1.2 Units of length

All measurements on building plans are written in millimetres.

A room is 4.3 metres long.

What length is written on the plan?

10 millimetres (mm)	= 1 centimetre (cm)
1 000 millimetres (mm)	= 1 metre (m)
100 centimetres (cm)	= 1 metre (m)
1 000 metres (m)	= 1 kilometre (km)

Converting to smaller units:

- To convert ***kilometres*** to ***metres***, **multiply** by 1 000.
- To convert ***metres*** to ***millimetres***, **multiply** by 1 000.
- To convert ***metres*** to ***centimetres***, **multiply** by 100.
- To convert ***centimetres*** to ***millimetres***, **multiply** by 10.

EXAMPLES

Convert 5 km to metres.

5 × 1 000 = 5 000 m

Convert 4.3 m to millimetres.

4.3 × 1 000 = 4 300 mm

A quick way to **multiply** by **1 000**: ***Move the decimal point 3 places to the*** **right**.

1 Convert to metres (m).

a 12 km = _____ **b** 9.5 km = _____ **c** 1.7 km = _____

d 0.8 km = _____ **e** 6.12 km = _____ **f** 16.5 km = _____

2 Convert to millimetres (mm).

a 14 m = _____ **b** 8.2 m = _____ **c** 11.3 m = _____

d 0.7 m = _____ **e** 1.28 m = _____ **f** 5.63 m = _____

3 Convert to centimetres (cm). *Hint:* multiply by 100.

a 8 m = _____ **b** 14 m = _____ **c** 6.4 m = _____

d 11.3 m = _____ **e** 0.2 m = _____ **f** 2.25 m = _____

4 Convert to millimetres (mm). *Hint:* multiply by 10.

a 7 cm = _____ **b** 24 cm = _____ **c** 8.7 cm = _____

d 0.9 cm = _____ **e** 11.3 cm = _____ **f** 150 cm = _____

5 Complete these conversions.

a 2.6 km = _____ m **b** 6.35 m = _____ mm **c** 46 cm = _____ mm

d 3.48 km = _____ m **e** 0.62 m = _____ cm **f** 4.07 m = _____ mm

1.2 Units of length

CONTINUED

Converting to larger units:

- To convert ***metres*** to ***kilometres***, **divide** by 1 000.
- To convert ***millimetres*** to ***metres***, **divide** by 1 000.
- To convert ***centimetres*** to ***metres***, **divide** by 100.
- To convert ***millimetres*** to ***centimetres***, **divide** by 10.

EXAMPLES

Convert 13 000 m to kilometres.
13 000 ÷ 1 000 = 13 km

Convert 2 500 mm to metres.
2 500 ÷ 1 000 = 2.5 m

A quick way to **divide** by **1 000**: ***Move the decimal point 3 places to the*** **left.**

6 Convert to kilometres (km).

a 4 000 m = _____ **b** 7 200 m = _____ **c** 15 600 m = _____

d 8 350 m = _____ **e** 750 m = _____ **f** 2 040 m = _____

7 Convert to metres (m).

a 3 000 mm = _____ **b** 15 000 mm = _____ **c** 4 900 mm = _____

d 26 300 mm = _____ **e** 870 mm = _____ **f** 4 650 mm = _____

8 Convert to metres (m). *Hint:* divide by 100.

a 600 cm = _____ **b** 1 200 cm = _____ **c** 670 cm = _____

d 1 960 cm = _____ **e** 175 cm = _____ **f** 95 cm = _____

9 Convert to centimetres (cm). *Hint:* divide by 10.

a 40 mm = _____ **b** 800 mm = _____ **c** 6 000 mm = _____

d 350 mm = _____ **e** 65 mm = _____ **f** 245 mm = _____

10 Complete these conversions.

a 50 mm = _____ cm **b** 5 400 m = _____ km **c** 850 cm = _____ m

d 780 mm = _____ m **e** 4 560 mm = _____ m **f** 14 750 m = _____ km

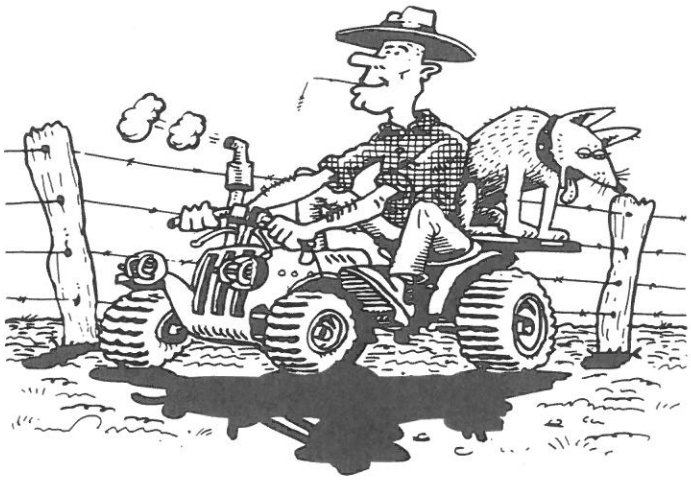
11 For each pair of lengths, ***circle*** the **longer** length.

a 7 km or 6 950 m **b** 575 mm or 5.7 m **c** 17.3 cm or 175 mm

12 For each pair of lengths, ***circle*** the **shorter** length.

a 2.5 km or 24 500 m **b** 750 mm or 0.7 m **c** 650 m or 6 510 cm

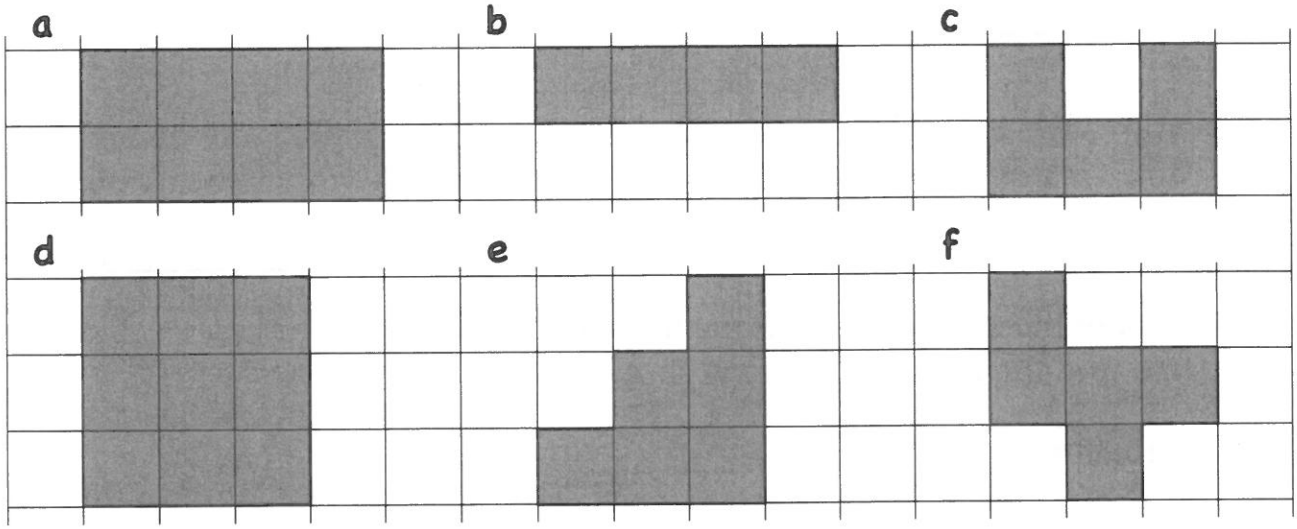
1.3 Measuring perimeters



The **perimeter** of a shape is the distance around its outside edge.

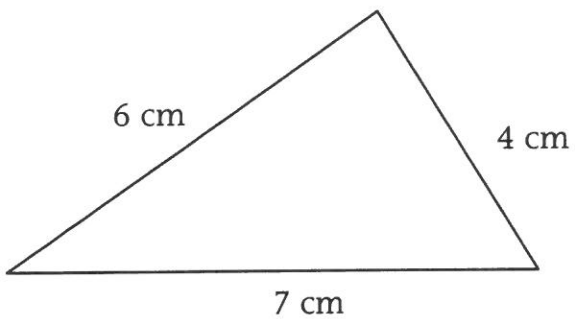
It is measured in **linear units** – millimetres, centimetres, metres or kilometres.

1 These shapes are drawn on a one centimetre grid. Write the perimeter of each shape, in centimetres.



To find the **perimeter** of any shape, **add** the lengths of the sides.

EXAMPLE



The perimeter of this triangle is:

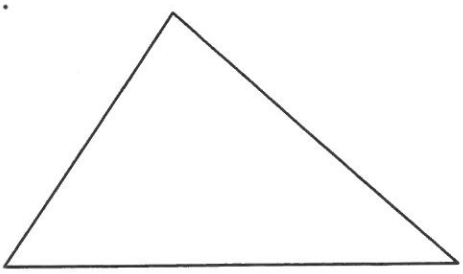
7 cm + 6 cm + 4 cm

= 17 cm

2 Measure each side of these shapes to the nearest **centimetre**. Then find the perimeter of each shape.

a Perimeter = _____ + _____ + _____

= _____

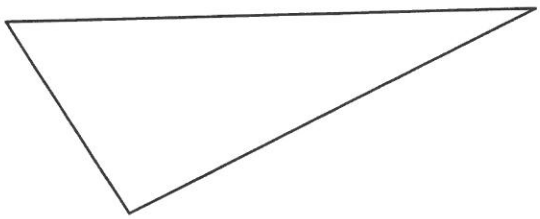


1.3 Measuring perimeters

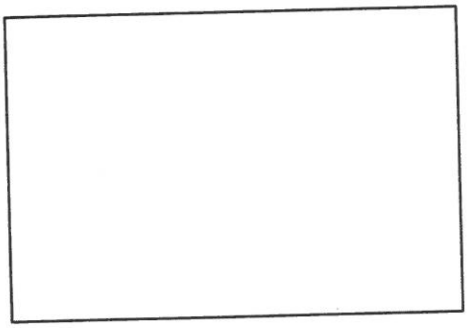
CONTINUED

b Perimeter = _____ + _____ + _____

= _____

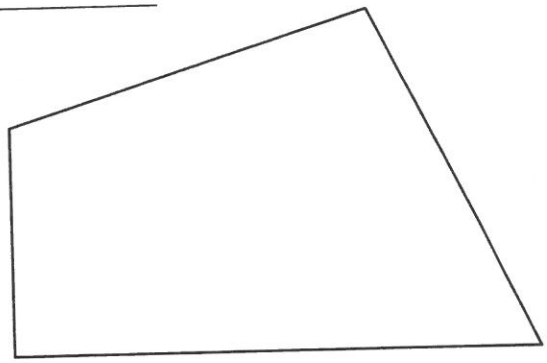


c



Perimeter = _____ + _____ + _____ + _____

= _____



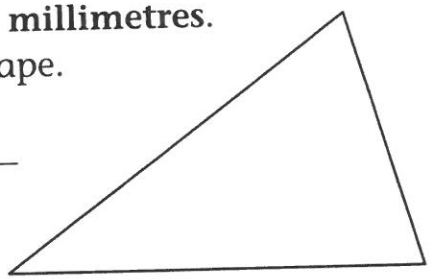
d Perimeter = _____ + _____ + _____ + _____

= _____

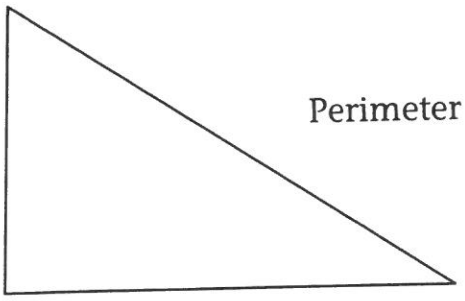
3 Measure the sides of each shape in **millimetres**. Then find the perimeter of each shape.

a Perimeter = _____ + _____ + _____

= _____



b

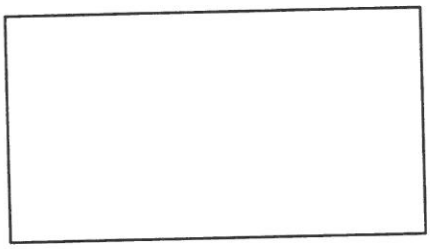


Perimeter = _____ + _____ + _____

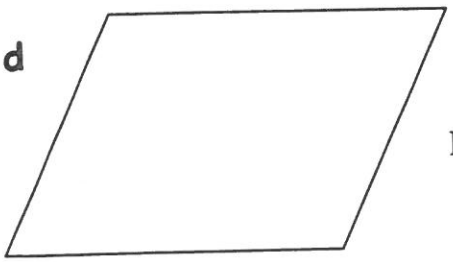
= _____

c Perimeter = _____ + _____ + _____ + _____

= _____



d



Perimeter = _____ + _____ + _____ + _____

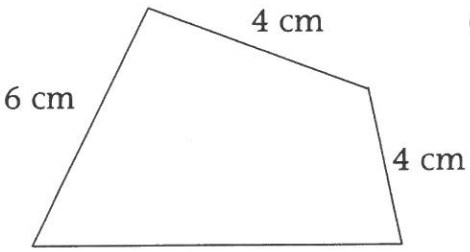
= _____

1.4 Calculating perimeters A

Terri wanted to calculate the perimeter of a piece of cardboard.
She added the lengths of the sides.

To find the *perimeter* of any shape, *add* the lengths of the sides.

EXAMPLE

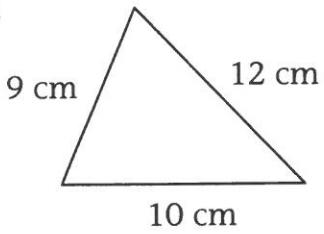


Calculate the perimeter of this shape.

The perimeter of this shape is:
7 + 6 + 4 + 4 = 21 cm

1 Calculate the perimeter of each shape.
These diagrams are ***not*** drawn to scale, so do not use your ruler.

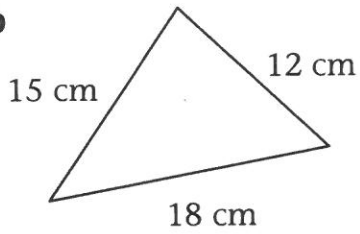
a



P = ____ + ____ + ____

= _____

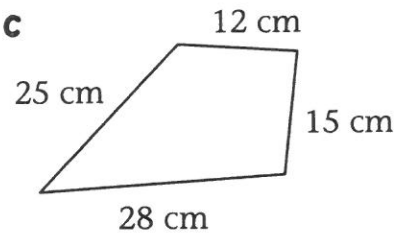
b



P = _____

= _____

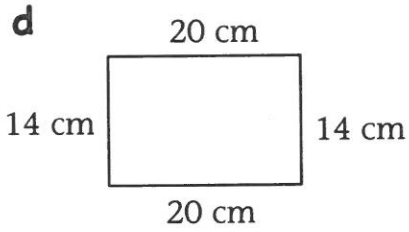
c



P = _____

= _____

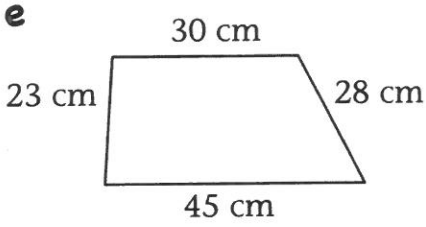
d



P = _____

= _____

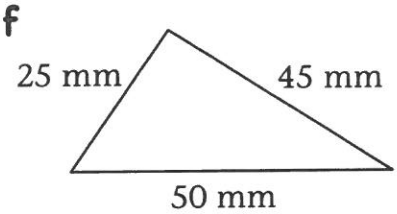
e



P = _____

= _____

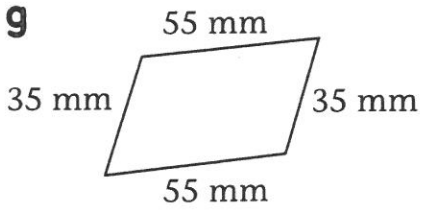
f



P = _____

= _____

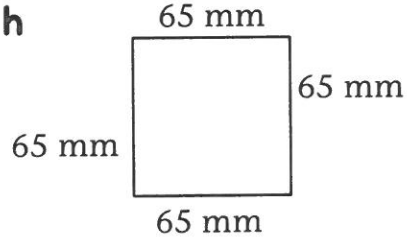
g



P = _____

= _____

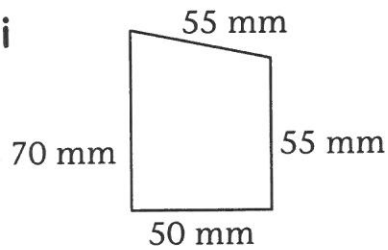
h



P = _____

= _____

i



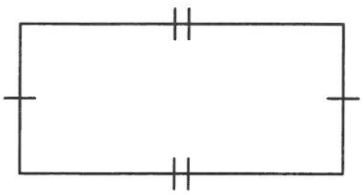
P = _____

= _____

1.4 Calculating perimeters A

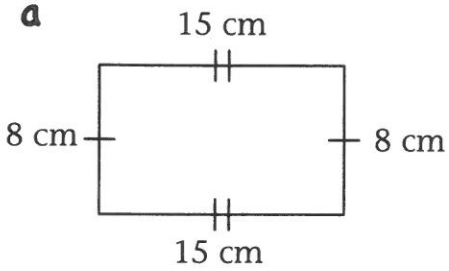
CONTINUED

On rectangles and squares, the **same marking** is used to indicate sides are the **same length**.



2 Calculate the perimeter of each rectangle and square. The diagrams are ***not*** drawn to scale.

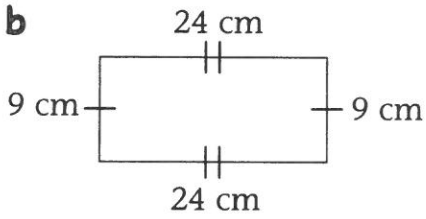
a



P = *15 + 8 + 15 + 8*

= _____

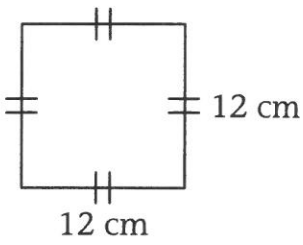
b



P = _____

= _____

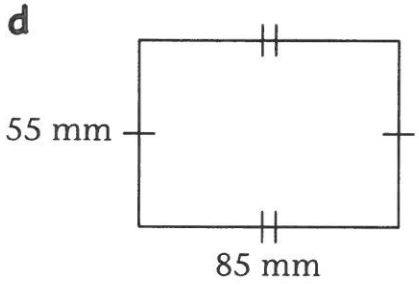
c



P = _____

= _____

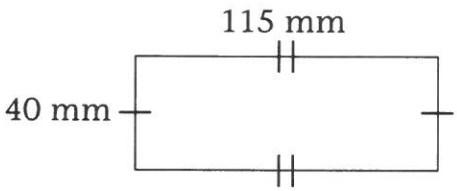
d



P = _____

= _____

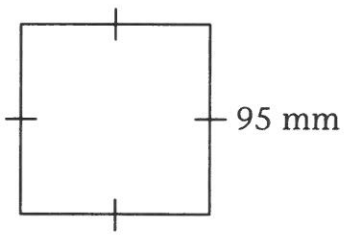
e



P = _____

= _____

f

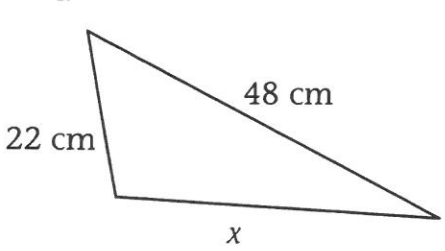


P = _____

= _____

3 On each diagram below, one length (x) is missing. You are told the perimeter of each shape. Use **subtraction** to find the missing length.

a

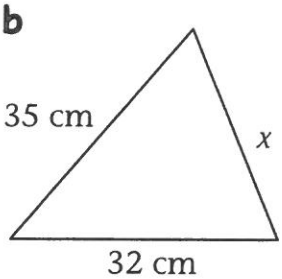


Perimeter = 105 cm

x = *105 − 48 − 22*

= _____

b

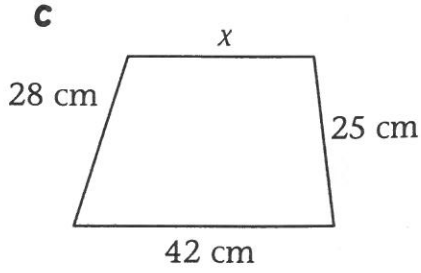


Perimeter = 95 cm

x = _____

= _____

c



Perimeter = 118 cm

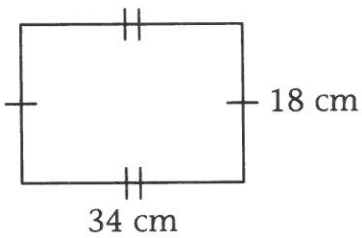
x = _____

= _____

1.5 Calculating perimeters B

1 Calculate the perimeter of each rectangle and parallelogram.
Hint: opposite sides are the same length.

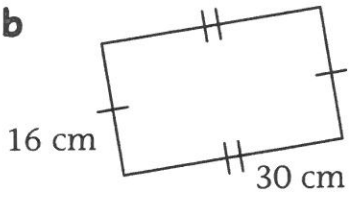
a



P = *34 + 18 + 34 + 18*

= _____

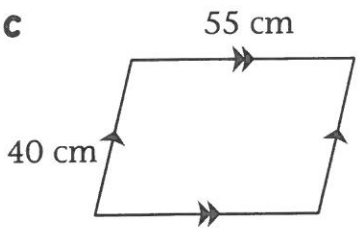
b



P = _____

= _____

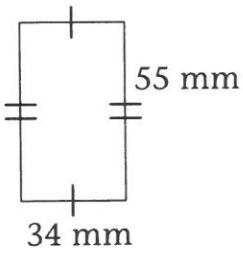
c



P = _____

= _____

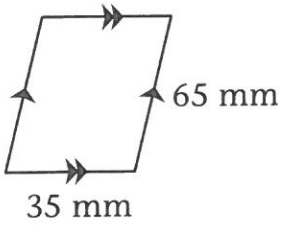
d



P = _____

= _____

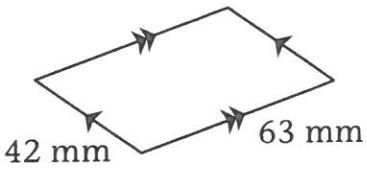
e



P = _____

= _____

f

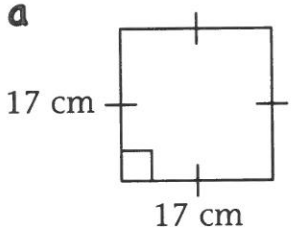


P = _____

= _____

2 Calculate the perimeter of each square and rhombus.
Hint: all squares and rhombuses have four sides of equal length.

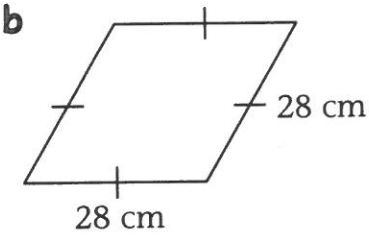
a



P = _____

= _____

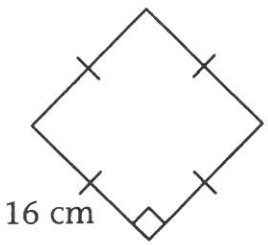
b



P = _____

= _____

c



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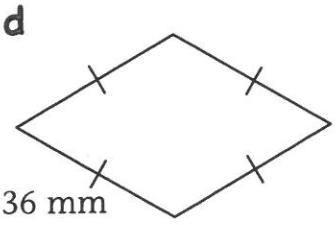

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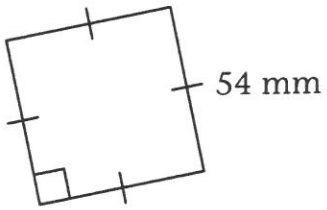

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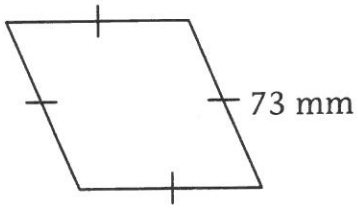

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