

Perimeter and compound area

Pearson Edexcel GCSE Mathematics 1MA1 • L033
Foundation and Higher • 60 minutes • Lesson resources

REACH FOR THE STAR | GCSE MATHEMATICS

Calculate perimeters and areas of compound rectilinear shapes, triangles, parallelograms and trapezia with correct units.

Optional check: $(5+9) \times 4 \div 2 = 28$. Enter brackets round the sum. Estimate first; a triangle with the same base and height has half the parallelogram area.

Follow the task-specific calculator guidance below. Write on the lines or replace them with typed answers. Attempt before reading intentional practice feedback.

Connect & Check

Perimeter: total boundary length. Area: surface coverage. Perpendicular height: shortest distance between parallel bases. Compound shape: shape assembled from familiar parts.

R1

Find perimeter of a 6 cm by 4 cm rectangle.

R2

Find its area.

R3

Convert 1 cm^2 to mm^2 .

Share | In pairs, predict the first step for this problem: A rectangle contains length×width unit squares. A triangle is half a parallelogram, so $\text{area} = \text{base} \times \text{perpendicular height} \div 2$. Shearing a parallelogram preserves area. Two matching trape Compare your reasons before using the worked model.

Present through worked examples

A rectangle contains length×width unit squares. A triangle is half a parallelogram, so $\text{area} = \text{base} \times \text{perpendicular height} \div 2$. Shearing a parallelogram preserves area. Two matching trapezia make a parallelogram, giving $\text{area} = (a+b)h \div 2$ for parallel sides a,b. Split compound shapes without overlap; internal cut lines do not count in the perimeter.

D1

Model: rectangle 8×5 cm with a 3×2 cm corner removed has area $40 - 6 = 34 \text{ cm}^2$. Now 10×6 cm minus a 4×2 cm corner.

D2

Model: triangle base 8 cm, height 3 cm has area 12 cm^2 . Now base 10 cm, perpendicular height 7 cm.

D3

Model: parallelogram base 6 cm, height 4 cm has area 24 cm^2 . Now base 9 cm, height 5 cm.

D4

Model: trapezium parallel sides 4,8 cm and height 3 cm has area 18 cm^2 . Now sides 5,9 cm, height 4 cm.

Apply with less support

Label missing lengths. Trace the outer boundary for perimeter. For area, choose non-overlapping pieces or subtract a cut-out. State square units. Estimate and use a second partition to check.

A1

With base 8 cm and height 5 cm, compare rectangle/parallelogram area with triangle area.

A2

For a 10×6 cm rectangle with a 4×2 cm corner removed, find area and perimeter.

A3

A floor is an 8 m by 5 m rectangle with a 3 m by 2 m corner missing. Tiles cover 0.5 m^2 each. Find tiles needed, ignoring waste.

Optional support: Sketch the bounding parallelogram.

Optional check: $(5+9) \times 4 \div 2 = 28$. Enter brackets round the sum. Estimate first; a triangle with the same base and height has half the parallelogram area.

Apply and extend reasoning

C1

A square and rectangle have the same perimeter. Must their areas match? Give a counterexample.

C2

Removing a rectangular corner always reduces perimeter. Test a 10×6 rectangle with a 4×2 corner removed.

Intentional practice feedback — read after attempting

A1: 40 cm^2 and 20 cm^2 .

A2: 52 cm^2 ; 32 cm.

A3: 34 m^2 ; 68 tiles.

C1: 4×4 gives perimeter 16 area 16; 6×2 gives perimeter 16 area 12.

C2: False: perimeter stays 32 cm; removed $4+2$ is replaced by inset $4+2$.

Correct one response and explain your change. Stretch is available to either tier; temporary support needs do not determine entry tier.

Recall & Review through retrieval

Work without notes. Six retrieval points; this attempt does not establish mastery. Equivalent exact numeric forms are accepted. Where accuracy is requested, also state the requested form in your written work.

Q1 Area 6×4 rectangle, in cm^2

Q2 Perimeter 6×4 rectangle, in cm

Q3 Triangle $b=10, h=7$: area in cm^2

Q4 Trapezium $a=5, b=9, h=4$: area in cm^2

Q5 Area 10×6 minus 4×2 , in cm^2

Q6 mm^2 in 1 cm^2

Intentional retrieval feedback

Q1 24; Q2 20; Q3 35; Q4 28; Q5 52; Q6 100. Correct and retry tomorrow, then in one week.

Prove independently and improve

P1–P2: five minutes without notes; 4 marks. Your teacher reviews explanations and method marks.
P3 has no mark.

P1

Find the area of a trapezium with parallel sides 6,10 cm and height 5 cm. Show working. [2]

P2

A 9×6 cm rectangle has a 2×3 cm corner removed. Find its area and perimeter. [2]

P3

Explain one corrected error. Record a fresh question and a date to check it without support.

Teacher feedback: _____

Fresh question and retry date: _____

Delayed independent evidence: _____

Prepare for the next lesson

L034: Circles arcs and sectors

F1

Tomorrow find triangle area for base 12 cm and height 5 cm.

F2

Before L034, a circle has radius 4 cm. Find diameter and explain the relationship.

Read and prepare

A circle circumference is $2\pi r$ and area is πr^2 . An arc or sector represents a fraction of the whole circle determined by its central angle divided by 360° .

Digital workbook: save locally where available; export a JSON backup before closing or moving the file. Restore only this lesson/version. Printing records answers, not mastery. Live browser checks remain pending; use Word/PDF if 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

A rectangle 12 cm by 8 cm has a 3 cm by 2 cm corner cut out. Find area and perimeter.

Deep challenge

Two shapes each have area 36 cm^2 . Must their perimeters be equal? Give a counterexample.

Recall & Review: feedback and extension integration

Lesson L033: Perimeter and compound area

Objective: Calculate perimeters and areas of compound rectilinear shapes, triangles, parallelograms and trapezia with correct units.

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 rectangle 12 cm by 8 cm has a 3 cm by 2 cm corner cut out. Find area and perimeter.

Deep challenge: Two shapes each have area 36 cm^2 . Must their perimeters be equal? Give a counterexample.

My next-step response
