

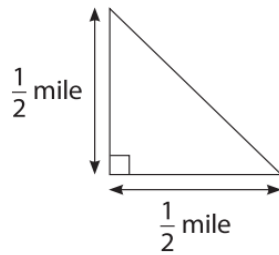
**Non-calculator Questions**

Edexcel

1.

Usha is a local councillor.  
She wants to write about a new housing development.

The diagram shows the space for the new development.



Usha thinks that the area of the development will be greater than the total area of 50 football pitches.

Usha knows

- a football pitch is rectangular 100 m by 50 m
- 1 mile = 1600 m.

(a) Will the area of the development be greater than the total area of 50 football pitches?

(5)



(b) Use reverse calculations to show a check of your answer.

(1)

NCFE

2.

Gavin goes to Joti's shop.

He is making a circular blanket.

The finished blanket will have a radius of 0.325 m

It will have ribbon all around the edge.

He thinks he will need 2.5 m of ribbon.

Gavin knows that  $\pi$  is about 3.1416

Round  $\pi$  to **1 decimal place** and **use this value** to work out how much ribbon Gavin will have left if he buys 2.5 m



**[4 marks]**

Worked Example

Your answer:

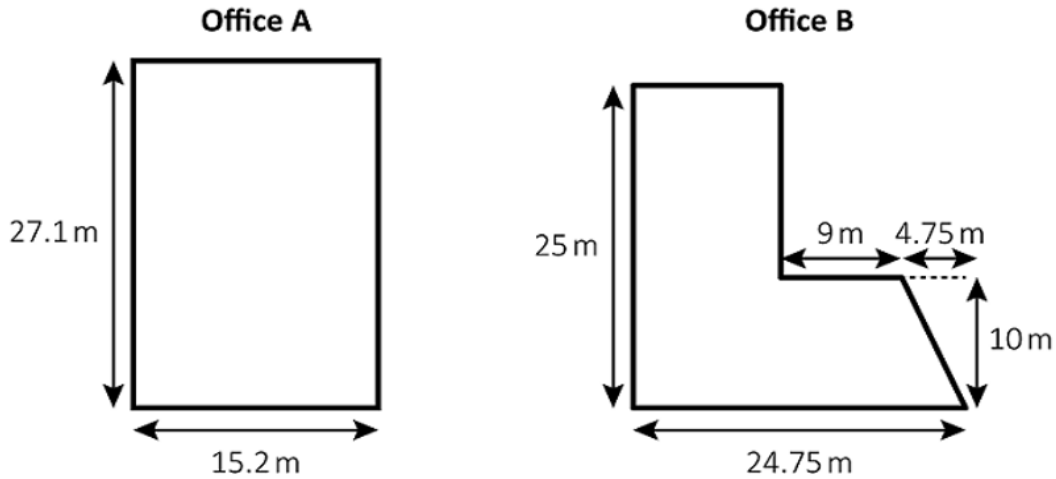
**m**

3.

Emma is asked to find an office with a floor area of approximately  $400 \text{ m}^2$

She compares two office spaces.

**Not drawn accurately**



The area of **Office A** is  $411.92 \text{ m}^2$

Which office has an area closest to  $400 \text{ m}^2$ ?

Show your working.

**[4 marks]**

Blank area for working.

Your answer:

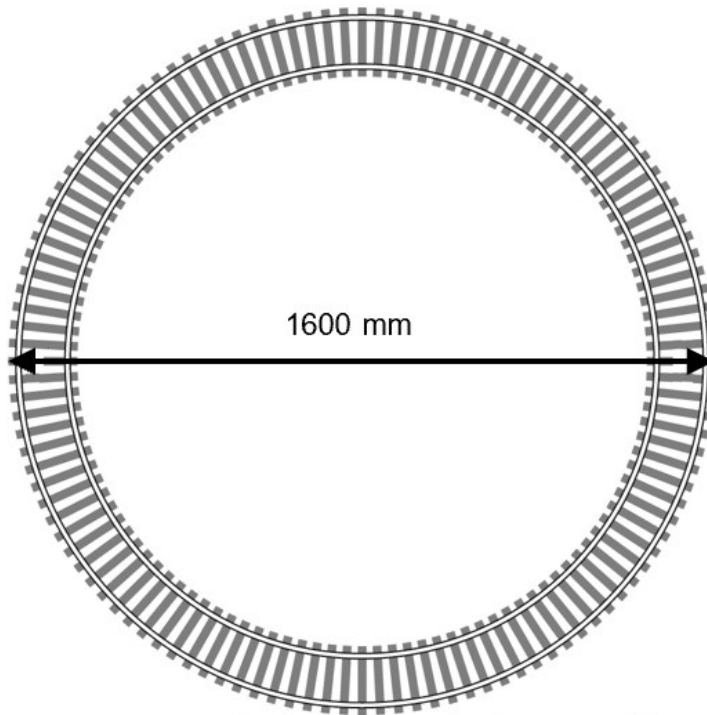
Blank box for the answer.

4.

Noah is making a circular train track.

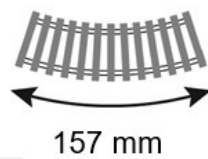
He has some curved pieces of track.

When he puts them together, the curved pieces will make a circular track with diameter 1600 mm



**Not drawn accurately**

The outside length of each curved section is 157 mm



How many curved pieces does Noah need to make the whole circle?

Use  $\pi = 3.14$

**[3 marks]**

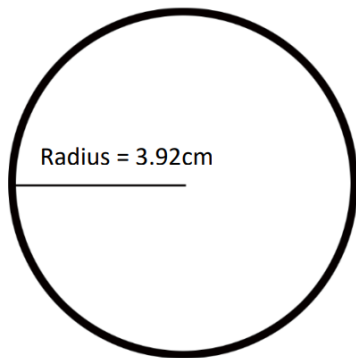
Blank area for working out the answer.

Your answer:

**curved pieces**

City & Guilds

5.



Which calculation gives an approximation of the area of this circle in  $\text{cm}^2$ ?

*(tick one box)*

**A**  $3 \times 8 =$

**B**  $3 \times 4 =$

**C**  $3 \times 16 =$

**D**  $3 \times 9 =$

**(1 mark)**

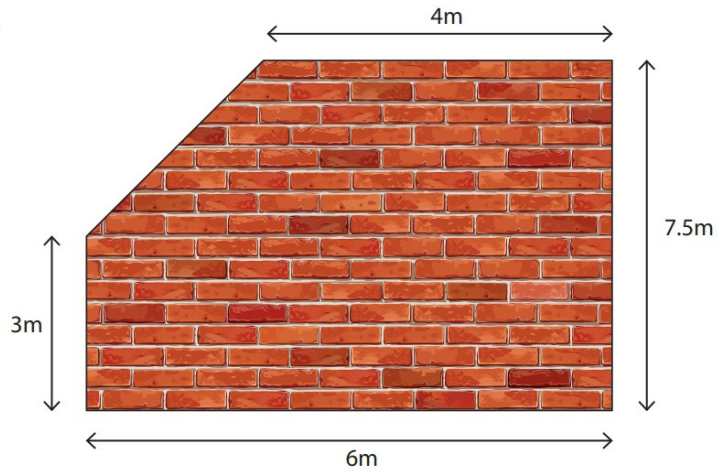
Highfield

6.

You are creating an advert for a billboard on the side of a building.

Below is a diagram of the space you have available on the building.

*Diagram not to scale*



**What is the total area of the space you have available for the advert?**

Show your working out and write the answer in the box below.

**(4 marks)**

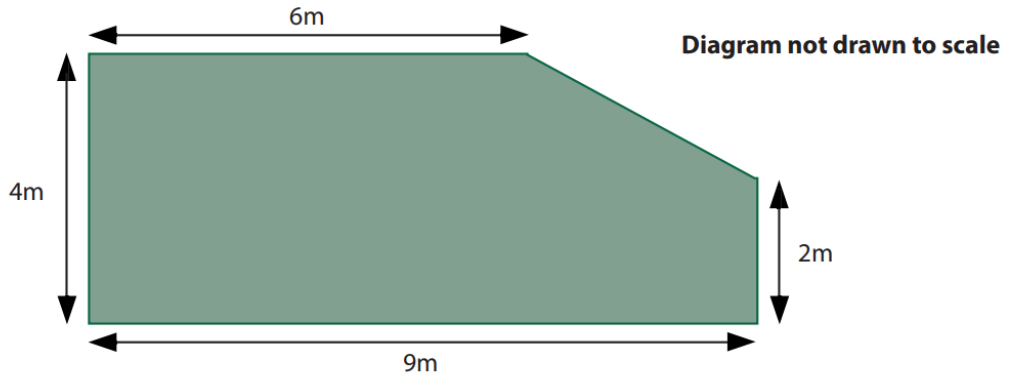
Answer: \_\_\_\_\_ m<sup>2</sup>



7.

You have recently rescued two dogs. The dogs need an outside kennel to share.

You see a kennel for sale with the following floor space:



It is recommended that each dog has a floor area of  $15\text{m}^2$

**Is the kennel big enough for your dogs?**

Show your working out and write the answer in the box below.

*(4 marks)*

Answer: \_\_\_\_\_

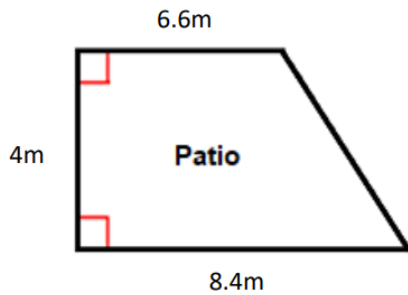
Open Awards

8.a)

Simon is planning to build a patio in his garden. The patio will have four sides.

He has drawn a sketch of the patio below.

*Sketch not drawn to scale*



Calculate the area of the patio.

(3 marks)

Show your calculations and/or workings out here:

Write your answer in this box.

b)

For the foundation of the patio, Simon will use a dry mixture of sand and cement.

He will need 20kg of mixture for each square metre of patio.

To make the mixture he needs to mix sand and cement in the ratio of 5:1.

Calculate how many 25kg bags of cement he will need. (4 marks)

Show your calculations and/or workings out here:

Write your answer in this box.

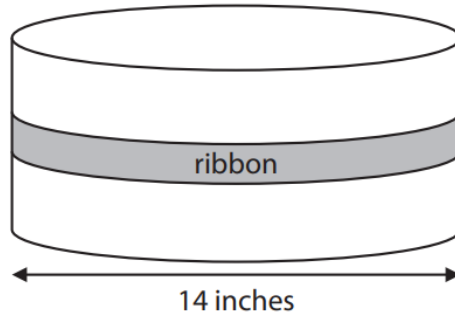
**Calculator Questions**

Edexcel

1.

Louis makes a cake.

The cake is in the shape of a cylinder with diameter 14 inches.



Louis needs to put a ribbon around this cake.

The ribbon will go around the cake once with a 6 inch overlap.

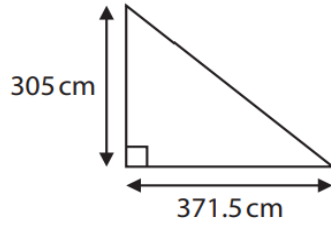
Louis has a piece of ribbon 48 inches in length.

Is this piece of ribbon long enough for this cake?

(3)

2.

George will cover part of a floor with tiles.  
The part of the floor is in the shape of a triangle as shown.



George buys tiles in packs.  
Each pack covers  $1 \text{ m}^2$  and costs £39.95

The tiles can be cut and joined.  
George gets  $\frac{1}{3}$  off the cost of the packs of tiles.

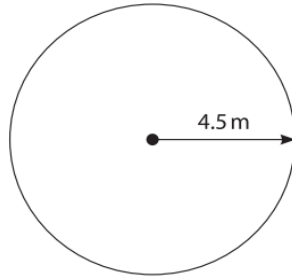
Work out the lowest cost of the tiles for George.

(5)

£

3.

Joanna is a landscape gardener.  
She has to fill a circular space with flowers.



The radius of the circular space is 4.5 metres.

Joanna will plant 40 flowers per square metre of space.

She will plant 4 times as many red flowers as white flowers.

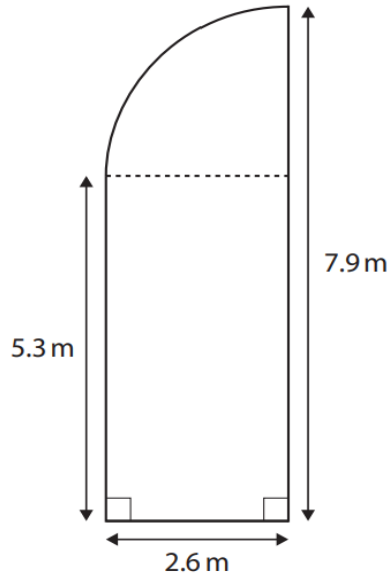
How many red flowers will she plant?

(5)

4.

Jessie needs to cover a wooden floor with varnish.

The floor is in the shape of a rectangle and a quarter circle.



A tin of varnish

- covers  $6 \text{ m}^2$
- costs £5.41

Jessie has £25 to buy the tins of varnish she needs to cover this wooden floor.

Is £25 enough to buy all the tins of varnish Jessie needs?

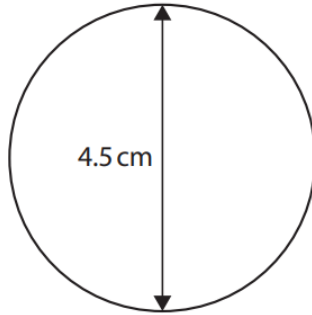
(6)

5.

Claire is a designer.

She needs to put some lights around a circular bandstand in a park.

Claire has this scale diagram of the plan view of the bandstand.



scale 1 : 200

Claire knows that

- a set of lights is 4.75 m in length
- each set of lights costs £27.99

Work out the total cost for the sets of lights Claire needs.

(5)

£



6.

Matt and Gabrielle are planning their wedding.  
There will be 150 people at the reception.

All of the tables at their reception

- seat a maximum of 8 people
- have a circular top of diameter 1.7 m

Matt and Gabrielle want to put ribbon around the top edge of each table.  
They will allow for an extra 65 cm of ribbon per table for a bow.

Ribbon is sold in rolls.  
Each roll of ribbon is 30 m in length.

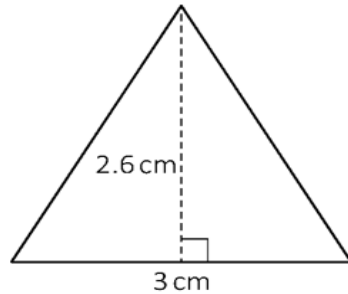
How many rolls of ribbon do Matt and Gabrielle need to buy to decorate the minimum number of tables needed at their reception?

(5)

NCFE

7.

The triangular faces of each prism have base 3 cm and height 2.6 cm



Not drawn accurately

Tom fills the hexagonal mould with water to a depth of 3.5 cm

Tom knows that:

- to calculate the volume of each triangular prism, he can use the formula  
Volume = area of triangular face  $\times$  depth of prism
- when a volume of water freezes, the ice that is formed has a volume 4% more than the volume of the water.

What will be the **total** volume of ice formed when all the water in the hexagonal mould freezes?

[5 marks]

Blank area for writing the answer.

Your answer:

cm<sup>3</sup>

8.

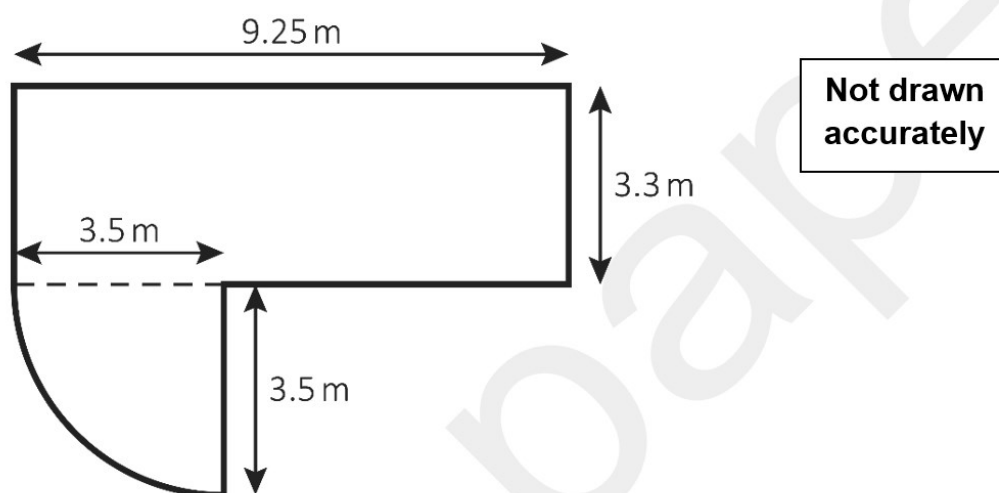
Dan has set up a patio cleaning business.

He charges £4.25 per  $\text{m}^2$  of the patio to be cleaned.



Mrs Jones has asked Dan how much he will charge for cleaning her patio.

This diagram shows her patio:



How much will Dan charge Mrs Jones for cleaning her patio?

Use  $\pi = 3.14$

**[4 marks]**



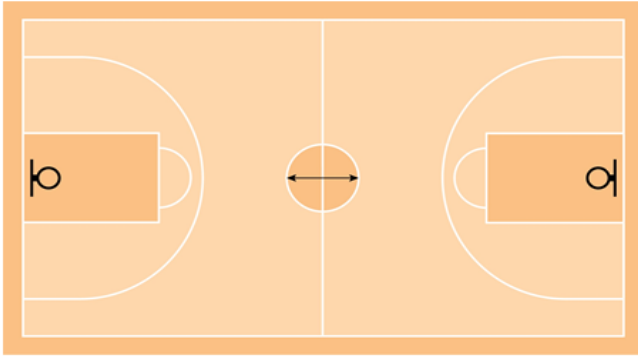
Your answer:

£

9.

This is a scale drawing of a basketball court.

The scale is 1 : 400



The diameter of the centre circle on the diagram is 0.9 cm

Work out the actual area of the centre circle in  $\text{m}^2$

Use  $\pi = 3.14$

**[3 marks]**

Blank area for working out the answer.

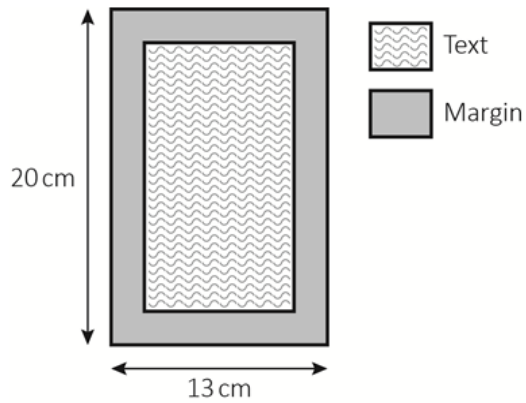
Your answer:

$\text{m}^2$

10.

Rani is on placement at a printing company.  
The company has an order for some leaflets.

Each page will have a rectangular area of text with a 2 cm margin around it.



The printer can fit an average of 3.9 words of text per  $\text{cm}^2$

There are 2000 words in total.

What is the minimum number of pages that the printer needs?

You **must** show your working.

**[4 marks]**

Working area for the student's solution.

Your answer:

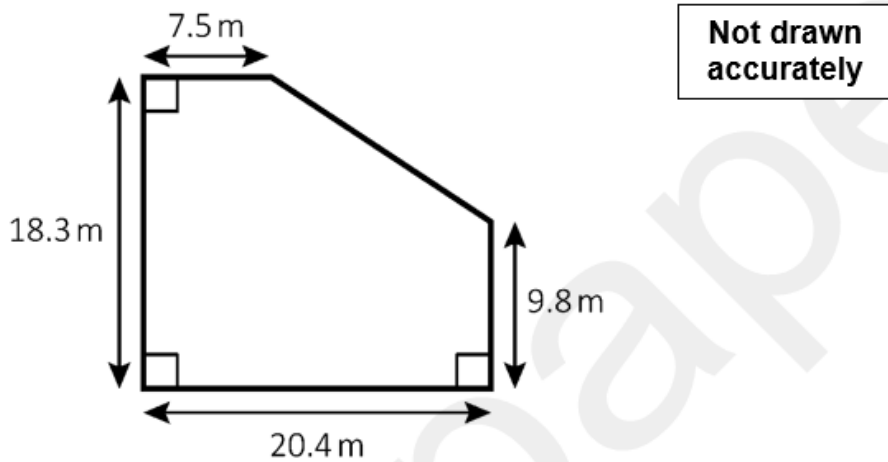
Answer box.

11.

An allotment is a piece of land that people can rent to grow fruit, flowers and vegetables.

A residents' association has an allotment so that people can grow their own vegetables.

This is a plan of the allotment:



What is the area of the allotment?

[3 marks]

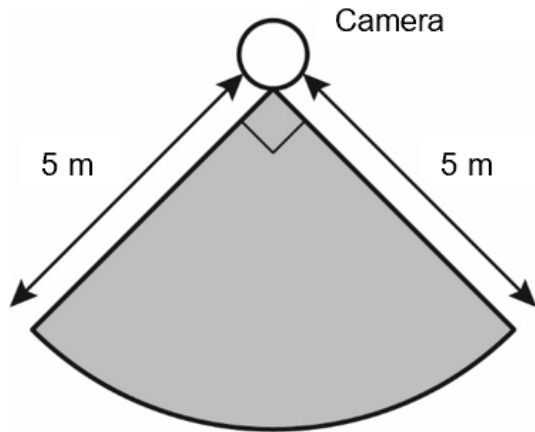
Your answer:

$\text{m}^2$

12.

The house had a CCTV camera.

The shaded section of the diagram shows the area covered by the camera:



Not drawn accurately

Calculate the area covered by the camera.

Use  $\pi = 3.14$

[2 marks]

Blank area for working out the solution.

Your answer:

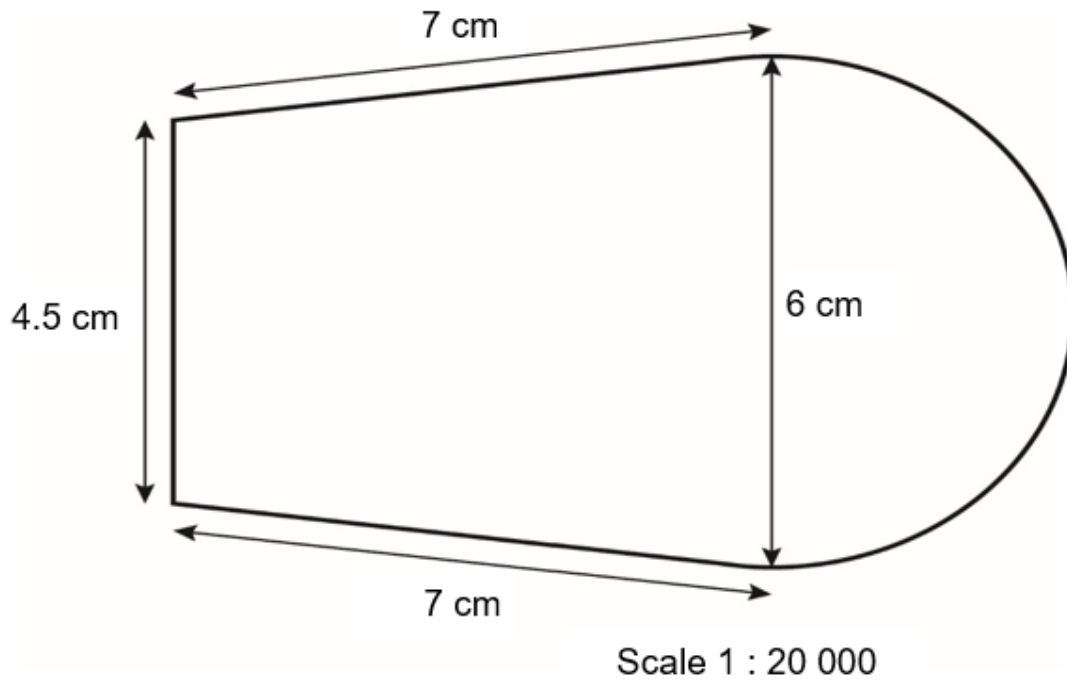
m<sup>2</sup>



13.

Pavel has this scale drawing of the festival area.

It is made up of a trapezium and a semicircle.



He needs to order fencing to go around the festival area.

He will leave gaps totalling 65 m for the gates.

Fencing comes in rolls 50 m in length.

How many rolls does Pavel need for the festival area?

Use  $\pi = 3.14$

**[5 marks]**



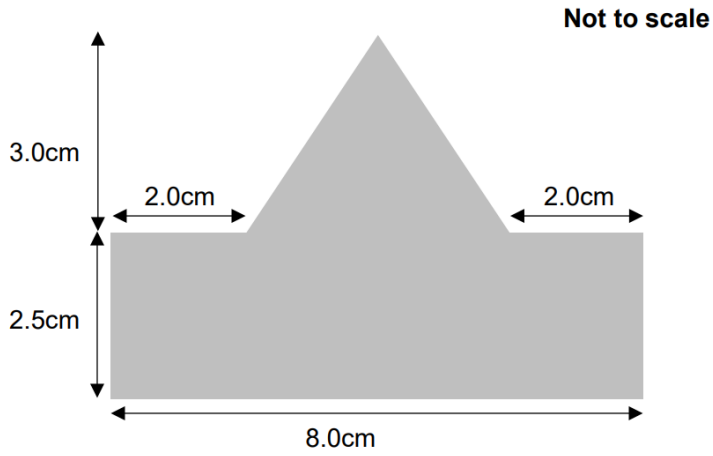
Your answer:

**rolls**

City & Guilds

14.

A worker has to set a machine to cut this shape from a piece of metal.



What is the area of the shape?

Show all your working.

Blank area for showing working.

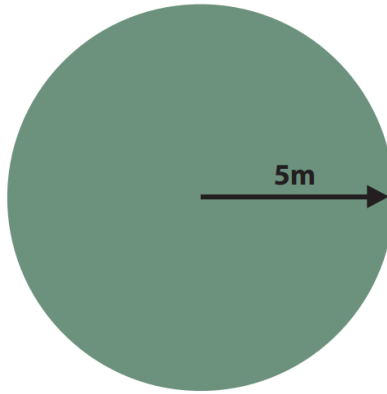
\_\_\_\_\_  $\text{cm}^2$

(4 marks)

Highfiled

15.

Calculate the circumference (**C**) of this circle:



*Diagram not drawn to scale*

**Use  $\pi = 3.14$**

Show your working out and write the answer in the box below.

*(2 marks)*

|                      |
|----------------------|
| <b>Answer:</b> _____ |
|----------------------|

16.

You have a job to decorate a local roundabout with a pattern of flowers.

The roundabout is a circle with a radius of 5.5m

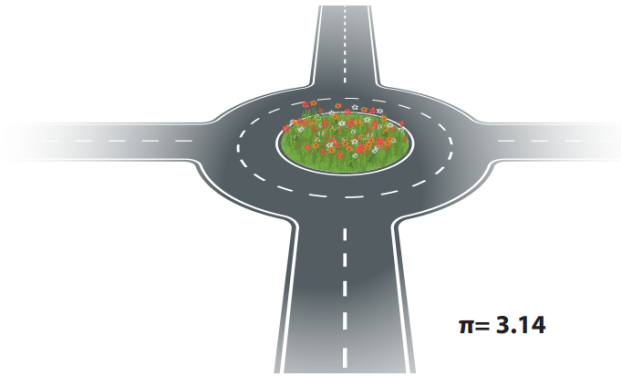
You have to completely fill the circular space with flowers.

You can plant 30 flowers per square metre of space.

You need 3 times as many red flowers as yellow flowers.

**How many red flowers will you plant?**

Show your working out and write your answer in the box below.



(5 marks)

Answer: \_\_\_\_\_

Open Awards

17.

Sarah bakes 15 identical cakes for the charity event. Each cake is circular with a radius of 80mm.

She plans to decorate each cake with a piece of ribbon around its edge.

She wants to buy an extra 12.5 % to allow for overlap.

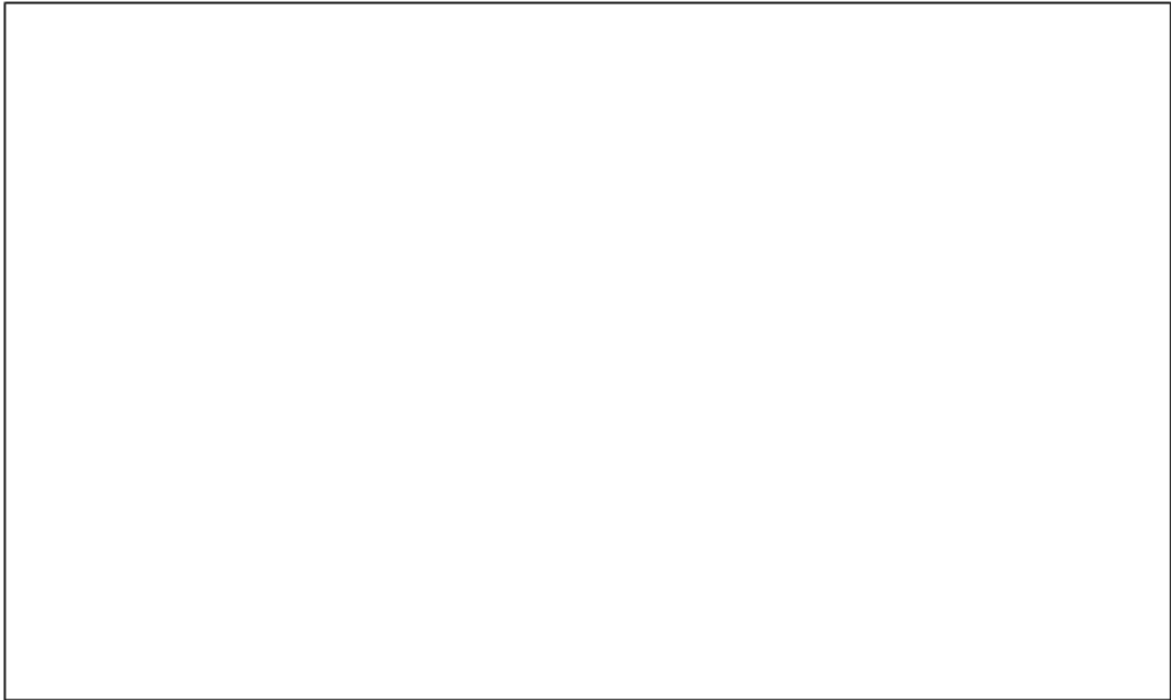
She can only buy ribbon in full metres, costing £4.95 per metre.

How much will she spend on ribbon?

(5 marks)

Use  $\pi = 3.14$

Show your calculations and/or workings out here:



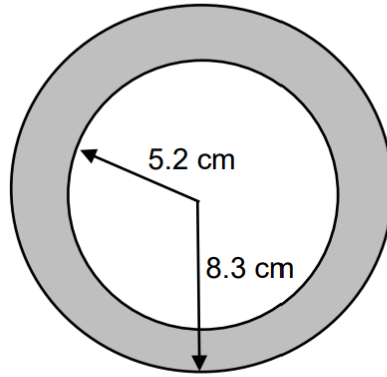
Write your answer in this box.



AQA

18.

A circle of radius 5.2 cm is inside a circle with radius 8.3 cm



Not drawn accurately

Work out the shaded area.

**[2 marks]**

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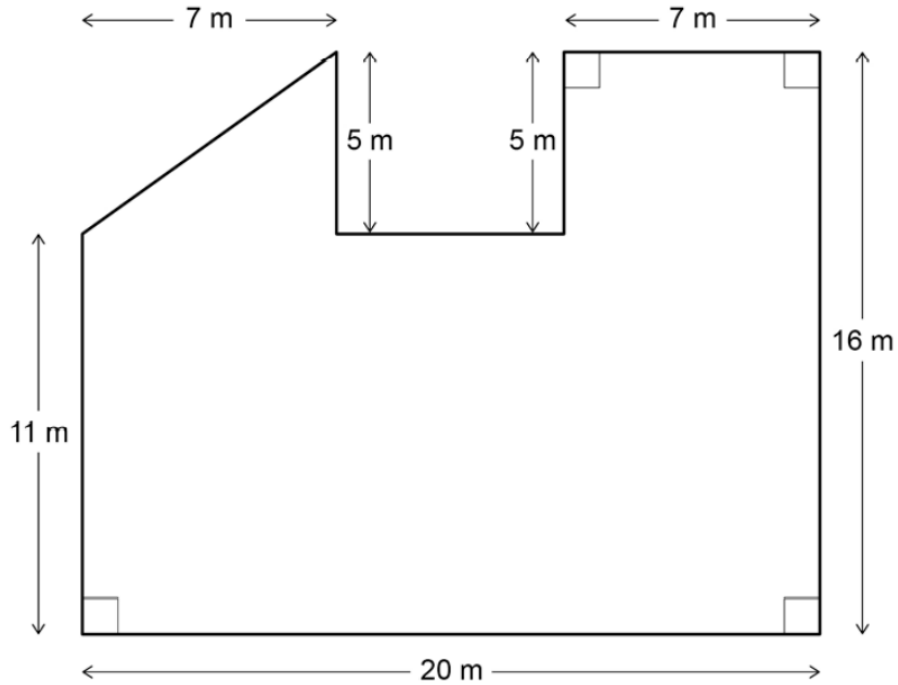
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Answer \_\_\_\_\_  $\text{cm}^2$

19.

Levi works for a company that designs and builds playgrounds.  
Here is a sketch of the plan for a new playground.



(a) Work out the area of the playground.

[3 marks]

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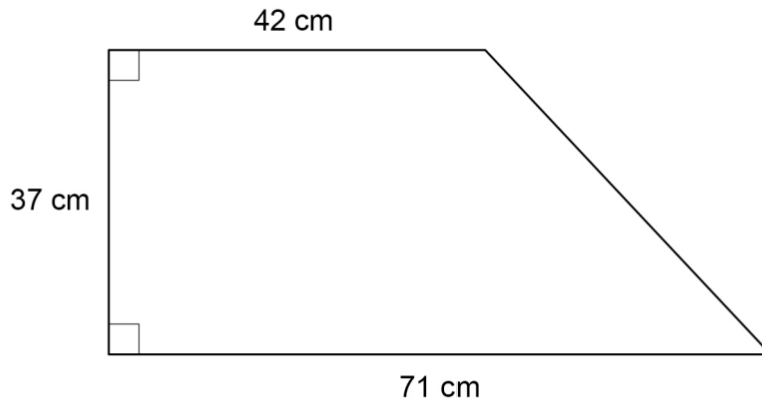
Answer \_\_\_\_\_ m<sup>2</sup>





21.

A shape is made from a rectangle and a triangle.



Not drawn accurately

Work out the area of the shape.

**[3 marks]**

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Answer \_\_\_\_\_  $\text{cm}^2$



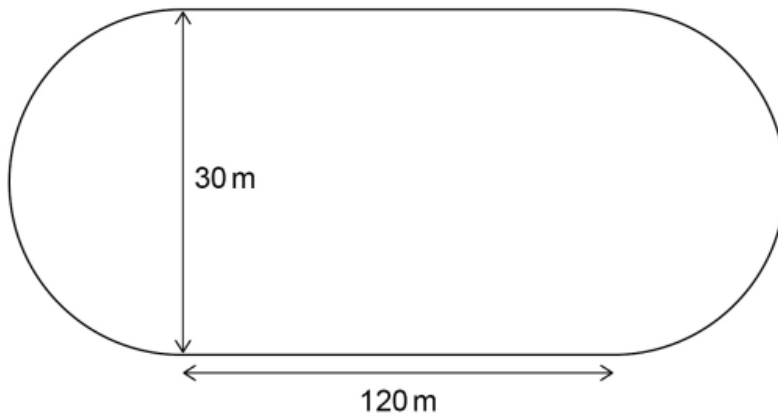
23.

Ben has a dog called Pluto.

Ben takes Pluto for a walk.

They walk **4 laps** of a sports track.

The sports track is the shape of two semi-circles joined by two straight sections.



Not drawn accurately

Ben has a target to walk 5000 m each day.

What percentage of his daily target has Ben completed on this walk?

**[5 marks]**

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Answer \_\_\_\_\_ %

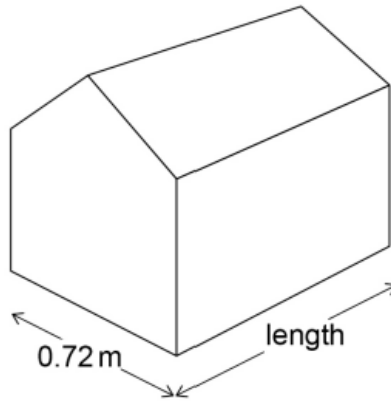
24.

In his garden, Ben has a rectangular fenced area for Pluto.

The fenced area measures 2.4 m by 2.25 m

Ben builds a kennel for Pluto which covers  $\frac{1}{6}$  of the fenced area.

Here is a sketch of the kennel.



The base of the kennel is a rectangle.

Work out the length of the kennel.

**[4 marks]**

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Answer \_\_\_\_\_ m