Non-Calculator

Q1.

The base of a pyramid has n sides.
Circle the expression for the number of faces of the pyramid.

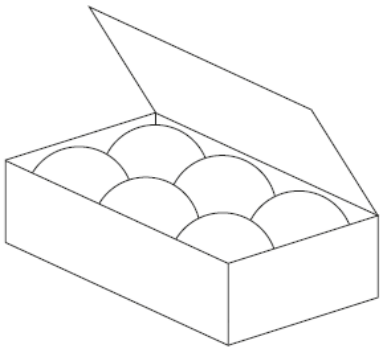
$2n$ $\quad$ $n - 1$ $\quad$ n $\quad$ $n + 1$

(Total 1 mark)

Q2.

Six balls just fit inside a box as shown.

The balls each have a diameter of 5 cm
The box is a cuboid.



Work out the volume of the box.

Answer _____ cm^3

(Total 3 marks)

Q3.

Does a cuboid have **more** faces, edges or vertices?
Circle your answer.

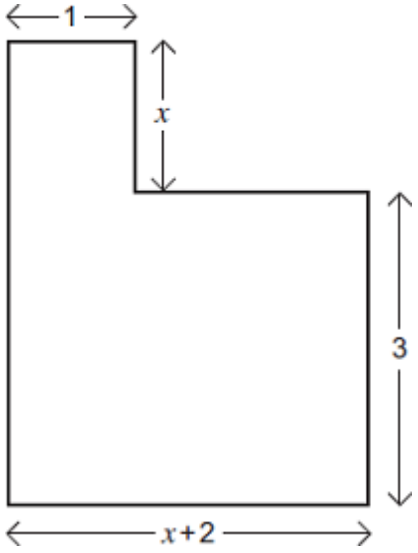
faces edges vertices

(Total 1 mark)

Q4.

The L-shape below has an area of 12 cm^2.
All corners are right angles.
All lengths are in centimetres.

Not drawn accurately



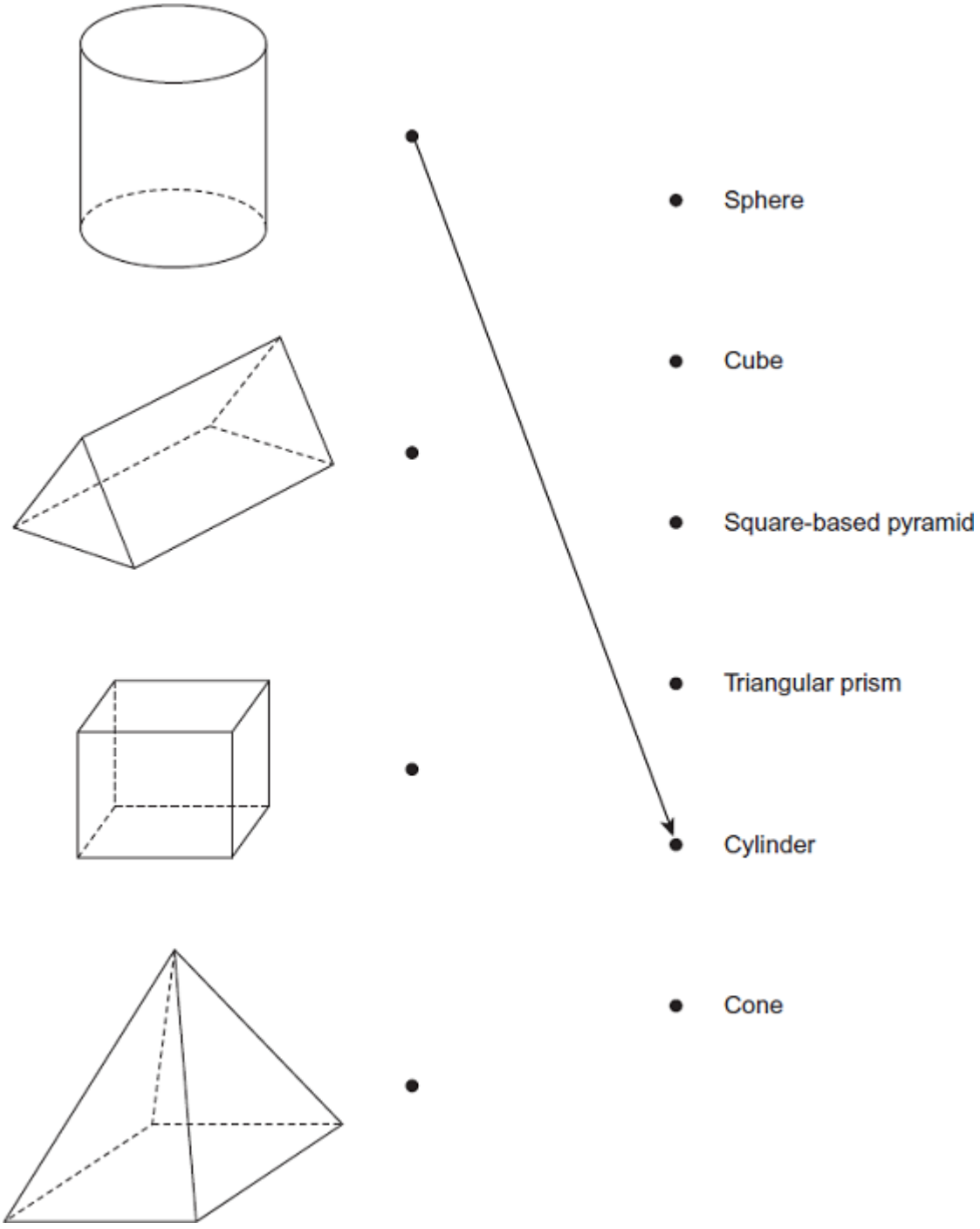
Work out the value of x.

Answer _____ cm

(Total 4 marks)

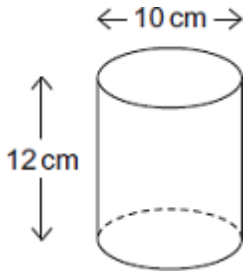
Q5.

(a) Match the solid to its mathematical name.
The first one has been done for you.

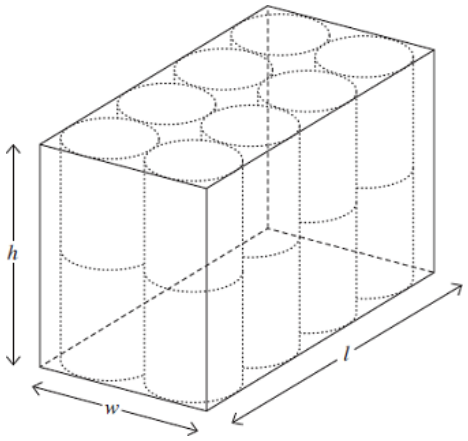


(3)

(b) This cylinder has a diameter of 10 cm and a height of 12 cm.



16 of the cylinders are packed tightly into a box.



Work out the length, l, the height, h and the width, w of the box.

l = _____ cm

h = _____ cm

w = _____ cm

(3)

(Total 6 marks)

Q6.

(a) How many edges are there on a square-based pyramid?
Circle your answer.

4 5 8 12

(1)

(b) How many faces of a triangular prism are triangles?
Circle your answer.

2 3 4 5

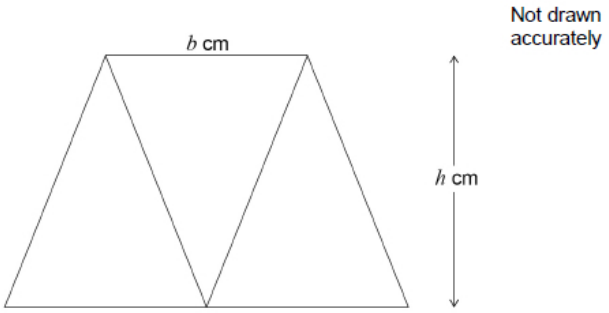
(1)

(Total 2 marks)

Q7.

Three identical isosceles triangles are joined to make this trapezium.

Each triangle has base b cm and perpendicular height h cm



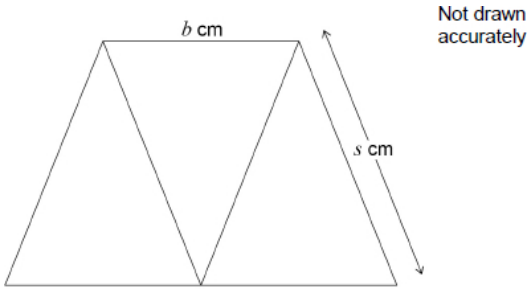
(a) Work out an expression, in terms of b and h, for the area of the trapezium.

Give your answer in its simplest form.

Answer _____ cm^2

(2)

(b) This diagram shows the same trapezium.



$b : s = 2 : 3$

Work out an expression, in terms of b, for the perimeter of the trapezium.

Answer _____ cm

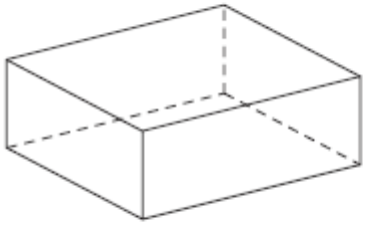
(2)

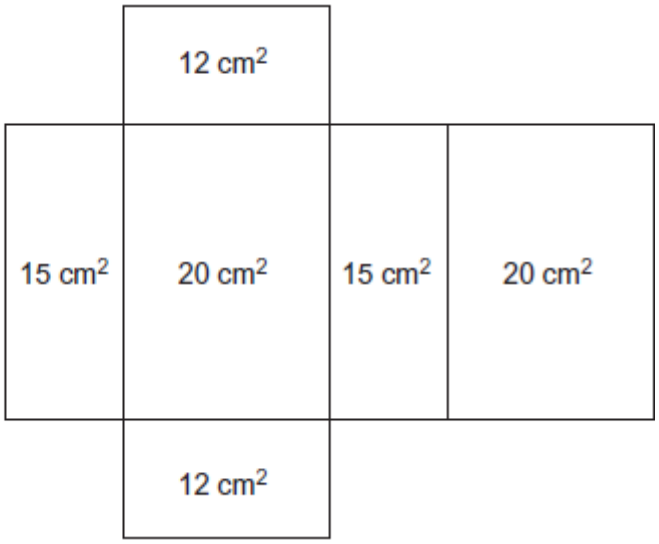
(Total 4 marks)

Q8.

Here is the net of a cuboid.
The net shows the area of each face.

Not drawn accurately





Work out the **volume** of the cuboid.

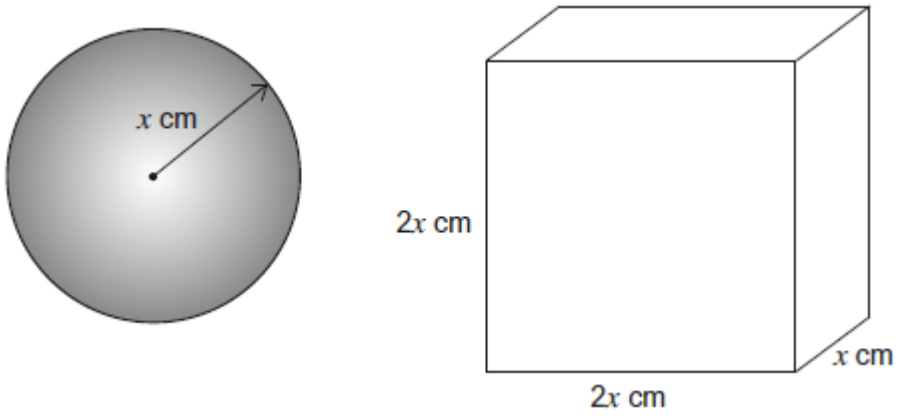
Answer _____ cm^3

(Total 4 marks)

Q9.

A sphere has a radius of x cm

A cuboid has edges of length x cm, width $2x$ cm and height $2x$ cm

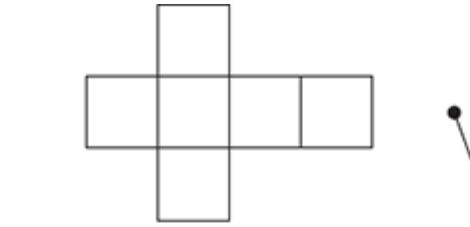


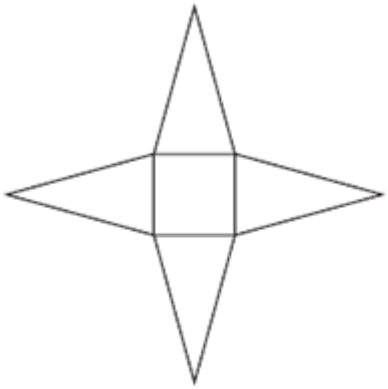
Show clearly that the sphere has the larger volume.

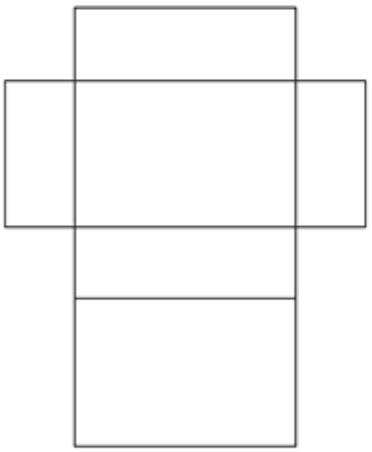
(Total 3 marks)

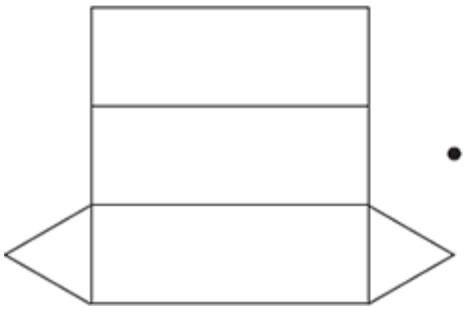
Q10.

Match each net with a solid.
The first one has been done.









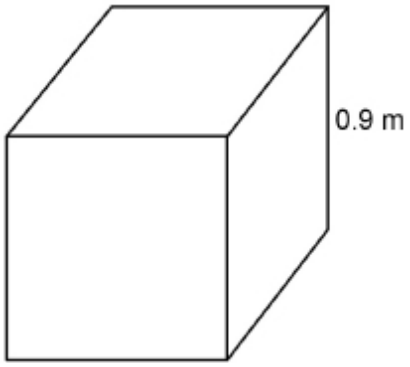
- Cuboid
- Pyramid
- Cylinder
- Cube
- Triangular prism

(Total 3 marks)

Calculator

Q11.

A cube has edge length 0.9 metres.



Work out the **total** surface area of the cube.

Give your answer in **square centimetres**.

Answer _____ cm^2

(Total 3 marks)

Q12.

In a game, Anna has to describe a hexagonal prism.
She must not use the words ‘hexagonal’ or ‘prism’.

She says,

> “It has a uniform cross section.
> It has 6 faces.
> It has 12 vertices.
> It has 12 edges.”

Correct any mistakes Anna has made.

_____

_____

_____

_____

_____

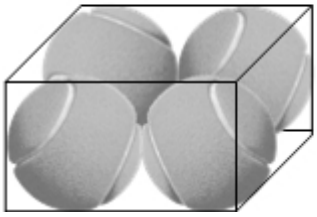
_____

(Total 2 marks)

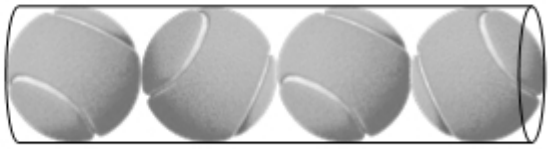
Q13.

Here are two closed containers.
Four tennis balls just fit in each container.
Each tennis ball has diameter 64 mm

Cuboid



Cylinder



Which container has the smaller surface area?
You **must** show your working.

Answer _____

(Total 5 marks)

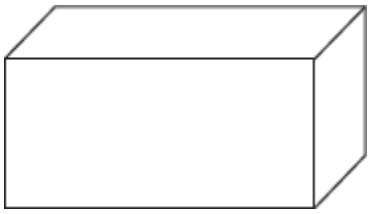
Q14.

(a) Write down the mathematical name of this shape.

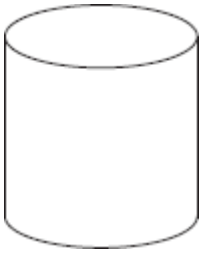
_____

(1)

(b) Write down the mathematical names of these solid shapes.



_____



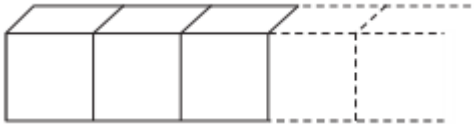
_____

(2)

(Total 3 marks)

Q15.

A shape is made by joining centimetre cubes together in a row as shown.



The surface area of the shape is 34 cm^2.

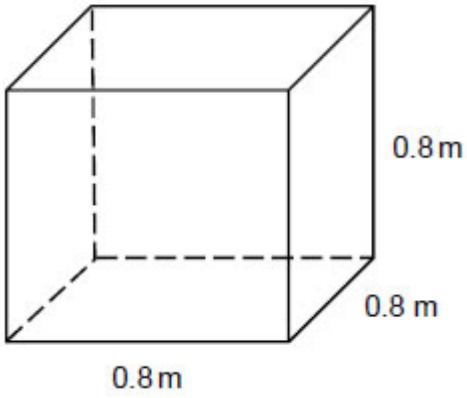
Work out the number of cubes used to make the shape.

Answer _____

(Total 3 marks)

Q16.

A cube has edges of length 0.8 metres.



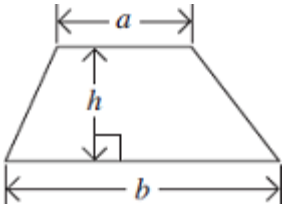
Work out its volume in **cubic centimetres**.

Answer _____ cm^3

(Total 2 marks)

Q17.

In the trapezium, a = 6.5 m, b = 8.3 m and h = 3.2 m



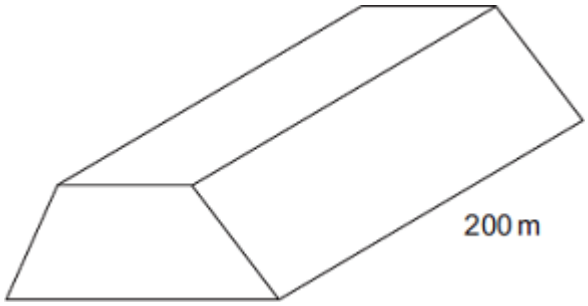
Not drawn accurately

(a) Work out the area of the trapezium.

Answer _____ m^2

(2)

(b) The trapezium is the cross-section of a tunnel.
The tunnel is 200 metres long.



Work out the volume of the tunnel.

Answer _____ m^3

(2)

(Total 4 marks)

Q18.

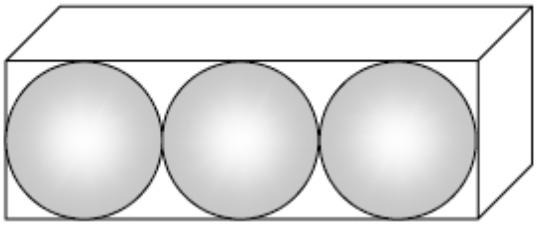
Volume of a sphere = $\frac{4}{3}\pi r^3$ where r is the radius.

(a) Work out the volume of a sphere of radius 8 cm.

Answer _____ cm^3

(2)

(b) Three spheres of radius 8 cm are packed tightly into a cuboid as shown.



Work out the volume of the cuboid.

Answer _____ cm^3

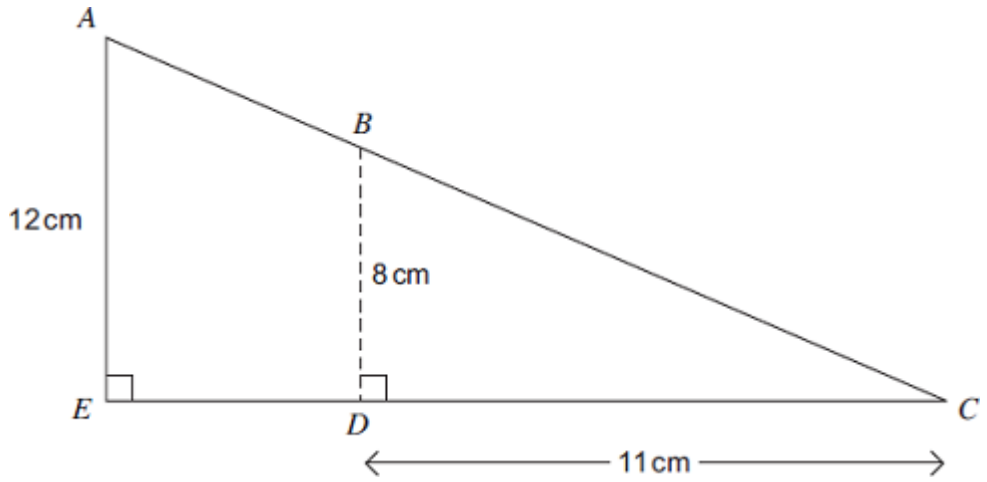
(4)

(Total 6 marks)

Q19.

The diagram shows a triangle cut into a smaller triangle and a trapezium.

Not drawn accurately



Work out the area of the trapezium $ABDE$.

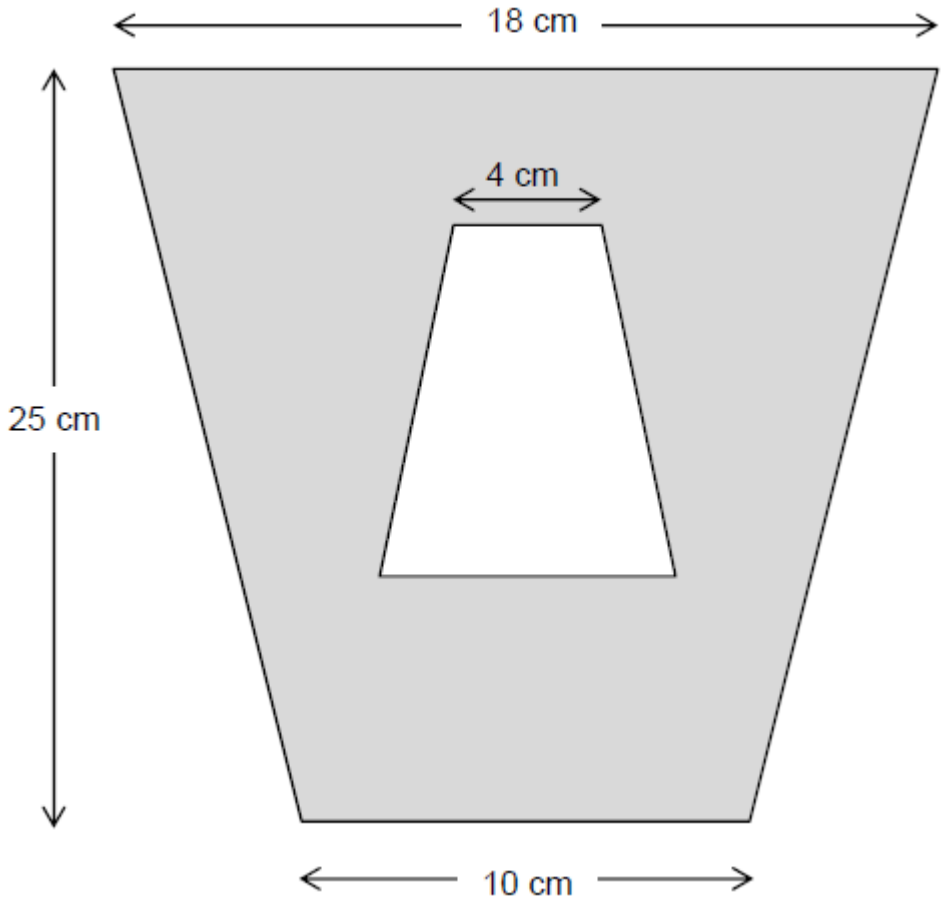
Answer _____ cm^2

(Total 5 marks)

Q20.

(a) A pattern is made from two **similar** trapeziums.

Not drawn accurately

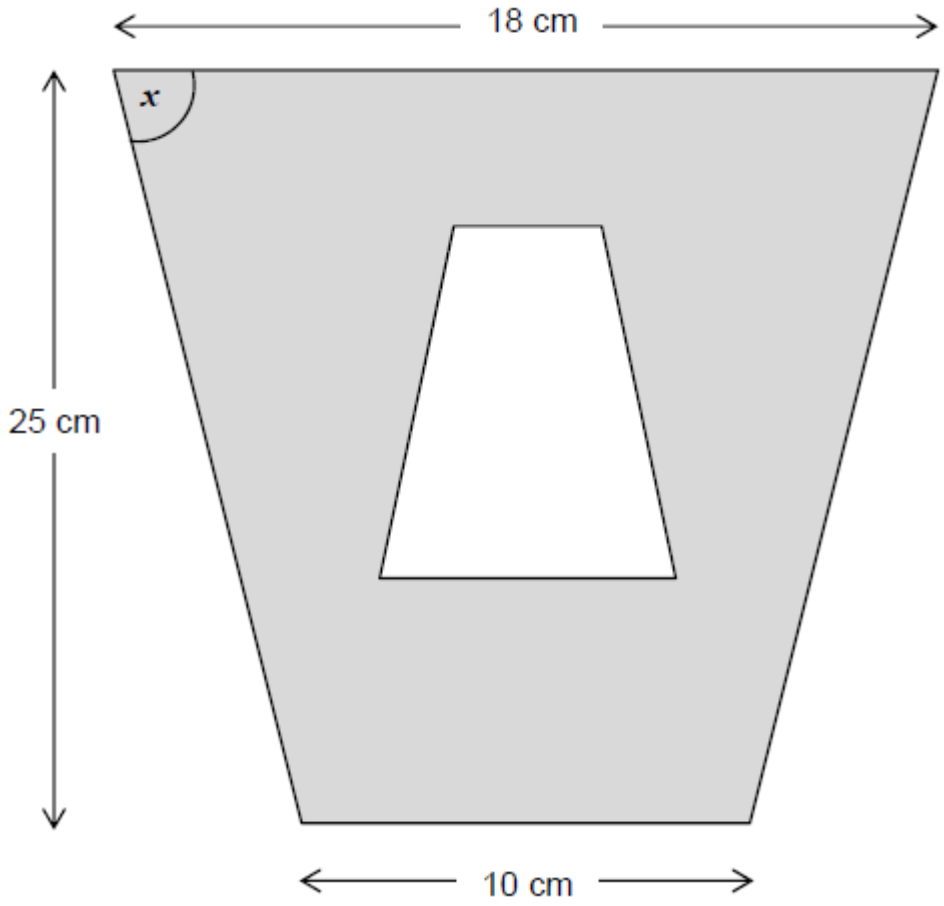


Show that the shaded area is 294 cm²

(4)

(b) The pattern has one line of symmetry.

Not drawn accurately



Work out the size of angle x.

Answer _____ degrees

(3)

(Total 7 marks)