

Slide by slide delivery map

Pearson Edexcel GCSE Mathematics 1MA1 • L034

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

REACH FOR THE STAR | GCSE MATHEMATICS

01 Circles arcs and sectors 1 min Recall

Calculate circle circumference and area, arc length and sector area, distinguishing curved length from the full sector perimeter.

02 The goal and the evidence 1 min Recall

L033 perimeter/area and square units; fractions of amounts; radius and diameter.

03 Starting-point diagnostic 5 min Recall

If diameter is squared in πr^2 , halve it first. If a sector perimeter equals just its arc, trace both straight edges. If $\theta/180$ is used, compare a semicircle with the full 360° . Recheck $r=6$, $\theta=90^\circ$.

04 See the geometry 2 min Discover

Every circle has circumference divided by diameter equal to π , so $C=\pi d=2\pi r$. Rearranging narrow sectors approaches a rectangle with height r and width πr , explaining area πr^2 . A central angle θ covers $\theta/360$ of a whole circle, so $\text{arc}=(\theta/360)2\pi r$ and $\text{sector area}=(\theta/360)\pi r^2$. A sector perimeter adds two radii to its arc.

05 Worked example and your turn 3 min Discover

10π cm. Use πd .

Delivery continued

06 Worked example and your turn 3 min Discover

$16\pi \text{ cm}^2$. Radius 4; square it.

07 Worked example and your turn 3 min Discover

$4\pi \text{ cm}$. One third of 12π .

08 Worked example and your turn 3 min Discover

$12\pi \text{ cm}^2$; $4\pi+12 \text{ cm}$. Area one third of 36π ; perimeter adds two radii.

09 A method you can explain 2 min Discover

Mark radius versus diameter. Decide whether the question asks for length or area. Use the central-angle fraction, retain π or full calculator precision, then round once at the end. Check units and that a minor part is smaller than the whole.

10 Diagnostic pause 3 min Apply

A quarter-circle sector has $r=4 \text{ cm}$. Its perimeter is A 2π , B $2\pi+8$, C $4\pi \text{ cm}$. Answer B: arc plus two radii.

Delivery continued

11 Careful variation 4 min Apply

8π , 4π , 2π cm. Whole, half, quarter.

12 Independent application 4 min Apply

16π cm²; $4\pi+16$ cm. Quarter of area and circumference; add radii.

13 Use the method in context 4 min Apply

31.4 m; 78.5 m². 10π and 25π ; round only final values.

14 Intentional practice feedback 2 min Apply

10π and 25π ; round only final values. Calculator required for A3 only; other tasks use exact π forms. Enter $10\times\pi$ and $\pi\times5^2$, retaining full precision until rounding to 1 decimal place. Numeric retrieval asks for coefficients of π , not the full symbolic answer.

15 A claim to test 4 min Challenge

Circumference doubles; area quadruples because $(2r)^2=4r^2$. Use formulas or a counterexample.

Delivery continued

16 Deepen the reasoning 4 min Challenge

3π is curved arc only; include diameter 6, total $3\pi+6$ m. Trace the closed boundary.

17 Retrieval without notes 2 min Prove

Answers: 14, 9, $1/3$. Completion is not mastery.

18 Retrieval without notes 2 min Prove

Answers: 25, 12, 4. Completion is not mastery.

19 Independent exit evidence 2 min Prove

$(60/360) \times 36\pi$ M1; $6\pi \text{ cm}^2$ A1. One sixth of circle.

20 Independent exit evidence 3 min Prove

Arc 3π cm M1; $3\pi+12$ cm A1. Add two radii.

Delivery continued

21 Feedback and next steps 2 min Prove

If diameter is squared in πr^2 , halve it first. If a sector perimeter equals just its arc, trace both straight edges. If $\theta/180$ is used, compare a semicircle with the full 360° . Recheck $r=6$, $\theta=90^\circ$.

22 Before the next lesson 1 min Recall

A prism has the same cross-section throughout. Volume equals cross-sectional area times perpendicular length; for a cylinder the cross-section is a circle. Use cubic units.

Recall & Review: feedback and extension integration

Lesson L034: Circles arcs and sectors

Objective: Calculate circle circumference and area, arc length and sector area, distinguishing curved length from the full sector perimeter.

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: A sector has radius 9 cm and angle 80° . Find arc length and area exactly.

Deep challenge: A learner finds the perimeter of a semicircle of radius 5 cm as 5π cm. Explain the missing part.

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. Calculator required for A3 only; other tasks use exact π forms. Enter $10 \times \pi$ and $\pi \times 5^2$, retaining full precision until rounding to 1 decimal place. Numeric retrieval asks for coefficients of π , not the full symbolic answer..