aloud. Scaffold: model the first decision, offer a worked-example or inverse-check frame. Core: remove prompts for A2 and P1–P2. Stretch: C1–C2 deepen reasoning for either tier. Record the support used, not a fixed ability label.

Evidence and pacing

The delivery map totals 60 minutes. Use the recall and hinge to select a repair; the suggested one-third error trigger is a planning judgement, not a validated threshold. If errors are widespread, use two minutes from independent practice and defer C2. P1–P2 need teacher marking. The mini-test and exam practice are delayed/additional activities, not extra tasks squeezed into the hour.

A:B=2:5; B exceeds A by 12. One part? A $12 \div 7$, B $12 \div 3$, C $12 \div 5$. Answer B: the difference is three parts.

Recall and guided-practice answers

R1

15 and 25. Eight equal parts.

R2

300 g. Multiply by $\frac{6}{4}$.

R3

£5/kg. Double the quantity and cost.

D1

24 and 32. Seven parts; one part 8.

D2

35. One part 5; seven parts 35.

D3

A=21; B=35. Two parts equal 14.

D4

600 g. 75 g per serving.

Application and challenge answers

A1

16; 20; 16. Divide by 5, 3 and 1 respectively to find one part.

A2

£40 and £32; £60 and £48. The second given amount is one part.

A3

Need 300 ml syrup and 1200 ml water; short by 50 ml. $1500 \div 5 = 300$ ml per part.

C1

No. Match B to 12: A:B:C=8:12:15, so A:C=8:15. The two original B parts have different sizes.

C2

No in general. Flour:sugar 2:1 becomes 4:1 rather than 4:2. All corresponding ingredients must scale together.

Calculator guidance: Optional check after A3: $1500 \div 5 = 300$ and $300 + 1200 = 1500$. The sum check is necessary but also check syrup:water=1:4.

Independent evidence and next steps

P1

$18 \div 3 = 6$ M1; A=24 and B=42 A1 both. Check difference and ratio.

P2

$350 \div 5 \times 8$ M1; 560 g A1. Constant amount per serving.

P3

Individual reflection. Record support and delayed evidence; completion is not mastery.

F1

18 and 45; 10 and 25. Given meanings differ.

F2

14 and 18. Brackets change which quantity is multiplied.

Retrieval answers: 24, 35, 21, 600, 1500, 4.8. Exact signed decimals/fractions/mixed numbers are accepted; unsupported notation goes to review. No automatic method marks. For rounding, equivalent numerical values may pass retrieval; the teacher checks stated accuracy and required trailing zeros in written work.

Reteaching and release

If total and difference are confused, draw five equal boxes for 2:3 and mark the extra box. If additive scaling is used, compare ratios. Recheck A:B=3:5 with total 40, then difference 10.

Practice feedback is intentionally visible. Full assessment answers, this guide and delivery notes are teacher-only. Local saving is browser dependent; no account service is included. Completed resources enter Review; human approval and outstanding browser checks remain required.

Optional extension answers

Stretch

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

Answer and reasoning: $4 \times 15 / 6 = 10$ hours.

Deep challenge

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

Answer and reasoning: The inverse model assumes equal productivity and no coordination limits; those assumptions may fail.

Activate Learning lesson cycle

Connect & Check: state the objective and diagnose prior knowledge. Share: pairs predict and compare methods. Present: explain or uncover the model. Apply: fade support for independent practice and optional stretch. Recall & Review: use a fresh question and feedback to decide the next step.

Recall & Review: feedback and extension integration

Source-integrated WWW/EBI and extension page

Lesson L016: Proportion problems and repair

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

Timing for a 60-minute lesson

0-7 Connect & Check; 7-14 Share; 14-25 Present/model; 25-44 Apply route choice/practice; 44-52 independent exam-style check; 52-60 Recall & Review, WWW/EBI and next step.

Recall & Review evidence

At the end of the lesson, solve a fresh question without prompts, explain a check, correct one error and record the next practice step.

What Went Well (WWW)

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

Even Better If (EBI)

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

Integrated stretch and deep challenge

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.

Teacher use

Use the WWW/EBI prompts to write mathematics-specific feedback linked to the objective. Do not accept generic praise; feedback should identify the method, representation, reasoning or checking step that improved, then set a fresh next-step question.

Assessment evidence to inspect: Compare corrected responses with the original diagnostic and a fresh unprompted question. Record the misconception repaired and a delayed check. Non-calculator core; optional calculator check.