Area and perimeter: fact sheet

Planner week 12 · Learn these facts

Perimeter

add all the sides

3 + 7 + 3 + 7 = 20 cm

The distance round the outside

Units: cm

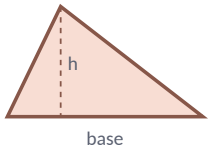
Rectangle



Area = base × height

Units: cm²

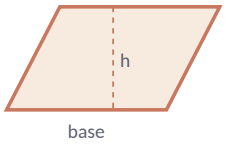
Triangle



Area = $\frac{1}{2}$ × base × height

Use the perpendicular height

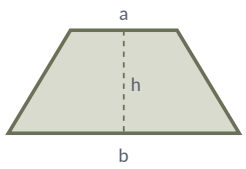
Parallelogram



Area = base × height

Not the slanted side

Trapezium



Area = $\frac{1}{2}$ (a + b) × h

Add the parallel sides

Compound shapes

split into rectangles

find missing sides

add the areas

Or a big shape − a cut-out

Mark the missing lengths

With algebra

6x − 5 = 52

x = 9.5

Write an expression, set it equal

Then solve the equation

Units

Perimeter	cm, m
Area	cm², m²
1 m²	10 000 cm²

Which sheet do I need?

Perimeter ▸
the distance round the edge

Area ▸
the space inside

Area and perimeter with algebra ▸
letters in the lengths: write an equation

Key words

- **Perimeter** the distance round the outside
- **Area** the space inside
- **Perpendicular height** at right angles to the base
- **Compound shape** made of simple shapes

Exam tips

- Perimeter: add. Area: multiply.
- Label every side before adding: find the missing ones.
- Use the height at a **right angle** to the base.
- Write cm for perimeter and cm² for area.
- Change to the same units first.
- Paint or seed questions: area ÷ cover, then round **up**.

Perimeter: fact sheet

Area and perimeter · Planner week 12 · Learn the method

Worked example

QUESTION

The diagram shows a shape made from rectangles. All the corners are right angles.

Work out the perimeter of the shape.

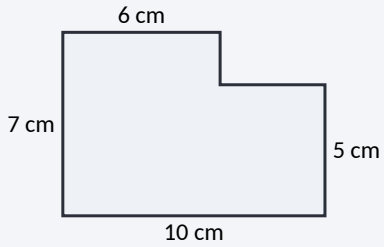


Diagram NOT accurately drawn

ANSWER

1. Find the missing sides: 10 − 6 = 4 cm and 7 − 5 = 2 cm
2. Go round the shape and add every side: 6 + 2 + 4 + 5 + 10 + 7

34 cm

Find every missing side, then add them all.

How to do it

1. Label all the sides you know.
2. Work out the missing sides (across and down).
3. Start at one corner and go round, adding.
4. Tick each side as you add it.
5. Write the units: cm or m.

Model answer:

34 cm

Watch out

- Missing out a side.
- Multiplying the sides (that is area).
- Adding inside lines that are not on the edge.

Area: fact sheet

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Worked example

QUESTION

A trapezium has parallel sides of 10 m and 16 m. The height is 7 m. Work out the area of the trapezium.

ANSWER

1. Area of a trapezium = $\frac{1}{2} \times (a + b) \times h$
2. = $\frac{1}{2} \times (10 + 16) \times 7$
3. = 13×7

91 m²

Pick the right formula, then multiply.

How to do it

1. Name the shape.
2. Choose the formula: rectangle, triangle, parallelogram or trapezium.
3. Use the perpendicular height.
4. Compound shapes: split up and add.
5. Write cm² or m².

Model answer:

91 m²

Watch out

- Forgetting the $\frac{1}{2}$ for a triangle or trapezium.
- Using a slanted side as the height.
- Rounding tins down instead of up.

Area and perimeter with algebra: fact sheet

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Worked example

QUESTION

A rectangle has length $(x + 4)$ cm and width x cm.

The perimeter of the rectangle is 30 cm. Work out the value of x.

ANSWER

1. Perimeter = add all four sides: $x + 4 + x + x + 4 + x = 4x + 8$
2. $4x + 8 = 30$
3. $4x = 22$

$x = 5.5$

Write an equation, then solve it.

How to do it

1. Write the perimeter or area using the letters.
2. Collect like terms.
3. Set it equal to the number you are given.
4. Solve for x.
5. Put x back in to find what was asked.

Model answer:

$4x + 8 = 30$, so $x = 5.5$

Watch out

- Stopping at x instead of finding the side.
- Using area when it says perimeter.
- Sign errors when collecting terms.