

Teacher guide and workbook answers

Pearson Edexcel GCSE Mathematics 1MA1 • L012

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

REACH FOR THE STAR | GCSE MATHEMATICS

Purpose and prerequisites

Demonstrate cumulative number understanding, diagnose the cause of an error and verify a repair independently.

L001–L011 integer arithmetic, factors, fractions, FDP and percentages.

Selected specification content: N2 N4 N8 N10 N12 R9. 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 fraction strips, equal-part bars or a ratio table 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.

£48 is a price after 20% off. To recover the original: A 48×1.2 , B $48 \div 0.8$, C 48×0.8 . B; a forward check must reproduce £48.

Recall and guided-practice answers

R1

−5; $7/12$. Record the first incorrect decision if either fails.

R2

6; $7/20$. Separate factor and conversion evidence.

R3

12; £80. The second answer uses $64 \div 0.8$.

D1

$5/6$. $4/6 + 1/6$ counts sixths.

D2

6. $12.5\% = 1/8$.

D3

£72. 54 is three quarters; one quarter is 18.

D4

$72 \times 0.75 = 54$. A useful check reproduces the stated final value.

Application and challenge answers

A1

11/12; 9/2. Addition needs equal parts; division uses the reciprocal.

A2

42; 3/5; 30. Select the method from the demand, not nearby questions.

A3

£66; no, voucher first gives £67.20. $0.8 \times 90 - 6 = 66$; $0.8 \times 84 = 67.2$.

C1

Independent explanation and a fresh delayed problem; e.g. recover original from £45 after 25% off: £60. Remembering an answer is not the same as choosing a method.

C2

Yes: $1.25 \times 0.8 = 1$. A 25% fall gives £93.75. Reciprocal multipliers reverse a change; equal percentage rates need not.

Calculator guidance: Optional check after A3: enter $90 \times 0.8 - 6$ and $(90 - 6) \times 0.8$. Expect 66 and 67.2. Brackets record the order. Use calculator results to check arithmetic, not to replace explanation.

Independent evidence and next steps

P1

10/12–3/12 M1; 7/12 A1. Independent evidence after repair.

P2

£90 B1; $90 \times 0.9 = 81$ B1. Do not add 10% of £81.

P3

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

F1

$\frac{3}{2}$; 15. Use exact fractions.

F2

$\frac{2}{3}$; twelve parts compared with eighteen parts of the same size. A ratio will compare quantities in a stated order.

Retrieval answers: -4, 10, $\frac{5}{6}$, $\frac{9}{20}$, 12, 80. 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

Fraction-unit error: rebuild twelfths. Percentage-base error: label final as 80% and original as 100%. Scaling error: write the decimal operator. Reteach only the selected priority, then reassess $\frac{1}{3} + \frac{1}{4} = \frac{7}{12}$ or £48 after 20% off gives original £60.

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

Solve $\frac{3}{5}$ of $x=42$ and $0.2x=18$.

Answer and reasoning: $x=70$ and $x=90$.

Deep challenge

Diagnose why 50% increase followed by 50% decrease does not restore the start.

Answer and reasoning: Multipliers $1.5 \times 0.5 = 0.75$, a 25% net decrease.

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 L012: Number checkpoint and feedback

Objective: Demonstrate cumulative number understanding, diagnose the cause of an error and verify a repair independently.

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 chose an appropriate method and produced clear evidence against the lesson objective.

Even Better If (EBI)

I will show the missing working step, correct one misconception and test the method on a fresh question.

Integrated stretch and deep challenge

Stretch: Solve $\frac{3}{5}$ of $x=42$ and $0.2x=18$.

Deep challenge: Diagnose why 50% increase followed by 50% decrease does not restore the start.

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.