

Equations in contexts

Pearson Edexcel GCSE Mathematics 1MA1

L020 • Foundation and Higher

60 minute lesson | learner resources

The goal and the evidence

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

Translate a context into a linear equation, solve it and interpret the result with appropriate units and constraints.

Explain, apply and check independently.

Starting-point diagnostic

R1–R3 • Attempt without notes

Solve $3x+2=17$.

Simplify $2(x+4)+2x$.

Find the perimeter of a 7 cm by 3 cm rectangle.

Worked example and your turn

D1 • Explain each step

Model: £4 tickets plus £3 fee total £23: $4n+3=23$, $n=5$. Now £5 tickets plus £2 fee total £32. Find n .

Try the paired problem; check independently.

Worked example and your turn

D2 • Explain each step

Model: two consecutive integers are n and $n+1$.
Their sum 15 gives $2n+1=15$. Find consecutive integers summing to 23.

Try the paired problem; check independently.

Worked example and your turn

D3 • Explain each step

Model: rectangle sides x and $x+3$ cm, perimeter 26 cm: $4x+6=26$, $x=5$. Now perimeter 34 cm. Find both sides.

Try the paired problem; check independently.

Worked example and your turn

D4 • Explain each step

Model: A costs $5+2n$, B costs $3n$ pounds. Equal cost gives $n=5$. Now A costs $8+2n$ and B costs $4n$. Find equality.

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.

n tickets cost £4 each plus one £3 fee. Total £23: A $4(n+3)=23$, B $4n+3=23$, C $7n=23$.

Use your explanation to decide the next step.

Careful variation

A1 • Show your reasoning

Form and solve: a number plus 6 is 20; six times a number is 30; six less than twice a number is 20.

Explain your decisions and check the result.

Independent application

A2 • Show your reasoning

A rectangle is x cm wide and $x+5$ cm long. Perimeter is 42 cm. Find both dimensions.

Explain your decisions and check the result.

Use the method in context

A3 • Show your reasoning

A club charges £6 joining fee plus £3 per visit. A bill is £27. Find the number of visits and check.

Explain your decisions and check the result.

Intentional practice feedback

Read after attempting A3

7 visits; $6+3\times 7=27$.

Correct one step and explain the change.

A claim to test

C1 • Show your reasoning

Can two consecutive whole numbers sum to 30?
Use an equation to explain.

Explain your decisions and check the result.

Deepen the reasoning

C2 • Show your reasoning

Plan A costs £10+£2 per visit; B costs £4 per visit.
When are costs equal, and which is cheaper for 8 visits?

Explain your decisions and check the result.

Retrieval without notes

Q1–Q6 • Numeric answers; units as requested

Q1–Q3

Solve $4n+3=23$

Smaller consecutive
integer: total 23

x if $4x+6=34$

Q4–Q6

Solve $8+2n=4n$

Visits: $6+3v=27$

20% of 45

Independent exit evidence

P1 • Without notes • Teacher review

A £4 fee plus £2 per item gives £18. Form an equation and find the number of items. [2]

Show working and check your answer.

Independent exit evidence

P2 • Without notes • Teacher review

Consecutive integers total 35. Form an equation and find both. [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

L021: Formulae and rearranging

Complete F1 tomorrow without notes.

Attempt F2 and bring one question.

Optional stretch

A taxi charges £3.50 plus £1.80 per mile. Find miles travelled for a £21.50 fare.

Show a method. Explain a check or counterexample.

Optional deep challenge

A rectangle's perimeter is 38 cm and its length is 3 cm more than width. Find dimensions.

Show a method. Explain a check or counterexample.

L020 Recall & Review

Equations in contexts



Fresh evidence: prove the objective

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

Objective: Translate a context into a linear equation, solve it and interpret the result with appropriate units and constraints.

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

A taxi charges £3.50 plus £1.80 per mile. Find miles travelled for a £21.50 fare.

Deep challenge

A rectangle's perimeter is 38 cm and its length is 3 cm more than width. Find dimensions.

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