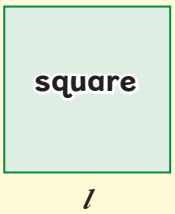
11A: Perimeter

Missing sides

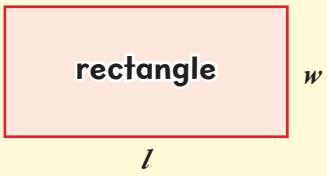
The perimeter of a shape is the distance along the outside edge.
It is measured in mm, cm, m, or km.

The formula for the perimeter of:

- a square is $P = 4l$, where l is the length of one side.



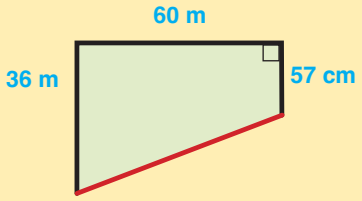
- a rectangle is $P = 2(l + w)$, where l and w are the length and width of the rectangle.



These formulae can be used to find the length of a missing side if given the perimeter and lengths of the other sides.

Worked example

The perimeter of this garden is 210 m. Find the length of the red side.



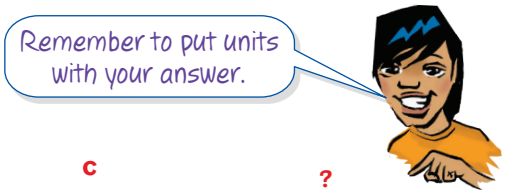
Answer *Perimeter = 60 m + 57 m + 36 m + red length.*

210 m = 153 m + red length
*210 m = 153 m + **57 m***

$$\begin{array}{r} 210 \\ -\ 153 \\ \hline 57 \end{array}$$

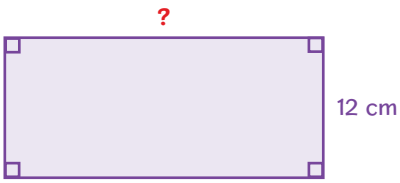
*red length = **57 m***

Activity 1



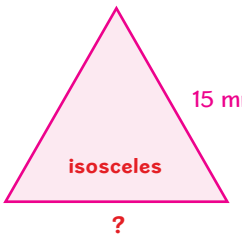
1 Find the unknown lengths (?) of these.

a



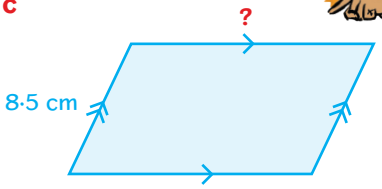
Perimeter = 56 cm

b



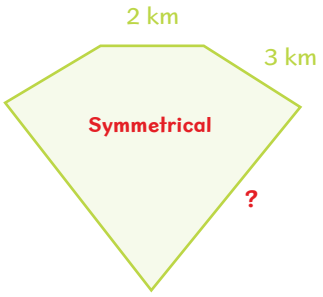
Perimeter = 48 mm

c



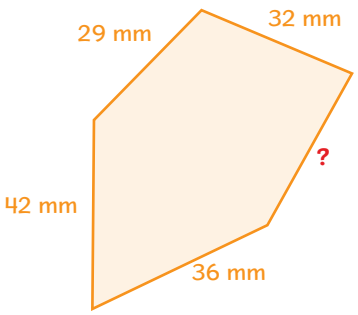
Perimeter = 40 cm

d



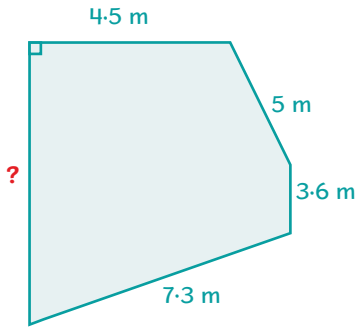
Perimeter = 19 km

e



Perimeter = 168 mm

f



Perimeter = 29 m

MEASUREMENT:
Using formulae to find unknown measurements related to perimeter (e.g. the length of the unknown sides of a square given its perimeter, the length of an unknown side in a composite shape given its perimeter).

2 Find the lengths of the sides of these squares.

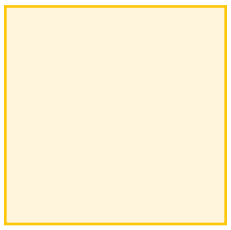
a

Perimeter = 56 cm

b

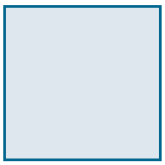
Perimeter = 8·4 mm

c



Perimeter = 144 mm

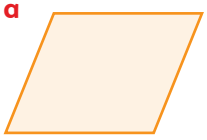
d



Perimeter = 124·8 mm

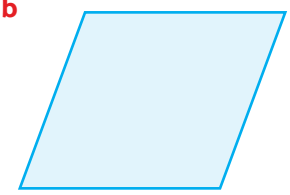
3 Find the lengths of the sides of these rhombuses.

a



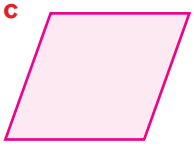
Perimeter = 72 cm

b



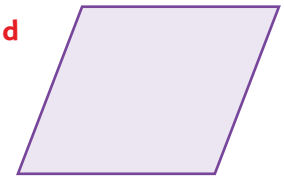
Perimeter = 10·8 cm

c



Perimeter = 104 mm

d



Perimeter = 49 km

4 Cole made some greeting cards using different cut out shapes.
He started putting a satin border around the outside of each shape.
Calculate the length of satin missing on each shape (red length).

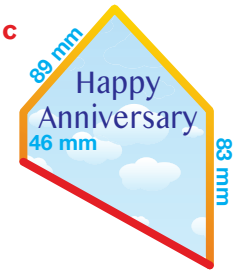
a

Perimeter
313 mm

b

Perimeter =
286 mm

c



Perimeter =
413 mm

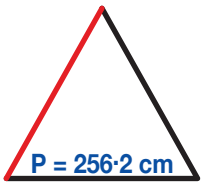
d

Perimeter =
258 mm

5 Work out the length of the red lines.

a **rectangle**

b **equilateral triangle**

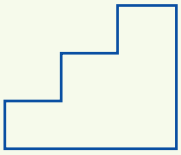


Practical

On your dotty paper draw the following.

- 1 cm square dotty paper

a Four different shapes, each with a perimeter 12 cm.
b Four different shapes, each with a perimeter 16 cm
c A staircase shape with a perimeter of 16 cm.
This is a staircase shape.



Check that shapes are not a reflection of each other. You could try other perimeters as well.

d Two different staircase shapes, each with perimeter of 20 cm.