1 Here is a hexagon *ABCDEF*.

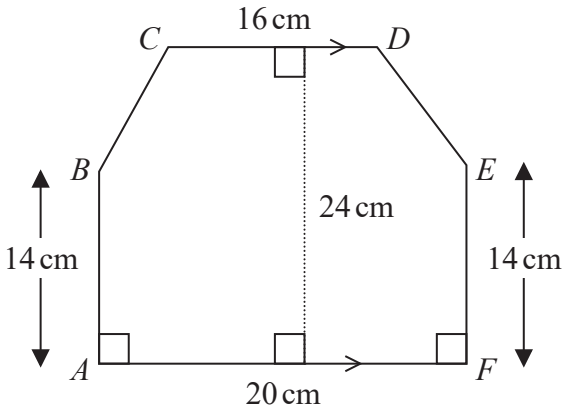


Diagram **NOT** accurately drawn

CD is parallel to *AF*.

Work out the area of hexagon *ABCDEF*.

..... cm^2

(Total for Question 1 is 4 marks)

2 The diagram shows a rectangle $ABCD$ and a semicircle with diameter AB where $AB = 12\,\text{cm}$. The point E lies on DC and also on the semicircle.

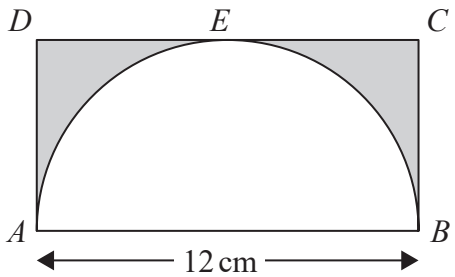


Diagram **NOT** accurately drawn

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

..... cm^2

(Total for Question 2 is 3 marks)

3 Here are two rectangles, rectangle *A* and rectangle *B*.

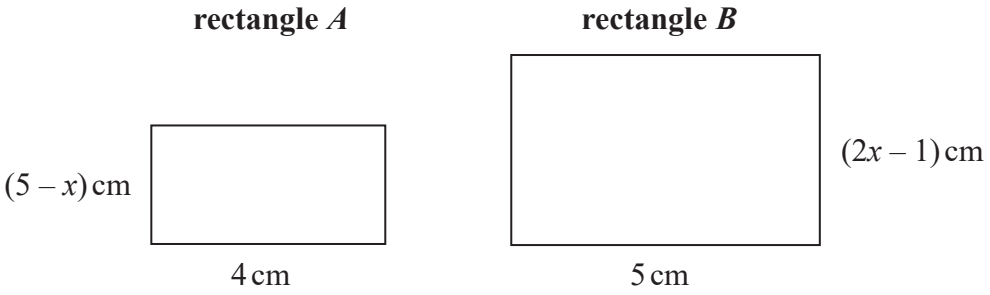


Diagram **NOT** accurately drawn

The area of rectangle *B* is twice the area of rectangle *A*.

Work out the value of *x*.
Show your working clearly.

x = ...

(Total for Question 3 is 4 marks)

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

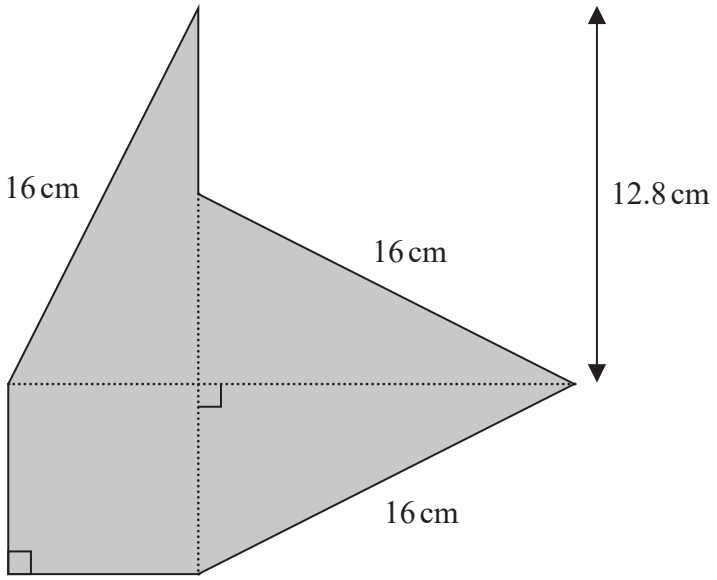


Diagram **NOT** accurately drawn

Work out the perimeter of the shaded shape.

..... cm

(Total for Question 4 is 4 marks)

5

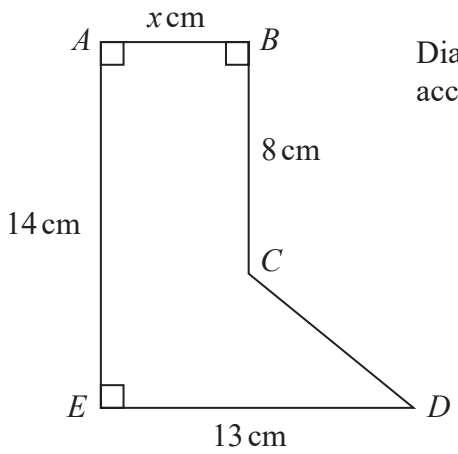


Diagram **NOT** accurately drawn

The diagram shows the shape *ABCDE*.

The area of the shape is 91.8 cm²

Work out the value of *x*.

x = ...

(Total for Question 5 is 4 marks)

6 The diagram shows an 8-sided shape *ABCDEFGH*.

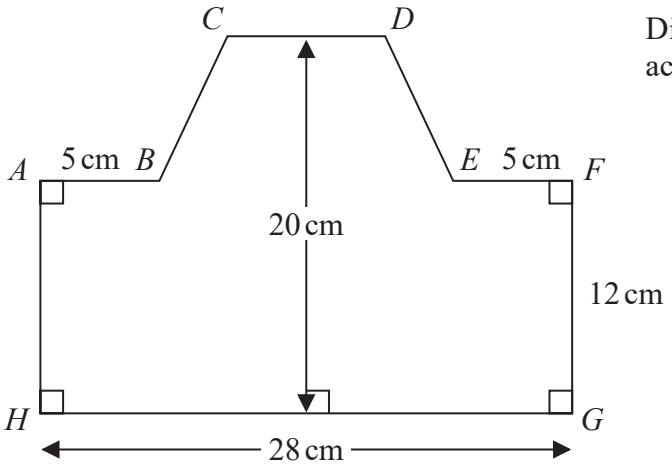


Diagram **NOT** accurately drawn

HG = 28 cm *FG* = 12 cm *AB* = *EF* = 5 cm
The height of the shape is 20 cm
CD is parallel to *HG*

The area of shape *ABCDEFGH* is 434 cm^2

Find the length of *CD*.

..... cm

(Total for Question 6 is 4 marks)

7 The diagram shows a shape made from a square *ABCD* and 4 identical semicircles.

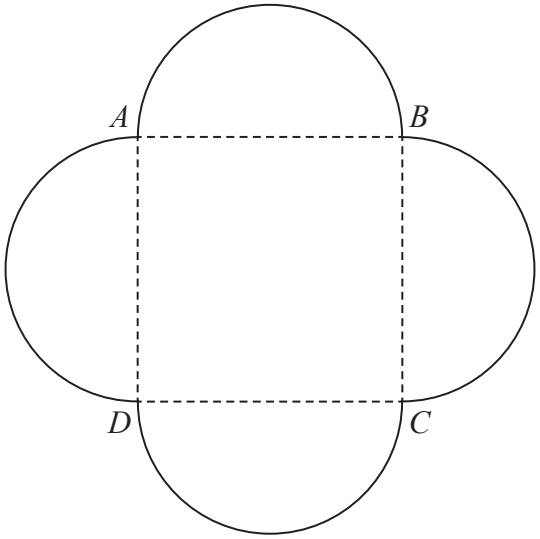


Diagram **NOT** accurately drawn

As shown in the diagram, the semicircles have *AB*, *BC*, *CD* and *DA* as diameters.

The area of the square is 36 cm^2

Calculate the total area of the shape.
Give your answer correct to one decimal place.

..... cm^2

(Total for Question 7 is 4 marks)

8 Yasmin has some identical rectangular tiles.
Each tile is L cm by W cm.

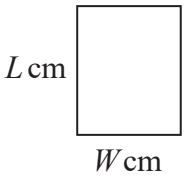


Diagram **NOT** accurately drawn

Using 9 of her tiles, Yasmin makes rectangle $ABCD$, shown in the diagram below.

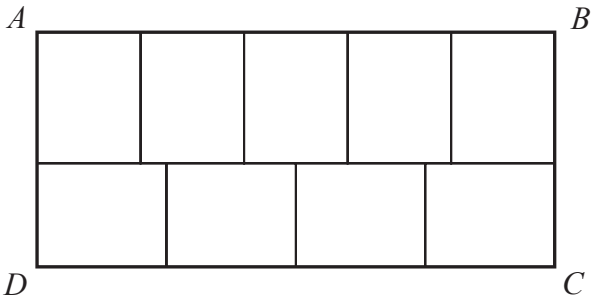


Diagram **NOT** accurately drawn

The area of $ABCD$ is 1620 cm^2

Work out the value of L and the value of W.

$L =$ ..... $W =$ .....

(Total for Question 8 is 5 marks)

9 Calvin has 12 identical rectangular tiles.
He arranges the tiles to fit exactly round the edge of a shaded rectangle, as shown in the diagram below.

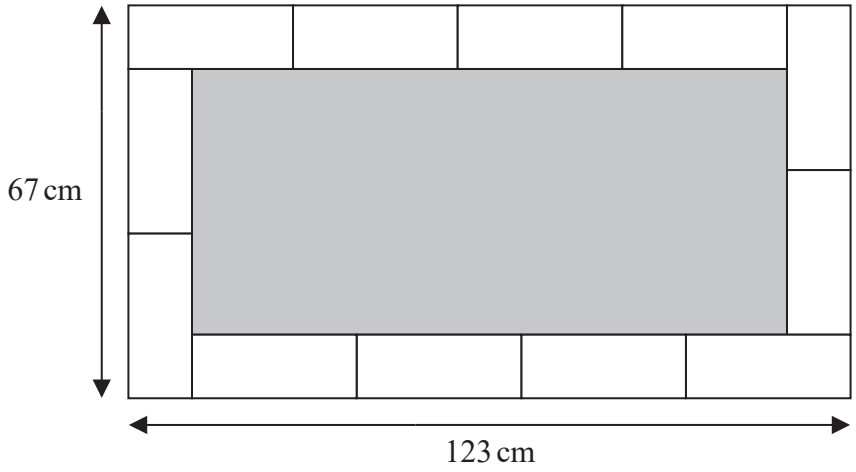


Diagram **NOT** accurately drawn

Work out the area of the shaded rectangle.

cm^2

(Total for Question 9 is 5 marks)

10 The diagram shows isosceles triangle *ABC*.

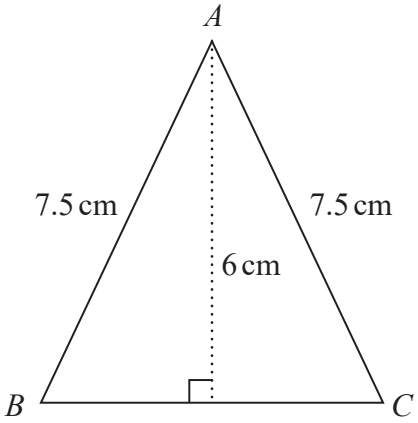


Diagram **NOT** accurately drawn

AB = *AC* = 7.5 cm.
The height of the triangle is 6 cm.

Calculate the area of the triangle.

.....cm^2

(Total for Question 10 is 4 marks)

11 The region, shown shaded in the diagram, is a path.

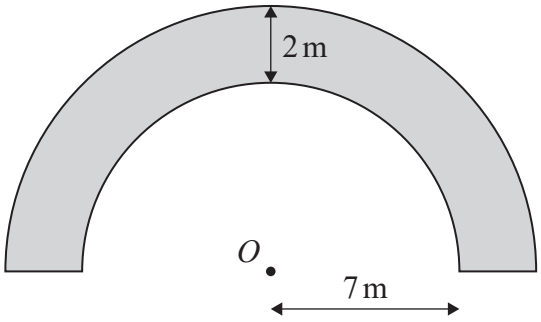


Diagram **NOT** accurately drawn

The boundary of the path is formed by two semicircles, with the same centre O, and two straight lines.

The inner semicircle has a radius of 7 metres.
The path has a width of 2 metres.

Work out the perimeter of the path.
Give your answer correct to one decimal place.

..... m

(Total for Question 11 is 3 marks)

12 The diagram shows an isosceles triangle.

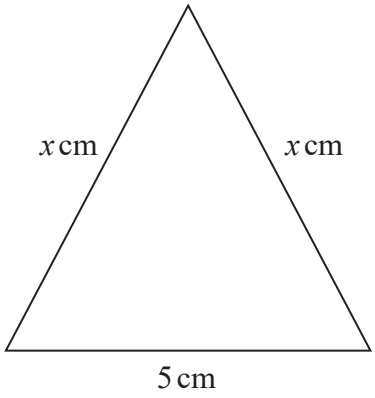


Diagram **NOT** accurately drawn

The area of the triangle is 12 cm^2

Work out the perimeter of the triangle.
Give your answer correct to 3 significant figures.

cm

(Total for Question 12 is 4 marks)

13 The diagram shows an isosceles triangle.

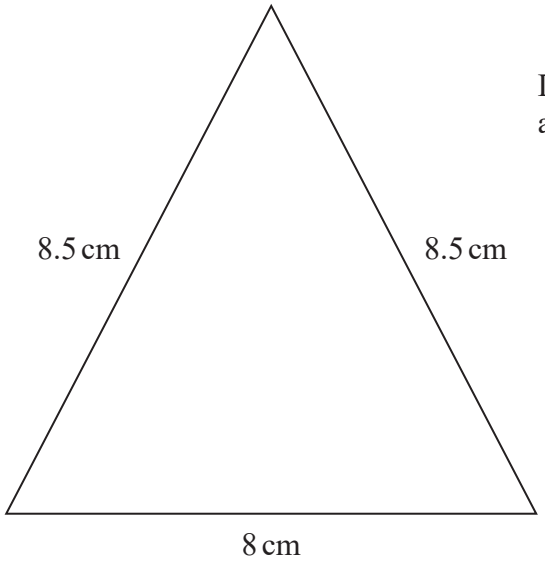


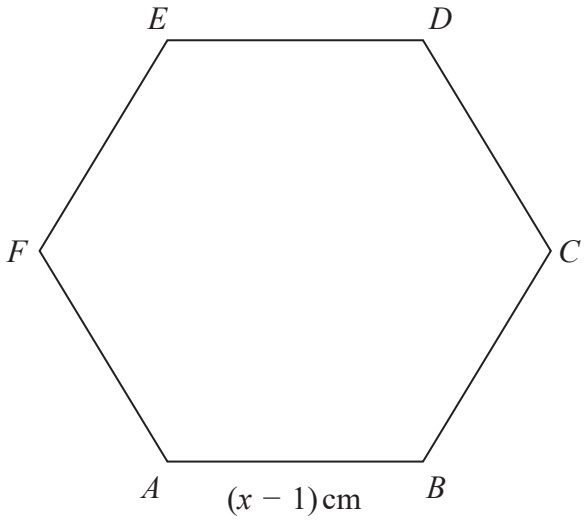
Diagram **NOT** accurately drawn

Work out the area of the triangle.

.....cm^2

(Total for Question 13 is 4 marks)

14 The diagram shows a regular hexagon, *ABCDEF*, and an isosceles triangle, *GHJ*.



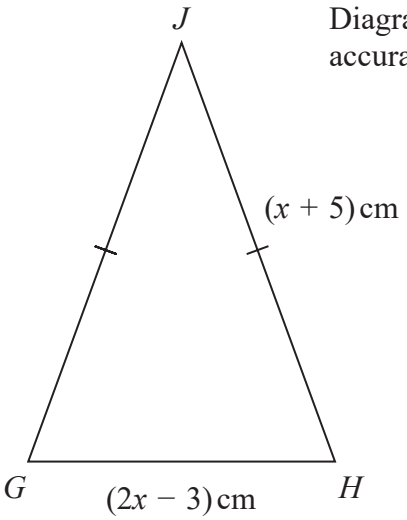


Diagram **NOT** accurately drawn

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 14 is 5 marks)

15 Jonty has a storage container in the shape of a cuboid, as shown in the diagram.

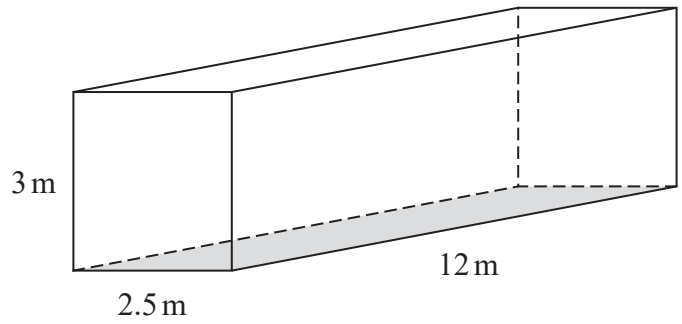


Diagram **NOT** accurately drawn

Jonty is going to paint the outside of his storage container, apart from the base which is shown shaded in the diagram.
He needs enough paint to cover the four sides and the top.

Each tin of paint covers an area of 15 m^2

The cost of each tin of paint recently increased by 10%
After the increase, the cost of each tin of paint is £26.95

Jonty says

"**Before** the increase, I could have bought enough paint for less than £200"

Show that Jonty is correct.
Show your working clearly.

(Total for Question 15 is 6 marks)

16 The diagram shows a trapezium.

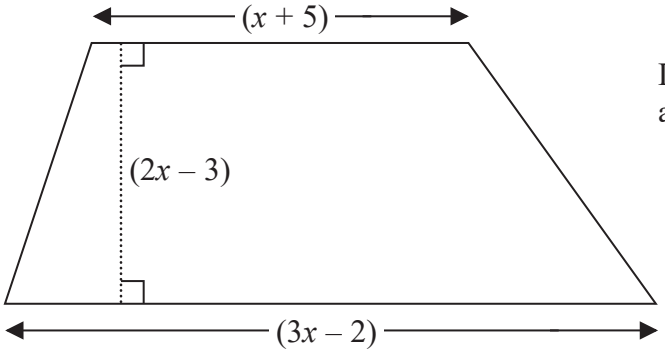


Diagram **NOT** accurately drawn

All measurements shown on the diagram are in centimetres.

The area of the trapezium is 133 cm^2

(a) Show that $8x^2 - 6x - 275 = 0$

(3)

(b) Find the value of x.
Show your working clearly.

$x =$

(3)

(Total for Question 16 is 6 marks)

17 Here is a rectangle.

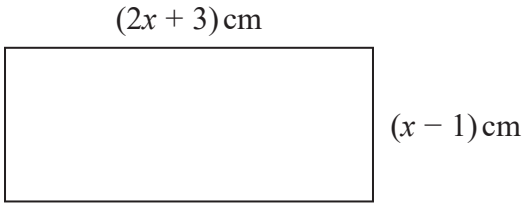


Diagram **NOT** accurately drawn

Given that the area of the rectangle is less than 75 cm^2

find the range of possible values of x

.....

(Total for Question 17 is 5 marks)

18 The diagram shows a rectangle.

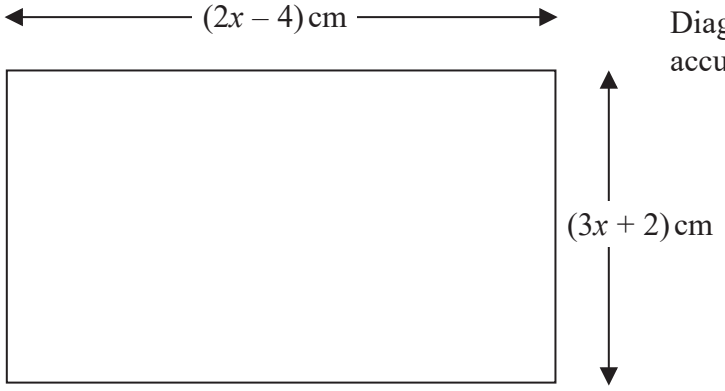


Diagram **NOT** accurately drawn

The area of the rectangle is A cm^2

Given that $A < 3x + 27$
find the range of possible values for x.

.....

(Total for Question 18 is 5 marks)

19 *ABCED* is a five-sided shape.

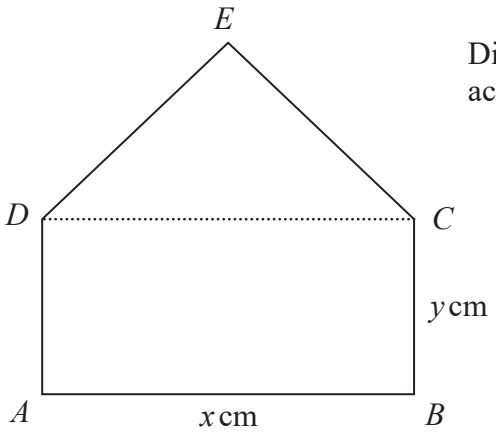


Diagram **NOT** accurately drawn

ABCD is a rectangle.
CED is an equilateral triangle.

$AB = x$ cm $BC = y$ cm

The perimeter of *ABCED* is 100 cm.
The area of *ABCED* is R cm^2

(a) Show that $R = \frac{x}{4}\left(200 - \left[6 - \sqrt{3}\right]x\right)$

(Total for Question 19 is 3 marks)

20 The area of a rectangle is $18\,\text{cm}^2$

The length of the rectangle is $\left(\sqrt{7}+1\right)$ cm.

Without using a calculator and showing each stage of your working,

find the width of the rectangle.
Give your answer in the form $a\sqrt{b}+c$ where a, b and c are integers.

..... cm

(Total for Question 20 is 3 marks)

21 The diagram shows four identical circles drawn inside a square.

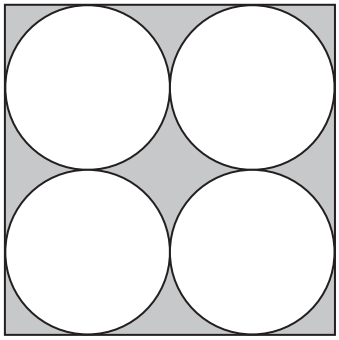


Diagram **NOT** accurately drawn

Each circle touches two other circles and two sides of the square.

The region inside the square that is outside the circles, shown shaded in the diagram, has a total area of 40 cm^2

Work out the perimeter of the square.
Give your answer correct to 3 significant figures.

..... cm

(Total for Question 21 is 4 marks)