

1 A circle has radius 9 cm.

- (a) Work out the circumference of the circle.  
Give your answer correct to 1 decimal place.

(2)

cm

The diagram shows the pentagon  $ABCDE$ .

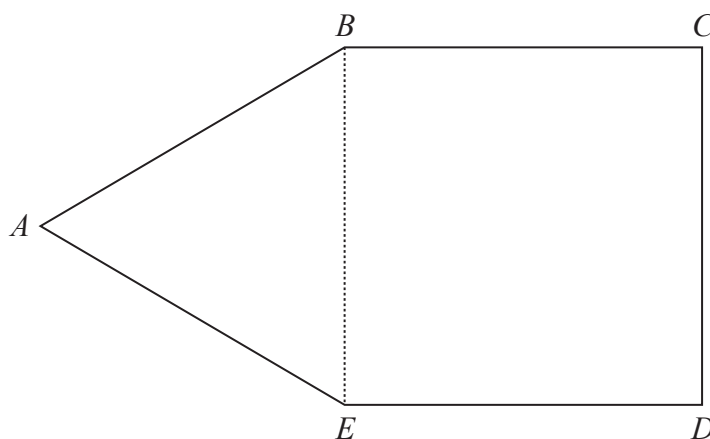


Diagram **NOT**  
accurately drawn

$ABE$  is an equilateral triangle.

$BCDE$  is a square with area  $169 \text{ cm}^2$

- (b) Work out the perimeter of  $ABCDE$ .

(3)

cm

(Total for Question 1 is 5 marks)

- 2 Here is a rectangle made from 12 square tiles.

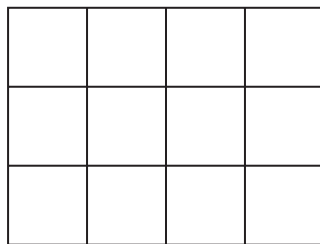


Diagram **NOT**  
accurately drawn

The perimeter of each tile is 20 cm.

Work out the area of the rectangle.

..... cm<sup>2</sup>

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**(Total for Question 2 is 3 marks)**

- 3 (a) Change 5.48 metres into centimetres.

..... cm  
(1)

- (b) Change 4600 millilitres into litres.

..... litres  
(1)

Here is an isosceles triangle  $ABC$ .

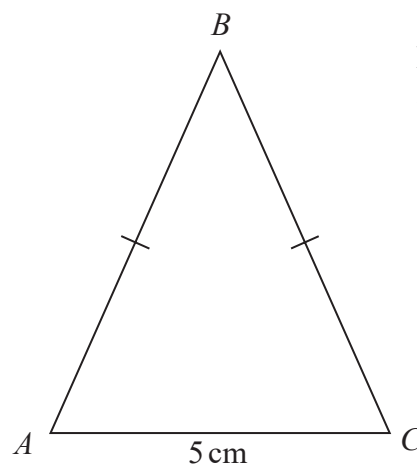


Diagram **NOT**  
accurately drawn

$AC = 5$  cm.

The perimeter of the triangle is 32 cm.

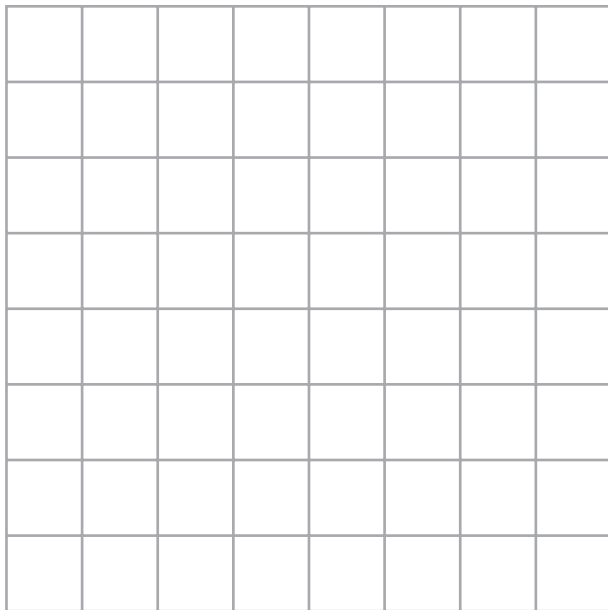
- (c) Work out the length of  $AB$ .

..... cm  
(2)

(Total for Question 3 is 4 marks)

4 Here is a centimetre grid.

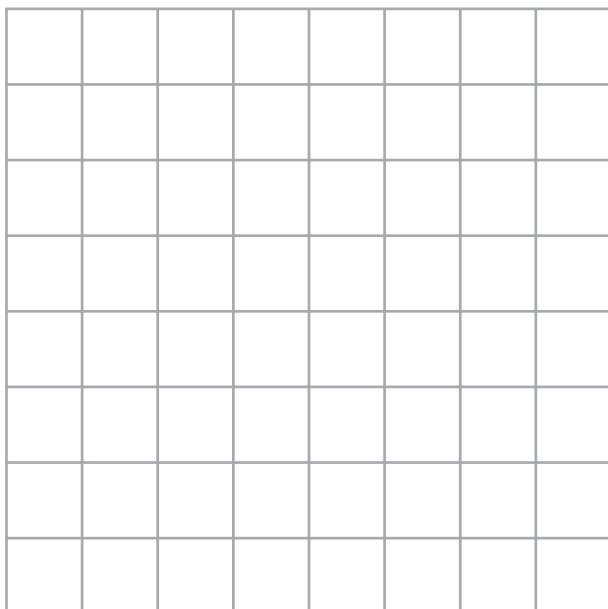
(a) On the grid, draw a rectangle with a perimeter of 14 cm.



(2)

Here is a centimetre grid.

(b) On the grid, draw a right-angled triangle with an area of  $12 \text{ cm}^2$



(2)

(Total for Question 4 is 4 marks)

5 The diagram shows a rectangle and a square.

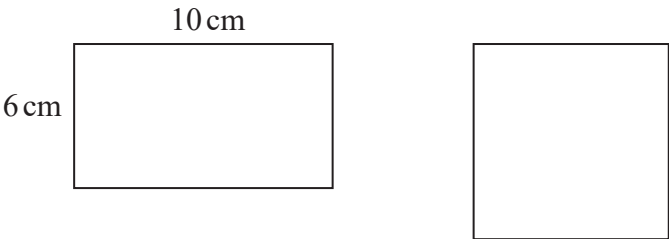


Diagram **NOT** accurately drawn

The perimeter of the rectangle is equal to the perimeter of the square.  
The area of the rectangle is less than the area of the square.

Work out by how much the area of the rectangle is less than the area of the square.

.....cm<sup>2</sup>

(Total for Question 5 is 4 marks)

6 Here is a diagram of a trapezium.

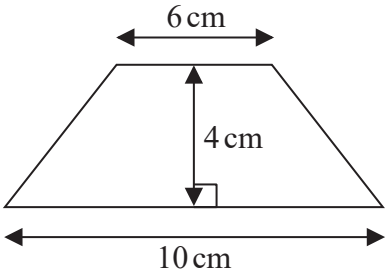


Diagram **NOT** accurately drawn

(e) Work out the area of the trapezium.

..... cm<sup>2</sup>

(Total for Question 6 is 2 marks)

7 Here is a rectangle.

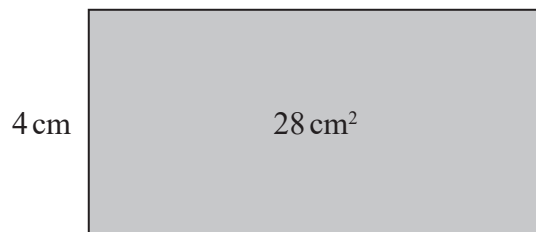


Diagram **NOT**  
accurately drawn

The area of the rectangle is  $28 \text{ cm}^2$

Three of these rectangles are used to make the shape below.

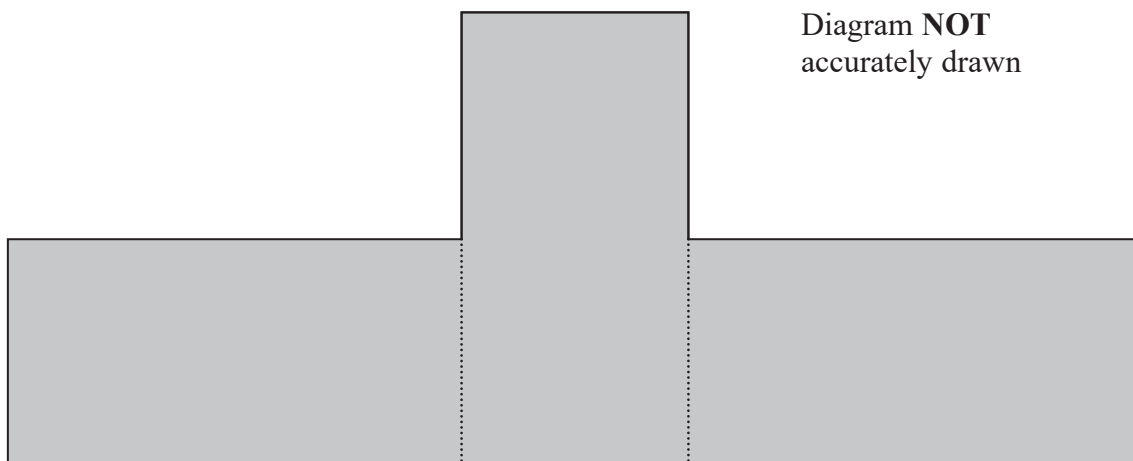


Diagram **NOT**  
accurately drawn

Work out the perimeter of the shape.

..... cm

(Total for Question 7 is 4 marks)

8 Here is a square.



Diagram **NOT**  
accurately drawn

The perimeter of the square is 24 cm.

The shaded rectangle below is made from 4 of these squares.

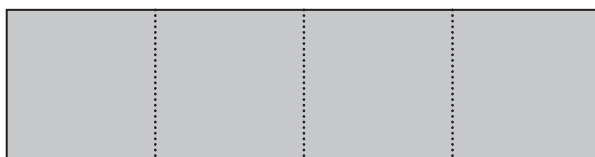


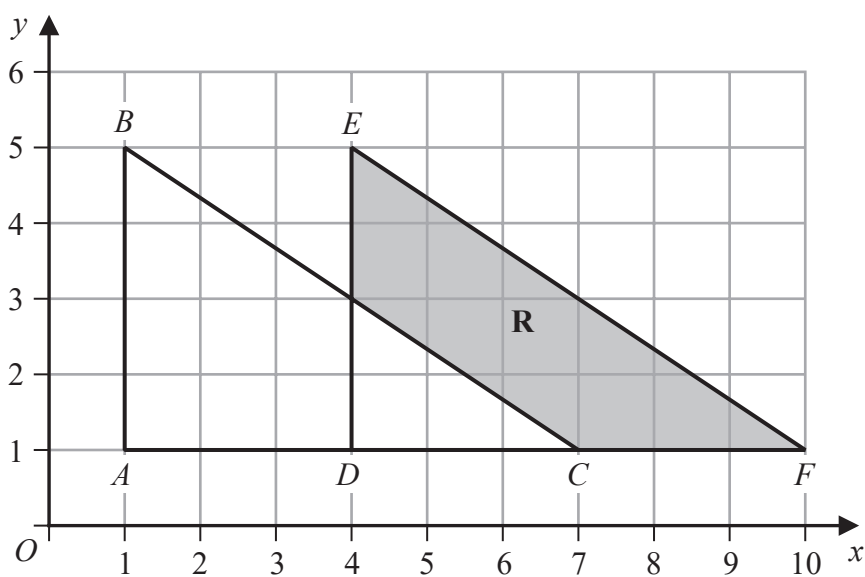
Diagram **NOT**  
accurately drawn

Work out the perimeter of the shaded rectangle.

..... cm

(Total for Question 8 is 3 marks)

- 9 The diagram shows two congruent triangles,  $ABC$  and  $DEF$ , drawn on a centimetre grid.



Find the area of the region **R**, shown shaded in the diagram.

.....  $\text{cm}^2$

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(Total for Question 9 is 3 marks)



**10** A circle has radius 7.5 cm

Work out the area of the circle.

Give your answer correct to 3 significant figures.

..... cm<sup>2</sup>

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(Total for Question 10 is 2 marks)

**11** The diagram shows a trapezium.

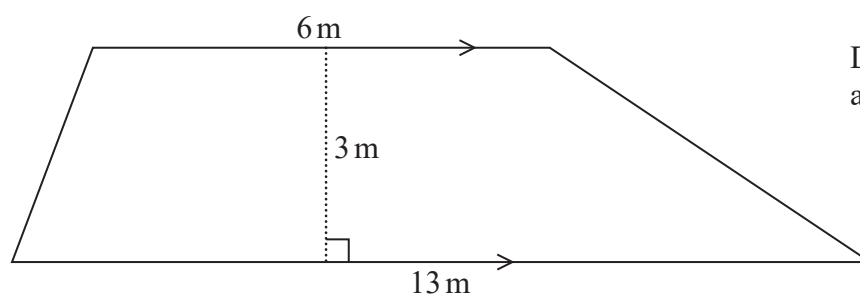


Diagram **NOT**  
accurately drawn

Work out the area of the trapezium.

..... m<sup>2</sup>

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(Total for Question 11 is 2 marks)

- 12 The diagram shows a shape  $ABCDEFG$  made from a square  $ABDF$  and three identical isosceles triangles  $BCD$ ,  $DEF$  and  $FGA$ .

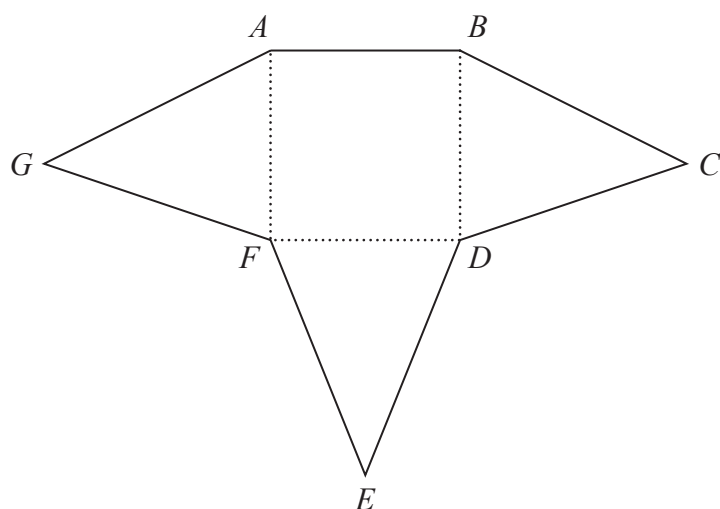


Diagram **NOT**  
accurately drawn

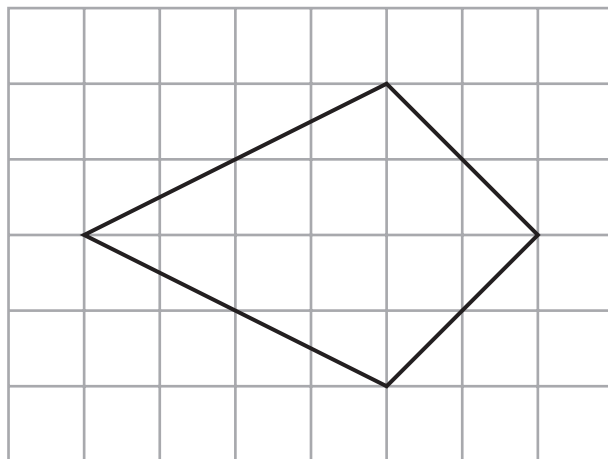
The perimeter of the square  $ABDF$  is 48 cm.  
The perimeter of each isosceles triangle is 30 cm.

Work out the perimeter of the shape  $ABCDEFG$ .

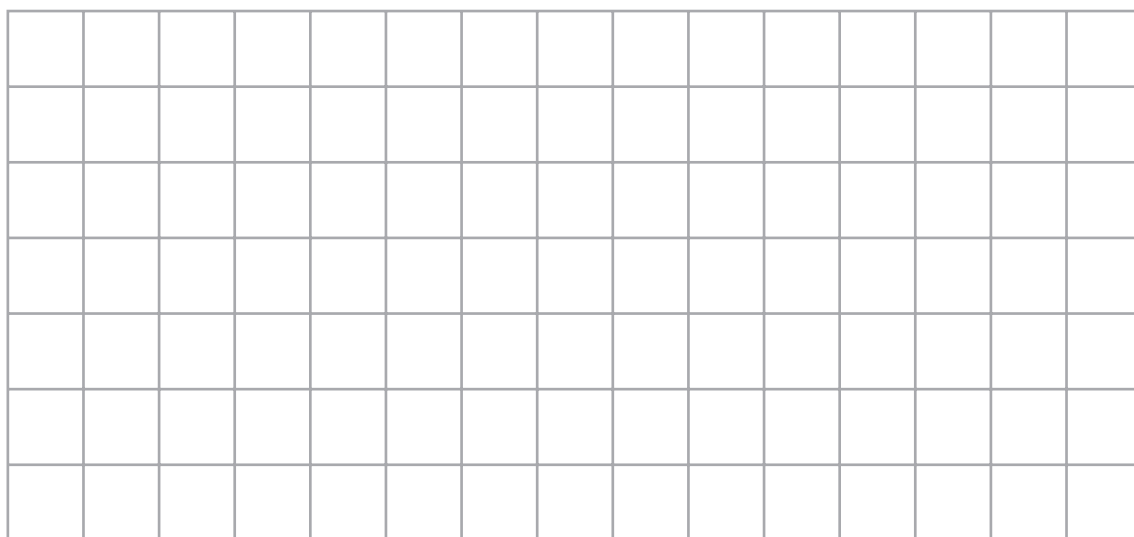
..... cm

(Total for Question 12 is 4 marks)

**13** The diagram shows a kite drawn on a centimetre grid.



On the centimetre grid below, draw a rectangle that has the same area as the kite.



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(Total for Question 13 is 3 marks)

- 14 The diagram shows a rectangle  $ABCD$  and a semicircle with diameter  $AB$  where  $AB = 12$  cm. The point  $E$  lies on  $DC$  and also on the semicircle.

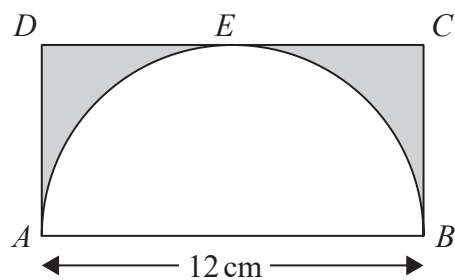


Diagram **NOT**  
accurately drawn

Work out the area of the shaded region.  
Give your answer correct to 3 significant figures.

.....  
(Total for Question 14 is 3 marks)

15 The diagram shows a square and an isosceles triangle.

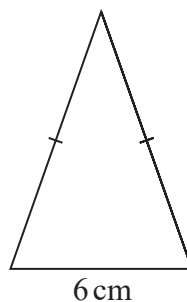
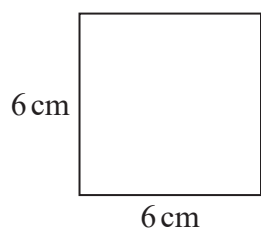


Diagram **NOT**  
accurately drawn

The square has sides of length 6 cm.  
The base of the isosceles triangle is 6 cm.

The perimeter of the square is equal to the perimeter of the isosceles triangle.

The shaded shape is made by putting three of the isosceles triangles around the square as shown in the diagram below.

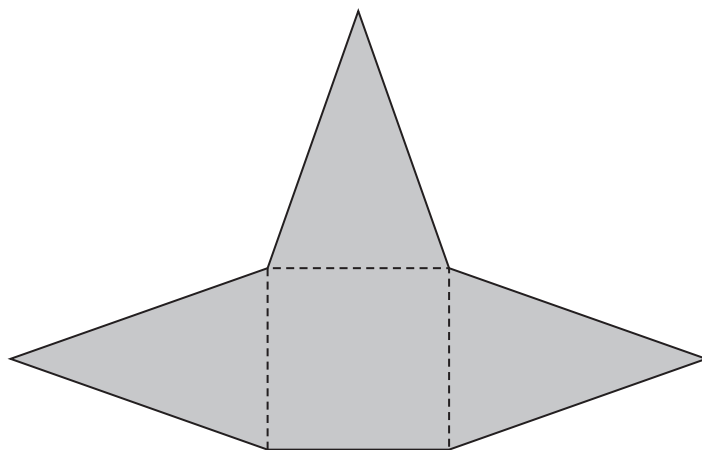


Diagram **NOT**  
accurately drawn

Work out the perimeter of the shaded shape.  
Show your working clearly.

..... cm

(Total for Question 15 is 4 marks)

16 The diagram shows a right-angled triangle.

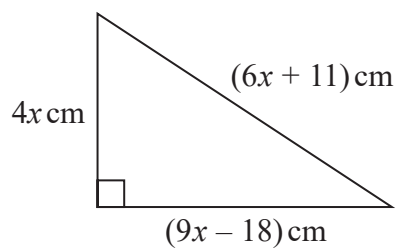


Diagram **NOT**  
accurately drawn

The perimeter of the triangle is 126 cm.

Work out the area of the triangle.

.....  $\text{cm}^2$

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(Total for Question 16 is 4 marks)

17 The diagram shows a regular hexagon,  $ABCDEF$ , and an isosceles triangle,  $GHI$ .

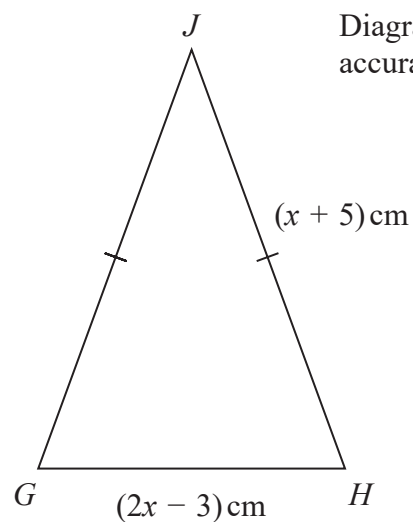
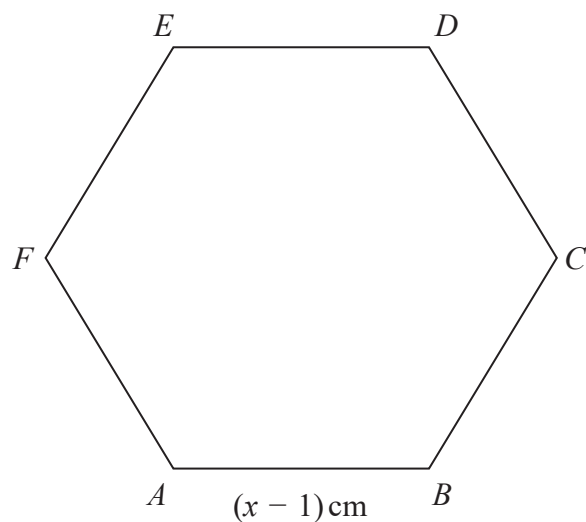


Diagram **NOT**  
accurately drawn

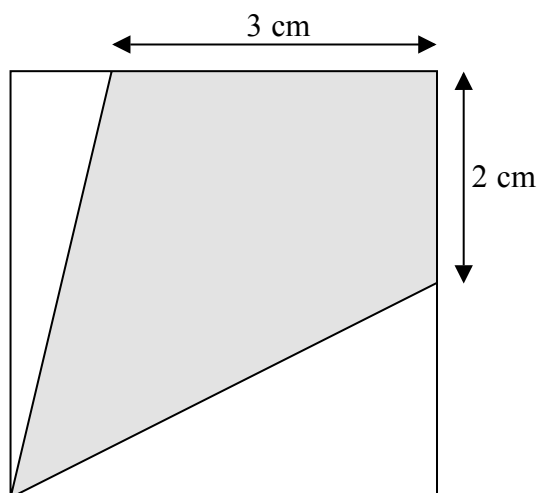
The perimeter of the hexagon is equal to the perimeter of the triangle.

Find the length of each side of the hexagon.  
Show clear algebraic working.

..... cm

(Total for Question 17 is 5 marks)

- 18 The diagram shows a square with perimeter 16 cm.

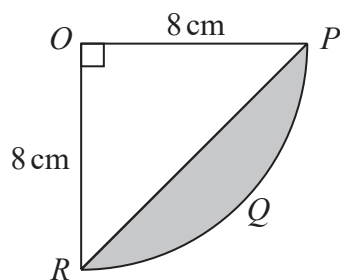


Work out the proportion of the area inside the square that is shaded.

.....  
(Total for Question 18 is 5 marks)



- 19 The diagram shows a sector  $OPQR$  of a circle, centre  $O$  and radius 8 cm.



$OPR$  is a triangle.

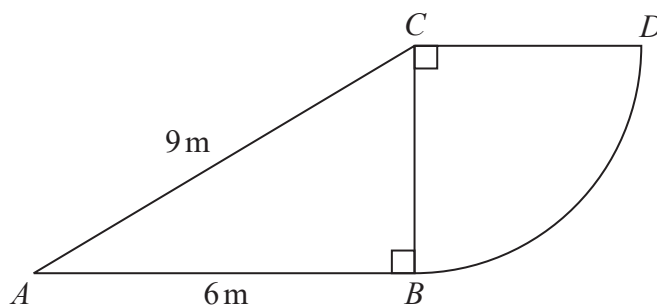
Work out the area of the shaded segment  $PQR$ .

Give your answer correct to 3 significant figures.

.....  $\text{cm}^2$

(Total for Question 19 is 4 marks)

- 20 The diagram shows a right-angled triangle and a quarter circle.



The right-angled triangle  $ABC$  has angle  $ABC = 90^\circ$   
The quarter circle has centre  $C$  and radius  $CB$ .

Work out the area of the quarter circle.  
Give your answer correct to 3 significant figures.  
You must show all your working.

.....  $\text{m}^2$

(Total for Question 20 is 4 marks)

- 21** The perimeter of a right-angled triangle is 72 cm.  
The lengths of its sides are in the ratio 3 : 4 : 5

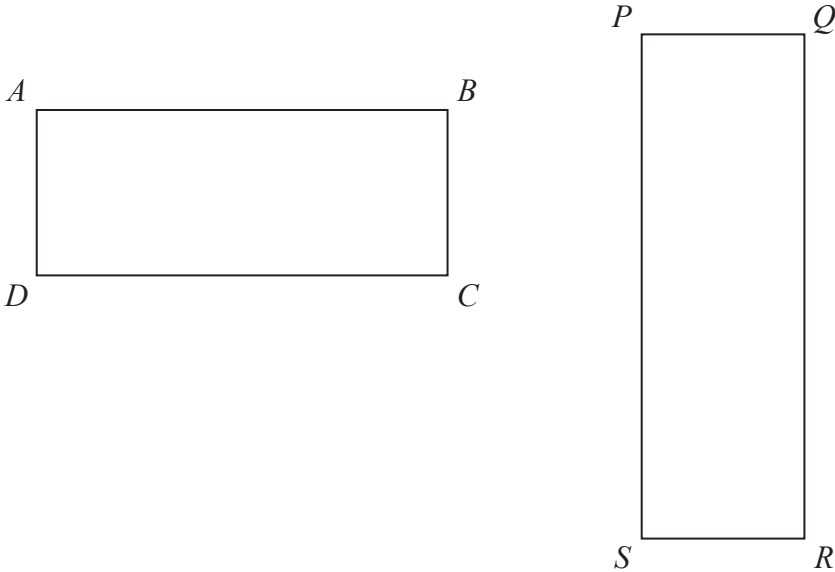
Work out the area of the triangle.

.....cm<sup>2</sup>

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**(Total for Question 21 is 4 marks)**

22 Here are two rectangles.



$QR = 10\text{ cm}$   
 $BC = PQ$

The perimeter of  $ABCD$  is  $26\text{ cm}$   
The area of  $PQRS$  is  $45\text{ cm}^2$

Find the length of  $AB$ .

..... cm

23  $A$ ,  $B$  and  $C$  are points on a circle with centre  $O$ .

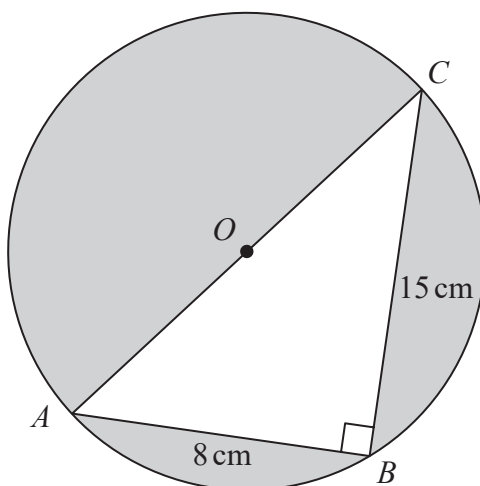


Diagram **NOT**  
accurately drawn

$AOC$  is a diameter of the circle.

$AB = 8 \text{ cm}$      $BC = 15 \text{ cm}$

Angle  $ABC = 90^\circ$

Work out the total area of the regions shown shaded in the diagram.  
Give your answer correct to 3 significant figures.

.....  $\text{cm}^2$

(Total for Question 23 is 5 marks)

24 The diagram shows isosceles triangle  $ABC$ .

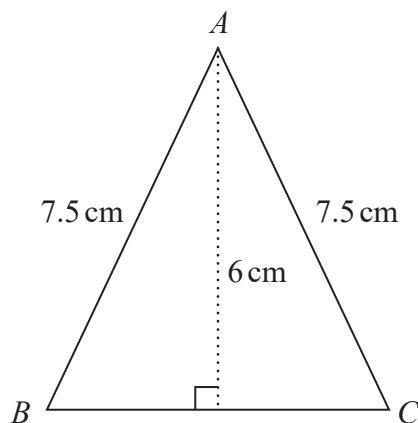


Diagram **NOT**  
accurately drawn

$AB = AC = 7.5 \text{ cm}$ .

The height of the triangle is  $6 \text{ cm}$ .

Calculate the area of the triangle.

..... $\text{cm}^2$

(Total for Question 24 is 4 marks)

**25** The diagram shows an isosceles triangle.

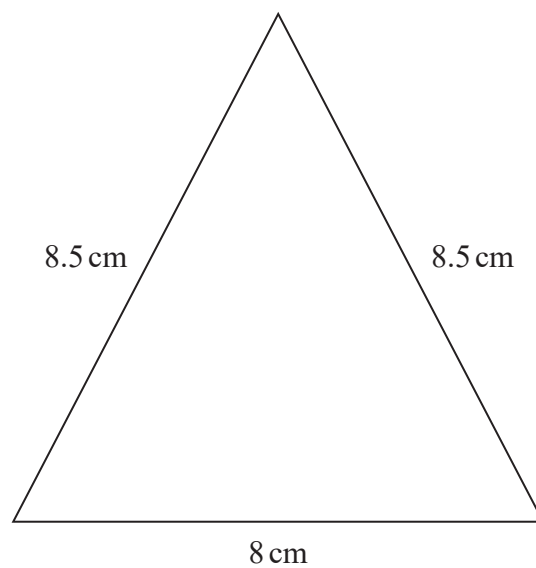


Diagram **NOT**  
accurately drawn

Work out the area of the triangle.

.....cm<sup>2</sup>

**(Total for Question 25 is 4 marks)**

**26** The diagram shows an isosceles triangle, with base length 24 cm.

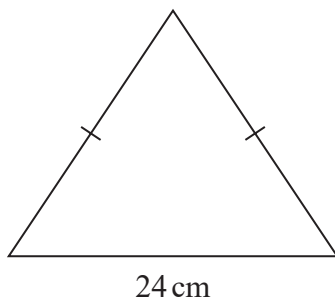


Diagram **NOT**  
accurately drawn

The perimeter of the triangle is 54 cm.

Work out the area of the triangle.

..... cm<sup>2</sup>

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**(Total for Question 26 is 5 marks)**



27 The diagram shows an isosceles triangle.

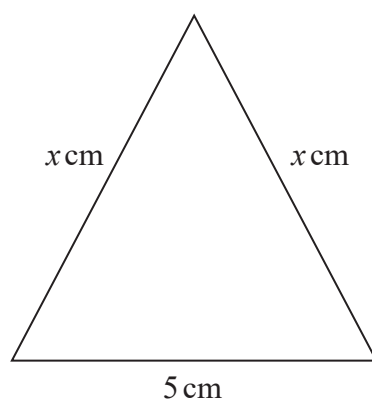


Diagram **NOT**  
accurately drawn

The area of the triangle is  $12 \text{ cm}^2$

Work out the perimeter of the triangle.

Give your answer correct to 3 significant figures.

cm

(Total for Question 27 is 4 marks)

- 28 The shaded shape is made using three identical right-angled triangles and a square.

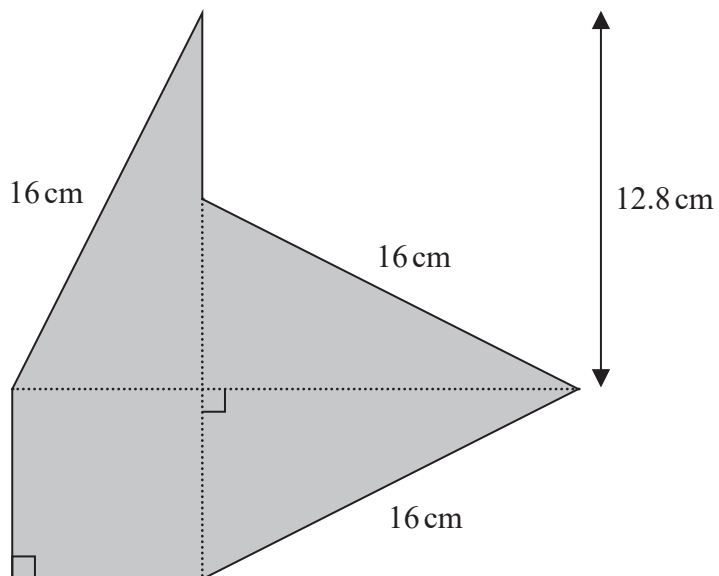


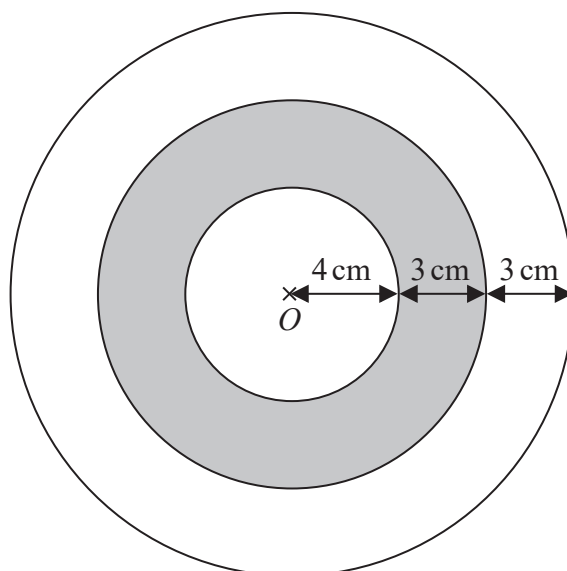
Diagram **NOT**  
accurately drawn

Work out the perimeter of the shaded shape.

..... cm

(Total for Question 28 is 4 marks)

- 29 The diagram shows a logo made from three circles.



Each circle has centre  $O$ .

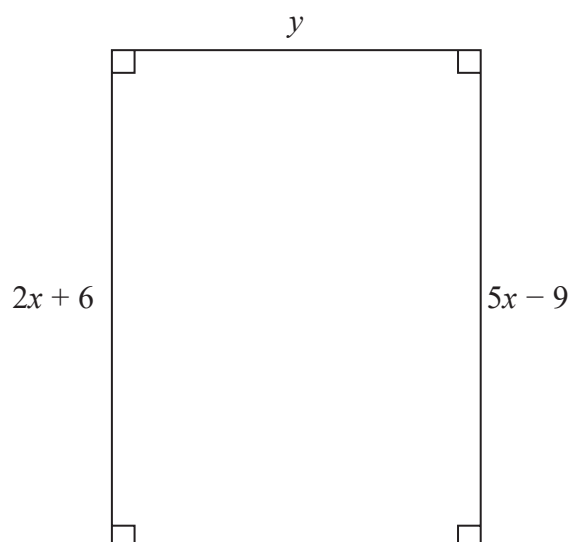
Daisy says that exactly  $\frac{1}{3}$  of the logo is shaded.

Is Daisy correct?

You must show all your working.

(Total for Question 29 is 4 marks)

**30** Here is a rectangle.



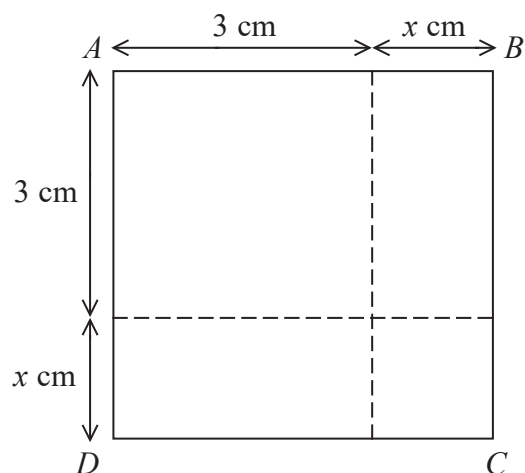
All measurements are in centimetres.

The area of the rectangle is  $48 \text{ cm}^2$ .

Show that  $y = 3$

**(Total for Question 30 is 4 marks)**

31



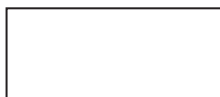
The area of square  $ABCD$  is  $10\text{ cm}^2$ .

Show that  $x^2 + 6x = 1$

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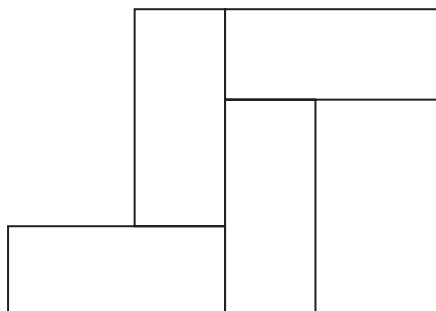
(Total for Question 31 is 3 marks)

**32** Here is a rectangle.



The length of the rectangle is 7 cm longer than the width of the rectangle.

4 of these rectangles are used to make this 8-sided shape.



The perimeter of the 8-sided shape is 70 cm.

Work out the area of the 8-sided shape.

..... cm<sup>2</sup>

**(Total for Question 32 is 5 marks)**