

Slide by slide delivery map

Pearson Edexcel GCSE Mathematics 1MA1 • L017

20 slides • 60 minutes • Teacher use only • Lesson resources

REACH FOR THE STAR | GCSE MATHEMATICS

01 Algebraic language and substitution 1 min Recall

Read algebraic notation accurately. Substitute signed values and distinguish expressions, equations and identities.

02 The goal and the evidence 1 min Recall

Signed arithmetic, operation priority and powers from L001–L004; brackets from L016 preparation.

03 Starting-point diagnostic 5 min Recall

If $3x$ is read as $3+x$, use three equal groups. If a negative square is negative, write both factors. Recheck $x=-3$ in $2x+5$ and x^2 : -1 and 9 .

04 Worked example and your turn 3 min Discover

$-10. 5 \times (-2)$.

05 Worked example and your turn 3 min Discover

$-7. 3 \times (-3) + 2 = -9 + 2$.

Delivery continued

06 Worked example and your turn 3 min Discover

9 and -9 . The leading minus is outside the square.

07 Worked example and your turn 3 min Discover

Identity: equal for every x . Distribution gives $2x+6$.

08 A method you can explain 2 min Discover

Write the replacement in brackets, then use operation priority. Keep multiplication distinct from powers. Check by a second calculation and state any excluded value when division is involved.

09 Diagnostic pause 3 min Apply

For $x=-2$, x^2 is A -4 , B 4 , C -2 . Answer B: $(-2) \times (-2) = 4$.

10 Careful variation 4 min Apply

$6, 5, 4$; $-6, 1, 4$. The square stays equal for opposite values.

Delivery continued

11 Independent application 6 min Apply

-13 ; -6 . $2 \times (-2) - 3 \times 3$; $(-2) \times 3$.

12 Use the method in context 4 min Apply

£18. Fixed charge £4 and distance cost £14. $4 + 2 \times 7$; model assumes that tariff applies.

13 Intentional practice feedback 2 min Apply

$4 + 2 \times 7$; model assumes that tariff applies. Optional check: enter $(-3)^2$ and then $-(3^2)$. Expect 9 and -9 . Calculator models differ in negative-key precedence; use explicit brackets.

14 A claim to test 4 min Challenge

No: $x=3$ gives 9 versus 6. They agree at $x=0$ or $x=2$. Agreement at one value does not prove an identity.

15 Deepen the reasoning 4 min Challenge

2 is not $1/2$. Division is not commutative. The divisor and dividend have different roles.

Delivery continued

16 Retrieval without notes 4 min Prove

Answers: 12, -7, 9, -9, 8, 15. Completion is not mastery.

17 Independent exit evidence 2 min Prove

$4 \times (-2) - 1$ M1; -9 A1. Brackets protect the negative sign.

18 Independent exit evidence 3 min Prove

$(-3)^2 + 2 \times 4$ M1; 17 A1. Square before addition.

19 Feedback and next steps 2 min Prove

If $3x$ is read as $3+x$, use three equal groups. If a negative square is negative, write both factors. Recheck $x = -3$ in $2x+5$ and x^2 : -1 and 9 .

20 Before the next lesson 1 min Recall

Like terms have the same letter part: $3x+2x=5x$. Unlike terms such as $3x+2y$ cannot normally be combined. A bracket is a group: $2(x+3)$ multiplies both parts by two.

Recall & Review: feedback and extension integration

Source-integrated WWW/EBI and extension page

Lesson L017: Algebraic language and substitution

Objective: Read algebraic notation accurately. Substitute signed values and distinguish expressions, equations and identities.

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 wrote the algebraic structure accurately and used a valid step-by-step method.

Even Better If (EBI)

I will show inverse operations clearly, keep signs/brackets accurate and substitute back to check.

Integrated stretch and deep challenge

Stretch: If $a=-2$ and $b=5$, evaluate $3a^2-2b$ and $2(a+b)$.

Deep challenge: A learner interprets $3x^2$ as $(3x)^2$. Use $x=2$ to expose the error.

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: Check the formative mini-test and independent workbook response against the objective. Use the teacher answers or mark guidance; group errors for reteaching. Non-calculator core; optional calculator check.