

Teacher guide and workbook answers

Pearson Edexcel GCSE Mathematics 1MA1 • L025

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

REACH FOR THE STAR | GCSE MATHEMATICS

Purpose and prerequisites

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

L019 linear equations; degrees, turns and straight lines; L024 angle preparation.

Selected specification content: G1 G3. 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. Prepare rulers, compasses, protractors, tracing paper and the practical drawing sheets. Drawings and constructions require teacher review. 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.

A co-interior pair on parallel lines includes 65° . Other angle? A 65° , B 115° , C 295° . Answer B: the pair sums to 180° .

Recall and guided-practice answers

R1

115. Half-turn total.

R2

150. Full-turn total.

R3

$x=70$. Subtract 40 and divide by 2.

D1

$y=107^\circ$. $180-73$.

D2

$y=155^\circ$. $360-80-125$.

D3

117° ; 63° . Opposite equal; adjacent sum 180° .

D4

$x=20$. $3x+10=70$.

Application and challenge answers

A1

48° , 48° , 132° . Only the co-interior partner is supplementary.

A2

$x=50$; 120° and 60° . $3x+30=180$; check sum.

A3

116° . Adjacent angles sum 180° ; corresponding angles transfer between crossings.

C1

Appearance is not evidence of parallelism. Equality requires parallel lines or another given reason. Use markings or stated information.

C2

Both equal $180-a$, so they are equal. This is a general argument, not a measurement.

Calculator guidance: Non-calculator reasoning. Optional check: $95+85=180$. A calculator cannot identify an angle relationship.

Independent evidence and next steps

P1

94° B1; angles on a straight line sum to 180° B1. Check $86+94=180$.

P2

$4x-5=63$ M1; $x=17$ A1. The angles are equal.

P3

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

F1

53° . $180-127$.

F2

70° . Triangle total 180° .

Retrieval answers: 108, 265, 113, 47, 56, 55. 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

If every angle is copied, contrast an alternate pair with a co-interior pair. If parallelism is assumed, remove the arrows and ask what remains known. Recheck a 68° angle with its supplement, 112° .

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 activities

Allow 10–15 minutes for learners who have secured the main practice. Show a method, explain a check and justify your conclusion.

Stretch

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

Answer and reasoning: $5x+30=180$, so $x=30^\circ$.

Deep challenge

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

Answer and reasoning: Alternate angles on parallel lines are equal; co-interior angles add to 180° .

Ask for a fresh independent explanation before deciding that the method is secure.

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

Lesson L025: Angle facts and parallel lines

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

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 one check, correct one error and record the next practice step.

What Went Well (WWW)

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

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.

Integrated stretch and deep challenge

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.

Teacher use

Use the What Went Well (WWW) and Even Better If (EBI) prompts to write mathematics-specific feedback linked to the objective. Do not accept generic praise: 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 reasoning.

Optional check: $95+85=180$. A calculator cannot identify an angle relationship..