

Linear equations

Pearson Edexcel GCSE Mathematics 1MA1

L019 • Foundation and Higher

60 minute lesson | learner resources

The goal and the evidence

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

Solve linear equations while preserving equality.
Check solutions in the original equation, including unknowns on both sides.

Explain, apply and check independently.

Starting-point diagnostic

R1–R3 • Attempt without notes

Simplify $3x+2x$.

Expand $2(x+3)$.

Evaluate $3x-2$ for $x=4$.

Preserve equality at each step

Read the representation; explain the connection.

$$2x + 3$$

$$=$$

$$11$$

Subtract 3

Subtract 3

$$2x = 8 \rightarrow x = 4$$

Worked example and your turn

D1 • Explain each step

Model: $x+5=12$ gives $x=7$ by subtracting 5 on both sides. Now solve $x-4=9$.

Try the paired problem; check independently.

Worked example and your turn

D2 • Explain each step

Model: $3x+2=14$ gives $3x=12$ then $x=4$. Now solve $4x-3=17$.

Try the paired problem; check independently.

Worked example and your turn

D3 • Explain each step

Model: $2(x+3)=14$ gives $x+3=7$ then $x=4$. Now solve $3(x-2)=15$.

Try the paired problem; check independently.

Worked example and your turn

D4 • Explain each step

Model: $5x+1=3x+9$ gives $2x=8$, so $x=4$. Now solve $7x-2=4x+13$.

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.

Solve $2x+3=11$. First useful step? A divide only 11 by 2, B subtract 3 from both sides, C add 3 to both sides.

Use your explanation to decide the next step.

Careful variation

A1 • Show your reasoning

Solve $2x+3=11$; $2x-3=11$; $3-2x=11$. Explain why the solutions differ.

Explain your decisions and check the result.

Independent application

A2 • Show your reasoning

Solve $4(x+2)=3x+13$ and check in the original equation.

Explain your decisions and check the result.

Use the method in context

A3 • Show your reasoning

A number is tripled and then 7 is added, giving 31.
Form an equation and find the number.

Explain your decisions and check the result.

Intentional practice feedback

Read after attempting A3

$$3x+7=31; x=8.$$

Correct one step and explain the change.

A claim to test

C1 • Show your reasoning

A learner solves $2x+6=14$ as $x+6=7$. Explain the mistake and give the solution.

Explain your decisions and check the result.

Deepen the reasoning

C2 • Show your reasoning

Compare $2(x+3)=2x+6$ with $2(x+3)=2x+7$. How many solutions does each have?

Explain your decisions and check the result.

Retrieval without notes

Q1–Q6 • Numeric answers; units as requested

Q1–Q3

Solve $x+5=12$

Solve $3x=18$

Solve $2x-3=11$

Q4–Q6

Solve $3-2x=11$

Solve $5x+1=3x+9$

$\frac{3}{4}$ of 28

Independent exit evidence

P1 • Without notes • Teacher review

Solve $5x - 4 = 16$. Show balanced steps. [2]

Show working and check your answer.

Independent exit evidence

P2 • Without notes • Teacher review

Solve $6x+1=4x+13$. Show 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

L020: Equations in contexts

Complete F1 tomorrow without notes.

Attempt F2 and bring one question.

Optional stretch

Solve $5(2x - 1) = 3x + 16$ and check.

Show a method. Explain a check or counterexample.

Optional deep challenge

Explain why dividing $3x+6=12$ by 3 gives $x+6=4$ incorrectly.

Show a method. Explain a check or counterexample.

L019 Recall & Review

Linear equations



Fresh evidence: prove the objective

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

Objective: Solve linear equations while preserving equality. Check solutions in the original equation, including unknowns on both sides.

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 represented the algebraic structure accurately, kept each transformation valid and checked the result by substitution, graph or equivalent reasoning.

Identify the mathematical method, representation, reasoning or check that improved.

Even Better If (EBI)

I will show the missing inverse operation or algebraic step, keep signs and brackets accurate and test the result in the original relationship.

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

Solve $5(2x-1)=3x+16$ and check.

Deep challenge

Explain why dividing $3x+6=12$ by 3 gives $x+6=4$ incorrectly.

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