PERIMETER AND AREA

CONTENT DOMAIN REFERENCES:
M7

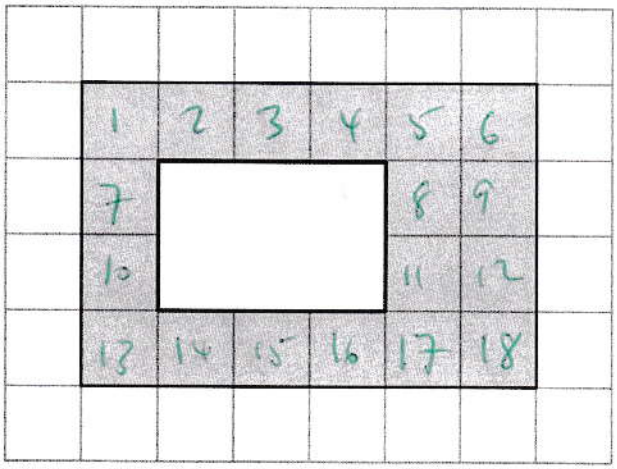
KS2 SATS

PRACTICE QUESTIONS BY TOPIC

1

[2018]

Here is a 1 cm square grid. Some of the grid is shaded.



What is the area of the shaded shape?

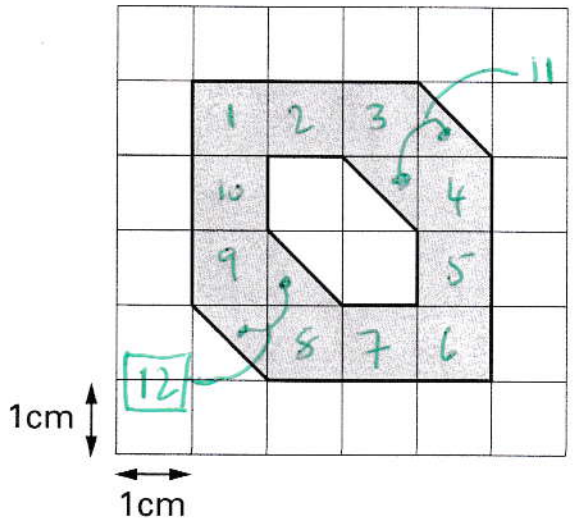
18 cm²

[1 mark]

2

[2005]

Here is a 1cm square grid. Some of the grid is shaded.



What is the area of the shaded shape?

12 cm²

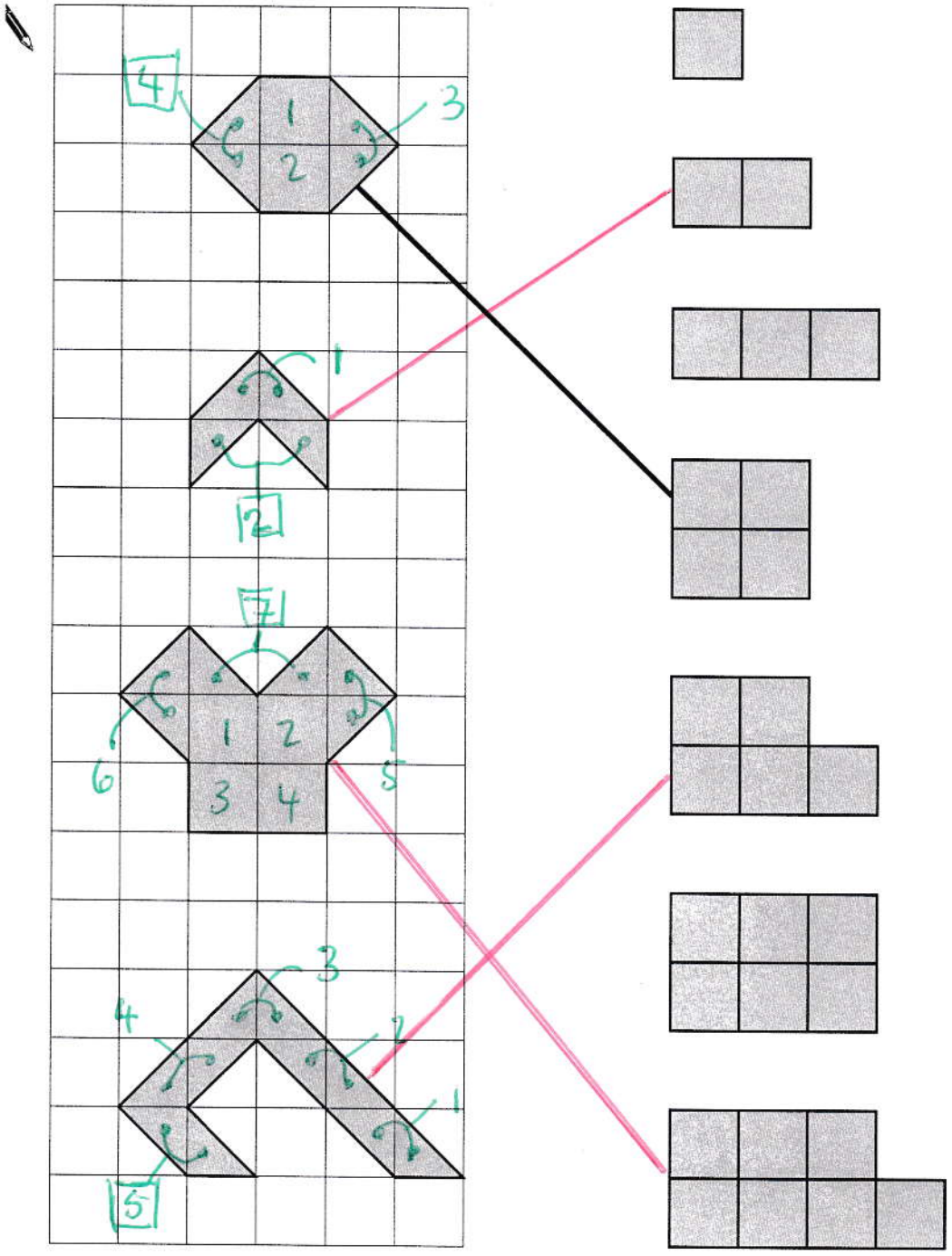
[1 mark]

Questions compiled by:
@Maths4Everyone

3 [2002]

Match each shape on the left to one with **equal area** on the right.

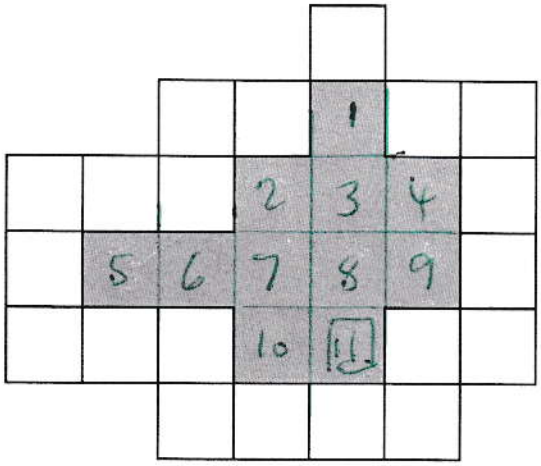
One has been done for you.



[2 marks]

4 Here is a set of 20 squares around a shaded space.

[2013]



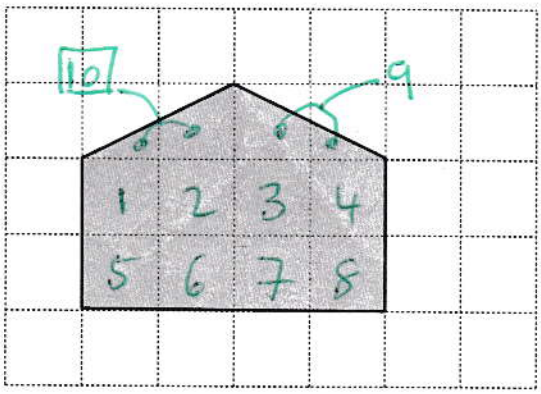
What is the area of the shaded space?

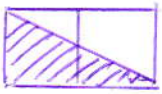
11 squares

[1 mark]

5 Here is a shaded shape on a 1 cm square grid.

[2012]





THE DIAGONAL IS CUTTING TWO SQUARES IN HALF ⇒ ONE SQUARE EACH HALF!

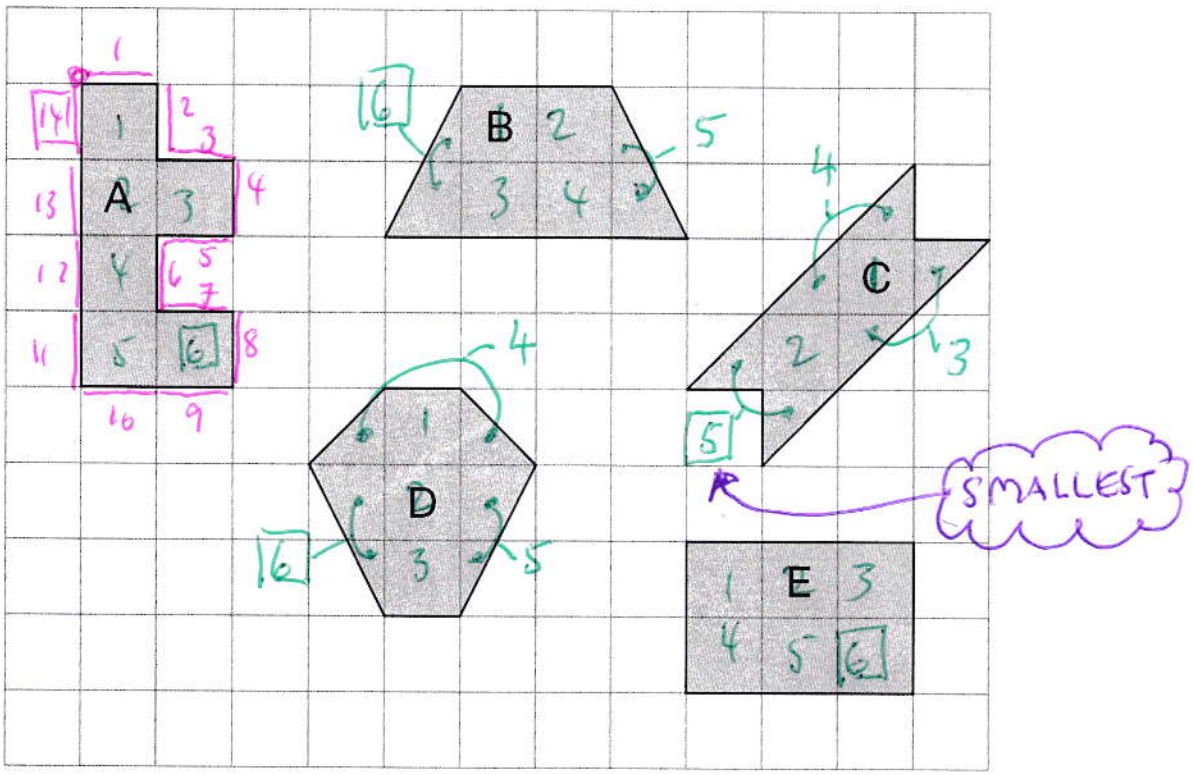
What is the area of the shaded shape?

10 cm^2

[1 mark]

6 Here are some shapes on a 1 cm square grid.

[2011]



What is the **perimeter** of shape A?

14 cm

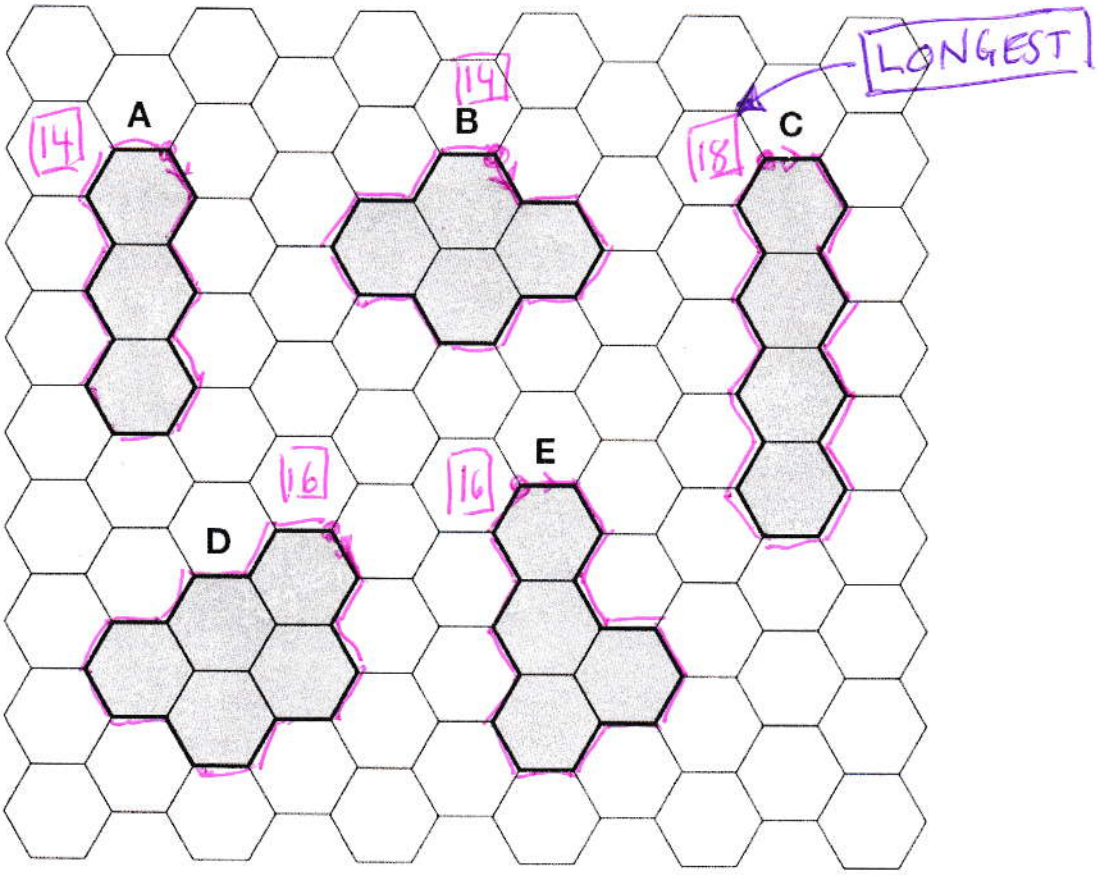
Write the letter of the shape that has the **smallest area**.

C

[2 marks]

7 Here are five shapes on a regular grid.

[2012]



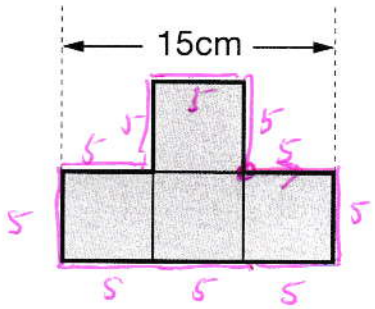
Which shape has the longest perimeter?

C

[2 marks]

8 This shape is made from 4 shaded squares.

[2006]



Not actual size

10 × 5

Calculate the perimeter of the shape.

50 cm

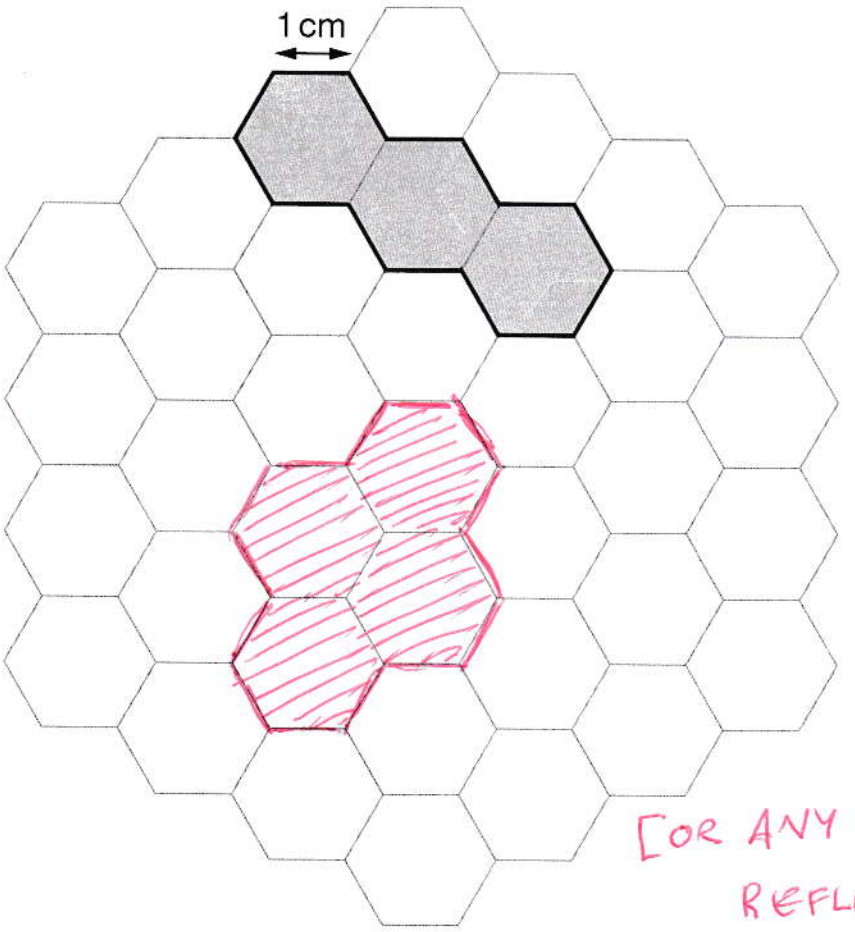
[1 mark]

9 Here is a grid of regular hexagons.

[2007]

The shaded shape has an area of 3 hexagons and a perimeter of 14 cm.

Draw another shape on the grid which has an **area** of 4 hexagons and a **perimeter** of 14 cm.



[OR ANY ROTATION/ REFLECTION]

THINKING...

[1 mark]

4 HEXAGONS HAVE A PERIMETER OF $4 \times 6 = 24$

WE NEED TO HAVE 10 CM LESS

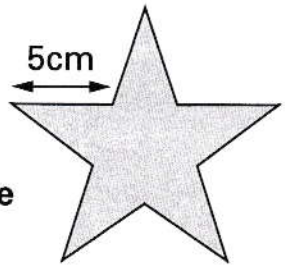
SO 5 SIDES MUST BE TOUCHING

EACH TOUCHING HEXAGON 'LOSES' A SIDE!

10 [2004]

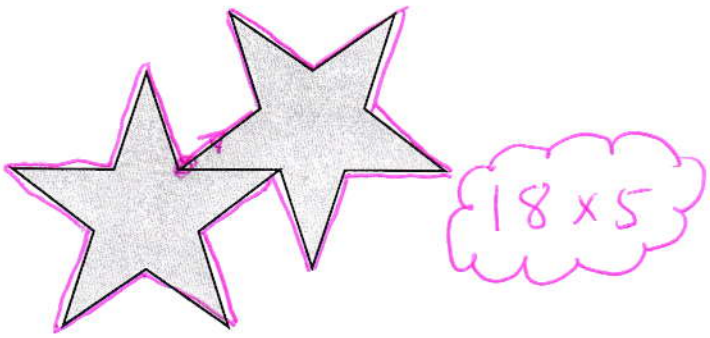
Millie has some star-shaped tiles.

Each edge of a tile is 5 centimetres long.



Not actual size

She puts two tiles together to make this shape.



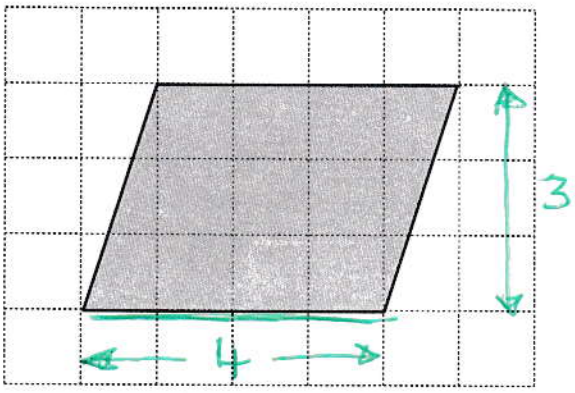
Work out the perimeter of Millie's shape.

90 cm

[1 mark]

11 [Extra]

Here is a parallelogram on a 1 cm square grid.



FOR A PARALLELOGRAM

A = BASE x HEIGHT

What is the area of the parallelogram?

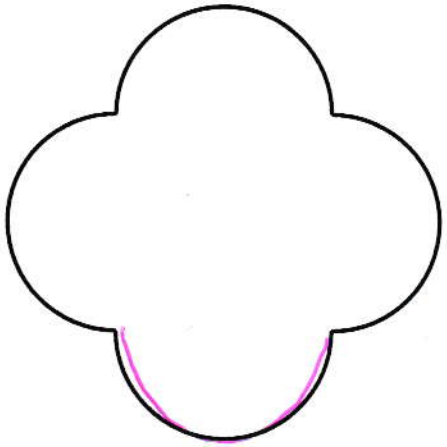
4 x 3

12 cm²

[1 mark]

12 This shape is made out of four identical curves.

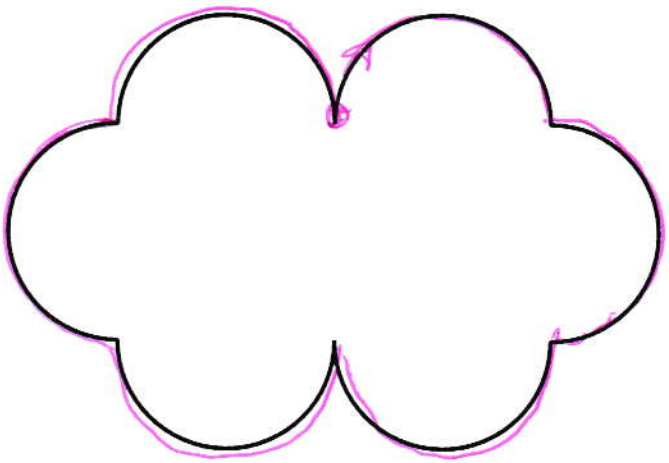
[2014]



Not actual size

The perimeter of the shape is 28 centimetres. EACH CURVE IS $\frac{28}{4} = 7$ cm

A new shape is made out of curves of the same size.



6 x 7 = 42

What is the perimeter of the new shape?

Show your method

28 ÷ 4 = 7cm [EACH CURVE]

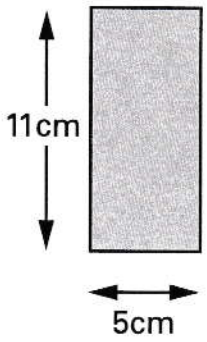
6 x 7 = 42cm

42cm

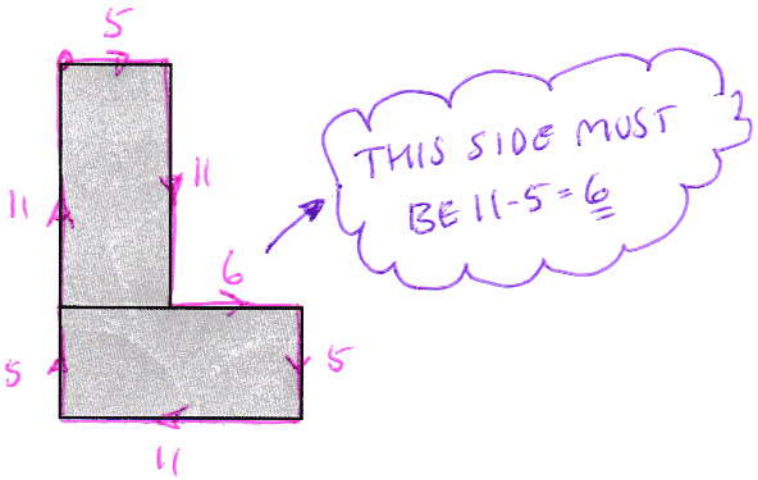
[2 marks]

13 Liam has two rectangular tiles like this.

[2000]



He makes this L shape.



What is the perimeter of Liam's L shape?

$5+11+6+5+11+5+11$

[DO YOU KNOW AN EASIER WAY?]

54 cm

[1 mark]

14 The area of a rugby pitch is 6,108 square metres.

[2016S]

A football pitch measures 112 metres long and 82 metres wide.

How much larger is the area of the football pitch than the area of the rugby pitch?

Show your method

$$\begin{array}{r} 112 \\ \times\ 82 \\ \hline 224 \\ 8960 \\ \hline 9184 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 9\,1\,\overset{7}{8}\,\overset{1}{4} \\ -\,6\,1\,0\,8 \\ \hline 3\,0\,7\,6 \end{array}$$

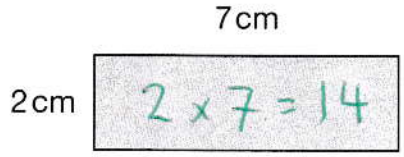
3076 m^2

[2 marks]

15 Lara has some identical rectangles.

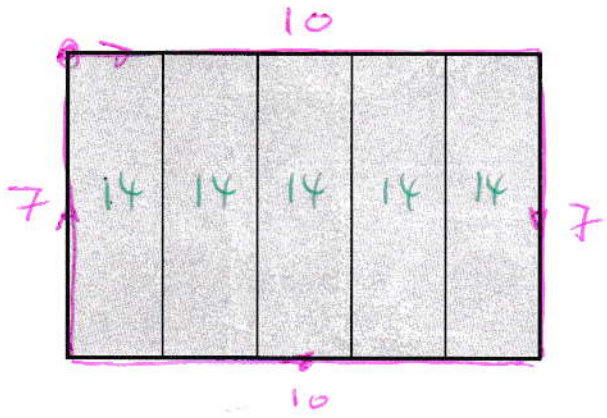
[2009]

They are 7 centimetres long and 2 centimetres wide.



Not actual size

She uses **five** of her rectangles to make the large rectangle below.



What is the **perimeter** of the large rectangle?

10 + 7 + 10 + 7

34 **cm**

What is the **area** of the large rectangle?

14 x 5

[OR 10 x 7 !]

70 **cm²**

[2 marks]

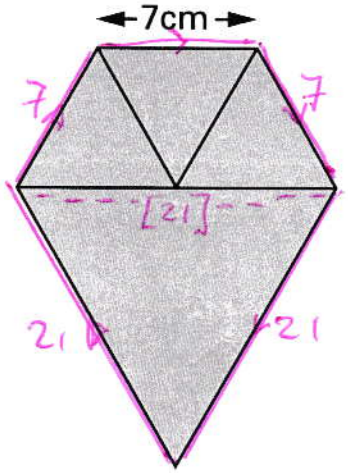
16

[2001]

Lauren has **three small equilateral triangles** and **one large equilateral triangle**.

The small triangles have sides of **7 centimetres**.

Lauren makes this shape.



Not actual size

Calculate the **perimeter** of the shape.

Do **not** use a ruler.

$7 \times 3 + 21 \times 2$

63 cm

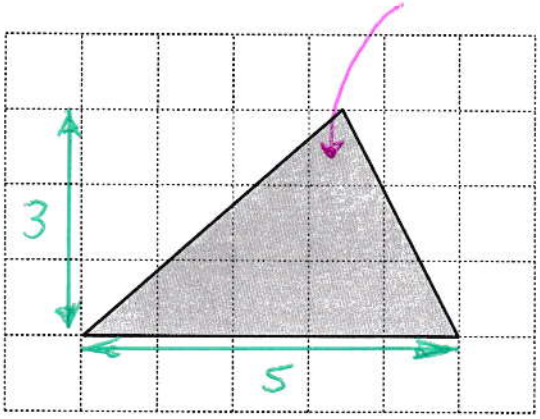
[2 marks]

17

[Extra]

Here is a triangle on a 1 cm square grid.

COUNTING SQUARES IS TRICKY!



FOR TRIANGLE,

$A = \frac{1}{2} \times$ BASE $\times$ HEIGHT

What is the area of the triangle?

$\frac{1}{2}$ of $3 \times 5 = \frac{1}{2}$ of 15

7.5 cm^2

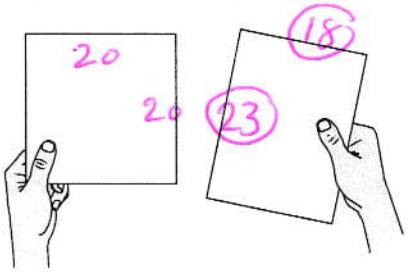
[1 mark]

18

[2017]

A square tile measures 20cm by 20cm.

A rectangular tile is 3cm **longer** and 2cm **narrower** than the square tile.



What is the **difference in area** between the two tiles?

Show your method

$20 \times 20 = 400$

$23 \times 18 = 184$, 230, 414

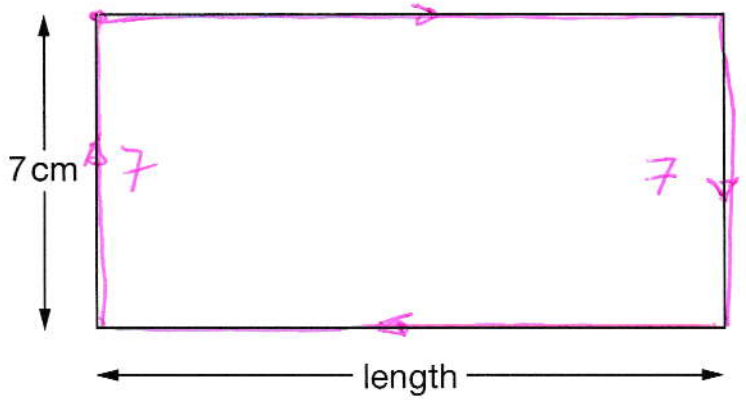
$414 - 400 = 14$

14 cm²

[3 marks]

19

[2010]



Not actual size

The perimeter of this rectangle is 50 centimetres.

Calculate the length of the rectangle.

Show your method

$2 \times \text{LENGTH} = 50 - 14$

$= 36$

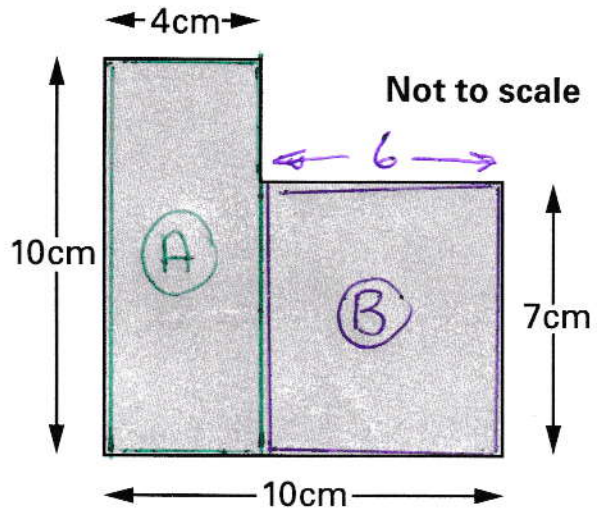
$\Rightarrow 1 \times \text{LENGTH} = 18\text{ cm}$

18 cm

[2 marks]

20 What is the area of this shape?

[2002]



Show your method

A = 4 x 10 = 40

B = 6 x 7 = 42

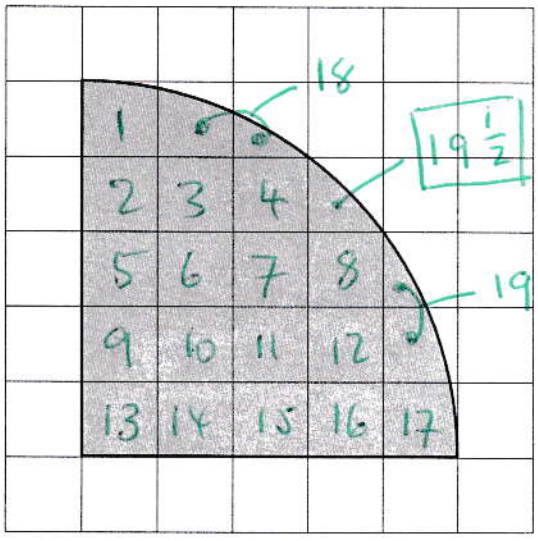
TOTAL = 82

82 cm²

[2 marks]

21 This shape is drawn on a centimetre square grid.

[Extra]



NOTE THAT THE 18, 19 AND 19½ ARE ACTUALLY A LITTLE BIT MORE THAN THIS!

Estimate the **area** of the shape.

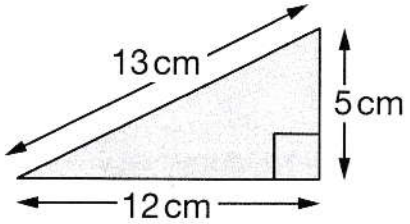
19.5 cm²

[ACCEPT 20]

[1 mark]

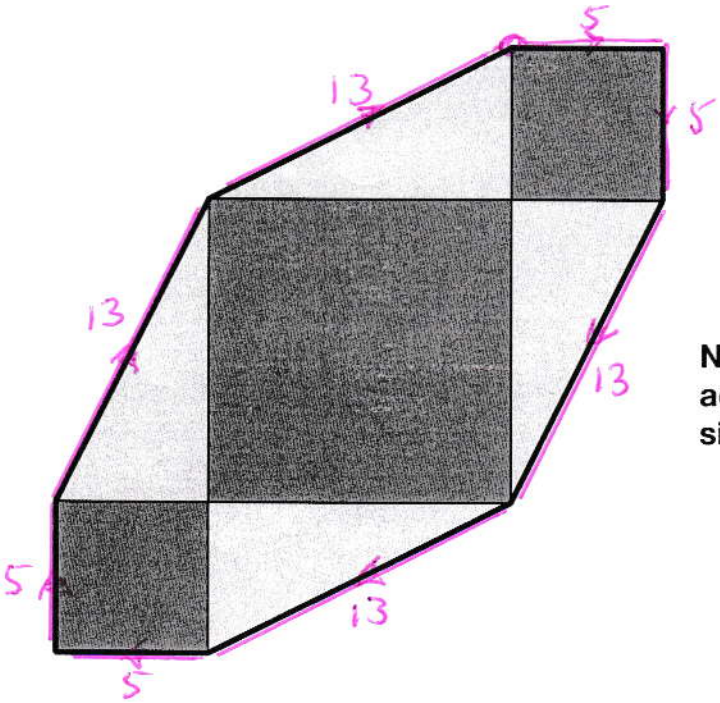
22 Chen has some right-angled triangular tiles.

[2015]



Not actual size

He makes this shape with four of his triangular tiles and three square tiles.



Not actual size

What is the **perimeter** of Chen's shape?

Show your method

$4 \times 5 = 20$

$4 \times 13 = 52$

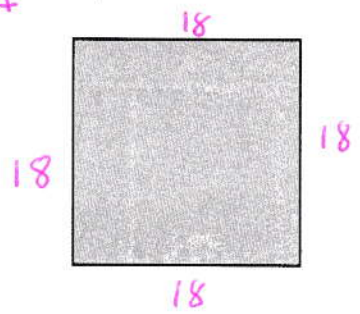
TOTAL 72

72 cm

[2 marks]

23 [2008]

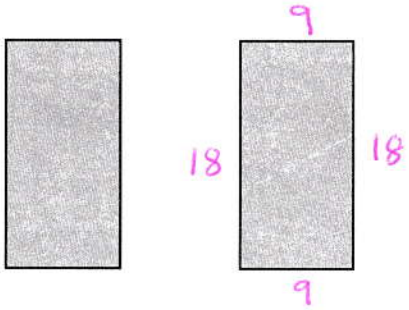
The perimeter of a square is 72 centimetres.



Not actual size

$\frac{72}{4} = 18$ [EACH SIDE]

The square is cut in half to make two identical rectangles.



What is the perimeter of one rectangle?

Show your method

$72 \div 4 = 18$

$(18 + 9) \times 2 = 27 \times 2$

$= 54$

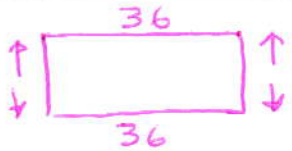
54 cm

[2 marks]

24 [Extra]

The perimeter of a rectangle is one metre. 100 cm

Each longer side is 36 centimetres.



What is the length of each shorter side?

Show your method

$2 \times \text{HEIGHT} = 100 - 72$

$= 28$

$\Rightarrow \text{HEIGHT} = 14$

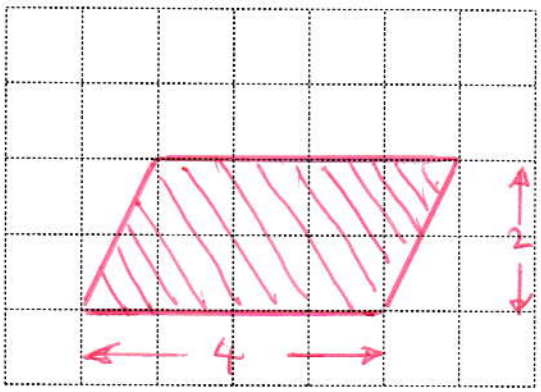
14cm

[2 marks]

25 [Extra]

On the centimetre square grid below, draw a parallelogram that has an area of 8 cm²

4 x 2
OR 2 x 4
[1 x 8 WON'T FIT!]



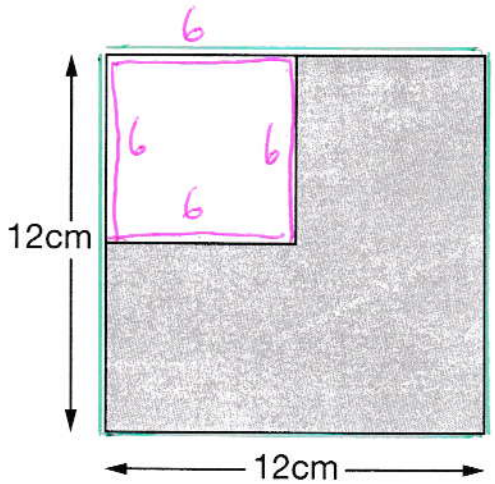
[ANY PARALLELOGRAM WITH A BASE OF 4 cm AND HEIGHT OF 2 cm]
[... OR BASE 2, HEIGHT 4]

[1 mark]

26 [2007]

A white square is painted in one corner of a grey square.

Each side of the white square is half the length of a side of the grey square.



Not actual size

SHADED AREA IS GREEN - PINK

What is the area of the grey section?

Show your method

12 x 12 = 144

6 x 6 = 36

SUBTRACT 108

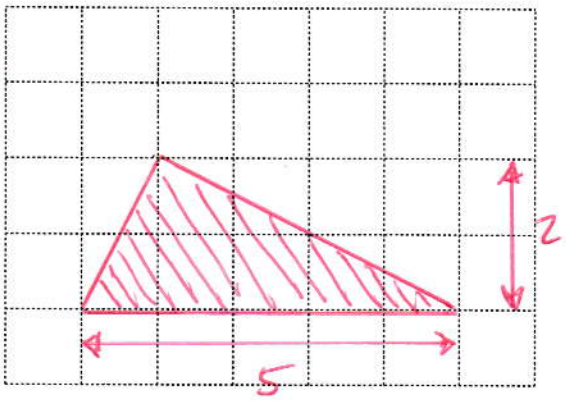
108 cm²

[2 marks]

27 [Extra]

On the centimetre square grid below, draw a triangle that has an area of 5 cm²

BASE × HEIGHT
= 10
5 × 2
OR 2 × 5

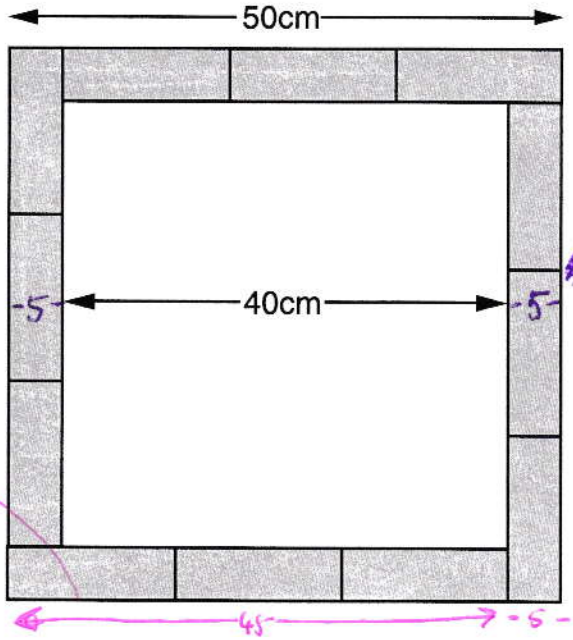


[ANY 5 BY 2 OR 2 BY 5 TRIANGLE]

[1 mark]

28 [2000]

Twelve rectangles, all the same size, are arranged to make a square, as shown in the diagram.



1ST WIDTH OF RECTANGLE MUST BE 5CM

2ND LENGTH OF 3 RECTANGLES MUST BE 45CM

Calculate the area of one of the rectangles.

Show your method

WIDTH = 5
LENGTH = 15

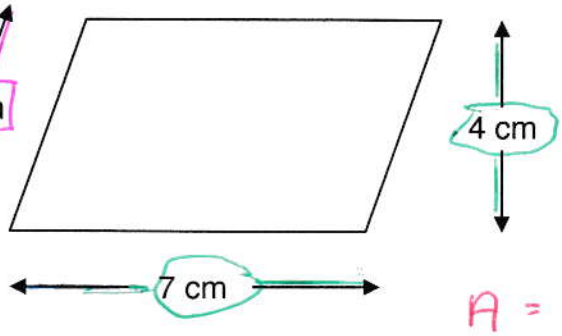
AREA = 15 × 5
= 75

75 cm²

[2 marks]

29 Calculate the area of the parallelogram?

[Extra]



IRRELEVANT FOR AREA

FOR PARALLELOGRAMS
A = BASE x HEIGHT

A = 4 x 7 = 28

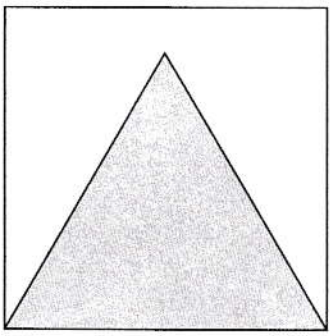
BASE AND HEIGHT ARE PERPENDICULAR!

28 cm²

[1 mark]

30 Here is an equilateral triangle inside a square.

[2004]



Not actual size

The perimeter of the triangle is 48 centimetres.

1ST SIDE LENGTH IS $\frac{48}{3}$ = 16cm

Calculate the perimeter of the **square**?

Show your method

SIDE LENGTH = 48 ÷ 3
= 16

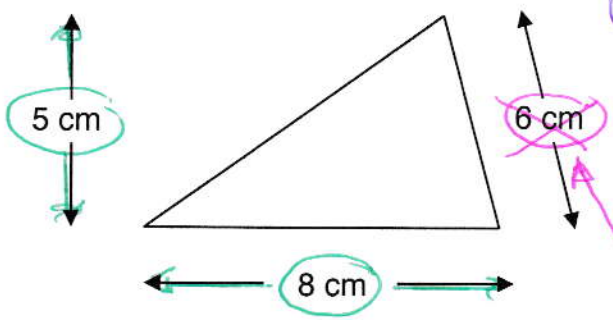
SQUARE'S PERIMETER = 16
× 4
64

64 cm

[2 marks]

31 Calculate the area of the triangle?

[Extra]



FOR TRIANGLES

$A = \frac{1}{2} \times \text{BASE} \times \text{HEIGHT}$

IRRELEVANT!

BASE AND HEIGHT ARE PERPENDICULAR!

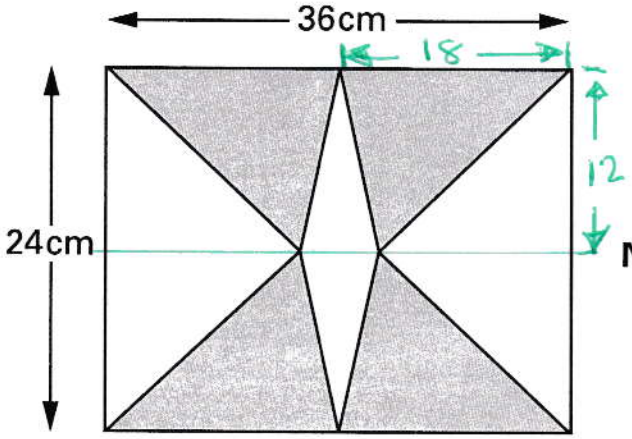
20 cm²

[1 mark]

---

32 The diagram shows **4 identical shaded triangles** in a rectangle.

[2001]



Not actual size

FOR TRIANGLES

$A = \frac{1}{2} \times \text{BASE} \times \text{HEIGHT}$

The rectangle measures **36 centimetres by 24 centimetres**.

Calculate the **area** of **one shaded triangle**.

Show your method

$A = \frac{1}{2} \times 18 \times 12$

$= 9 \times 12$

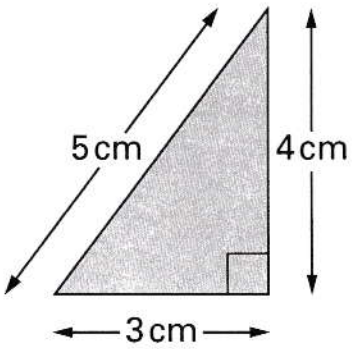
$= 108$

108 cm²

[2 marks]

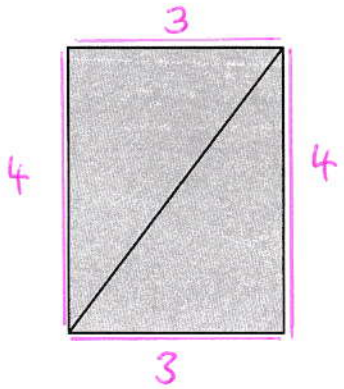
33 Jody has some triangular tiles like this:

[Extra]



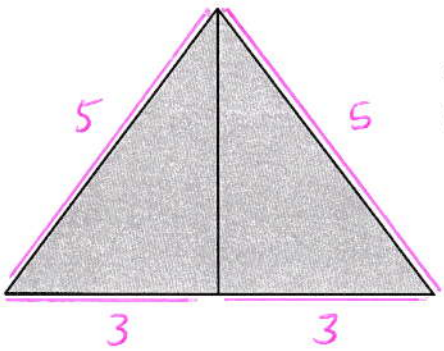
I use two of these tiles to make different shapes.

For each shape, work out its perimeter.



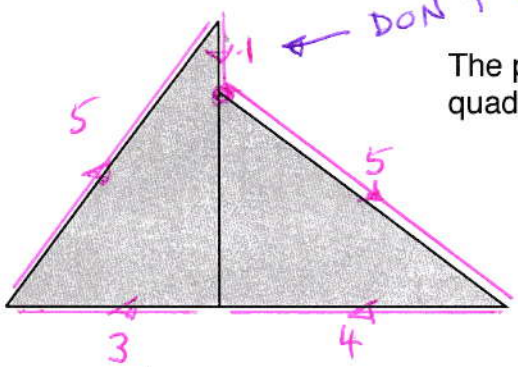
The perimeter of the rectangle is:

14 cm



The perimeter of the isosceles triangle is:

16 cm



DON'T FORGET THIS ONE!

The perimeter of the quadrilateral is:

18 cm

[3 marks]