

Angle facts and parallel lines

Pearson Edexcel GCSE Mathematics 1MA1

L025 • Geometry and measures

60 minute lesson | learner resources

The goal and the evidence

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

Calculate missing angles and justify each step using named angle facts and marked parallel lines.

Explain, apply and check independently.

Starting-point diagnostic

R1–R3 • Attempt without notes

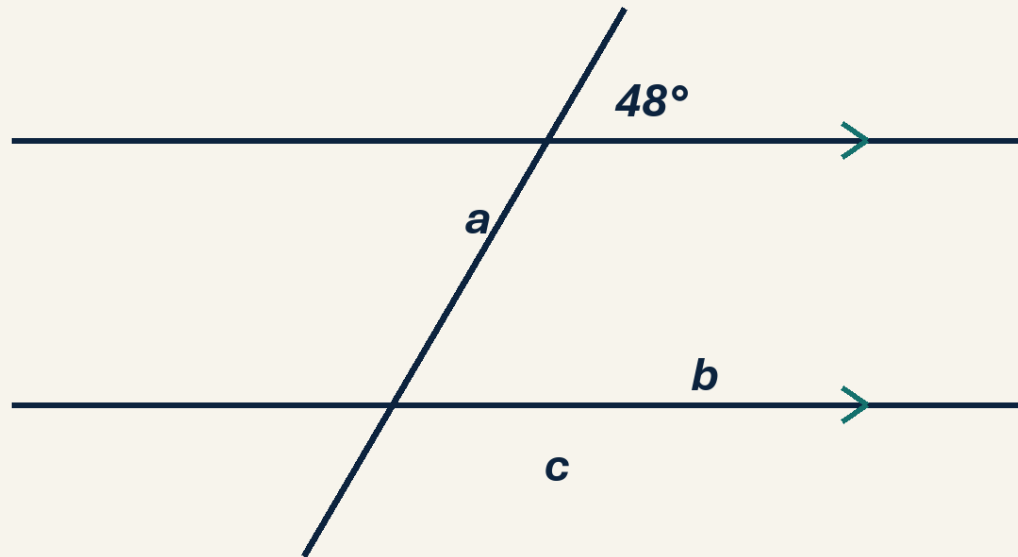
Find $180 - 65$.

Find $360 - 120 - 90$.

Solve $2x + 40 = 180$.

See the geometry

Use the diagram and practical sheet.



Parallel arrows are given.

Name the angle facts.

Do not measure the sketch.

Teaching sketch • not to scale

Worked example and your turn

D1 • Explain each step

Model: adjacent angles on a straight line are 42° and x° , so $x=138^\circ$. Now use 73° and y° .

Try the paired problem; check independently.

Worked example and your turn

D2 • Explain each step

Model: angles at a point are 90° , 140° and x° , so $x=130^\circ$. Now use 80° , 125° and y° .

Try the paired problem; check independently.

Worked example and your turn

D3 • Explain each step

Model: one angle at intersecting lines is 62° ; its opposite is 62° . Now one is 117° . Find its opposite and an adjacent angle.

Try the paired problem; check independently.

Worked example and your turn

D4 • Explain each step

Model: alternate angles on parallel lines are equal, so 54° matches 54° . Now an alternate pair is $(3x+10)^\circ$ and 70° . Find x .

Try the paired problem; check independently.

A method you can explain

Name the fact or construction at each step.

Check against the original question.

Diagnostic pause

Choose and explain before moving on.

A co-interior pair on parallel lines includes 65° .
Other angle? A 65° , B 115° , C 295° .

Use your explanation to decide the next step.

Careful variation

A1 • Show your reasoning

For a given angle of 48° on parallel lines, find a corresponding, alternate and co-interior partner.

Explain your decisions and check the result.

Independent application

A2 • Show your reasoning

A co-interior pair on parallel lines is $(2x+20)^\circ$ and $(x+10)^\circ$. Find x and both angles.

Explain your decisions and check the result.

Use the method in context

A3 • Show your reasoning

Two straight parallel rails meet a transversal. One acute angle is 64° . Find an obtuse angle at either crossing and explain.

Explain your decisions and check the result.

Intentional practice feedback

Read after attempting A3

116°.

Correct one step and explain the change.

A claim to test

C1 • Show your reasoning

A learner sees two lines that look parallel and copies an alternate angle. Explain why this may fail.

Explain your decisions and check the result.

Deepen the reasoning

C2 • Show your reasoning

Explain why vertically opposite angles are equal using a shared adjacent angle a° .

Explain your decisions and check the result.

Retrieval without notes

Q1–Q3 • Numeric answers

Supplement of 72° , in degrees

Full turn minus 95° , in degrees

Opposite angle to 113° , in degrees

Retrieval without notes

Q4–Q6 • Numeric answers

Alternate to 47° on parallels, degrees

Co-interior partner of 124° , degrees

Solve $3x+15=180$

Independent exit evidence

P1 • Without notes • Teacher review

A straight-line pair is 86° and x° . Find x with a reason. [2]

Show working and check your answer.

Independent exit evidence

P2 • Without notes • Teacher review

Alternate angles on marked parallel lines are $(4x - 5)^\circ$ and 63° . Find x , showing the equation. [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

L026: Triangles and polygons

Complete F1 tomorrow without notes.

Attempt F2 and bring one question.

Optional stretch

Two parallel lines have co-interior angles $3x+10$ and $2x+20$. Find x .

Show a method. Explain a check or counterexample.



Optional deep challenge

A student says alternate angles always add to 180° . Correct the claim.

Show a method. Explain a check or counterexample.

L025 Recall & Review

Angle facts and parallel lines



Fresh evidence: prove the objective

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

Objective: Calculate missing angles and justify each step using named angle facts and marked parallel lines.

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 selected the correct geometric fact, theorem, formula or transformation and used a clear diagram with appropriate labels and units.

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

Even Better If (EBI)

I will name the fact or theorem, show the substitution or construction step and check whether the size, direction and units of the result are reasonable.

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

Two parallel lines have co-interior angles $3x+10$ and $2x+20$. Find x .

Deep challenge

A student says alternate angles always add to 180° . Correct the claim.

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