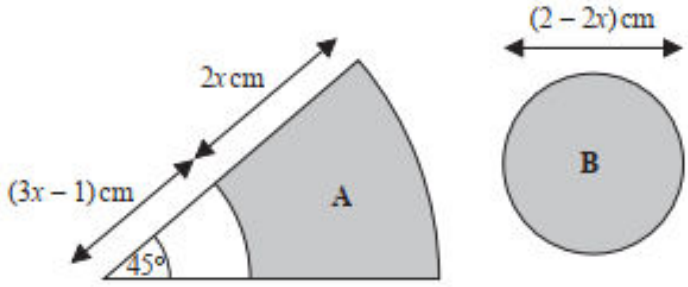
AREA AND CIRCUMFERENCE OF CIRCLES

Pearson Edexcel - Tuesday 19 May 2020 - Paper 1 (Non-Calculator) Higher Tier

1.

22 The diagram shows two shaded shapes, **A** and **B**.

Shape **A** is formed by removing a sector of a circle with radius $(3x - 1)$ cm from a sector of the circle with radius $(5x - 1)$ cm.
Shape **B** is a circle of diameter $(2 - 2x)$ cm.



The area of shape **A** is equal to the area of shape **B**.

Find the value of x.
You must show all your working.

.....

(Total for Question 22 is 5 marks)

Pearson Edexcel - Monday 8 June 2015 - Paper 2 (Calculator) Higher Tier

2.

*11 The diagram shows the top of Levi's birthday cake.

Diagram **NOT** accurately drawn

The top of the cake is in the shape of a circle.
The diameter of the circle is 7 inches.

A ribbon is going to be put around the side of the cake.
Ribbons are sold in 50 cm lengths.

1 inch is 2.54 cm.

Work out if one length of ribbon is long enough to go all the way around the cake.
You must show your working.

(Total for Question 11 is 4 marks)

Pearson Edexcel - Friday 13 June 2014 - Paper 2 (Calculator) Higher Tier

3.

4 Here is a circle.

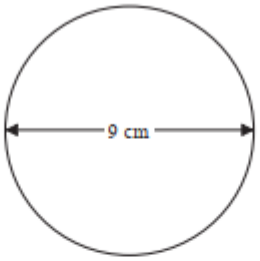


Diagram **NOT** accurately drawn

The diameter of the circle is 9 cm.

Work out the circumference of this circle.
Give your answer correct to 3 significant figures.

..... cm

(Total for Question 4 is 2 marks)

Pearson Edexcel - Friday 8 November 2013 - Paper 2 (Calculator) Higher Tier

4.

12 A circle has a diameter of 140 cm.

Work out the circumference of the circle.
Give your answer correct to 3 significant figures.

..... cm

(Total for Question 12 is 2 marks)

Pearson Edexcel - Monday 4 March 2013 - Paper 2 (Calculator) Higher Tier

5.

5

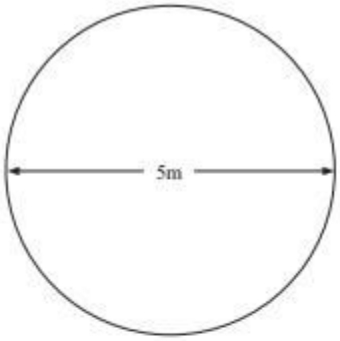


Diagram **NOT** accurately drawn

Jon has a flower garden in the shape of a circle.
The diameter of the garden is 5 metres.

Jon wants to put fencing around the edge of the garden.
The fencing costs £1.80 per metre.

Work out the total cost of the fencing.

£.....

(Total for Question 5 is 3 marks)

Pearson Edexcel - Monday 14 November 2011 - Paper 4 (Calculator) Higher Tier

6.

8. The diagram shows a CD.
The CD is a circle of radius 6 cm.

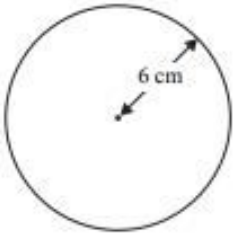


Diagram **NOT** accurately drawn

(a) Work out the circumference of the CD.

..... cm
(2)

CDs of this size are cut from rectangular sheets of plastic.
Each sheet is 1 metre long and 50 cm wide.

(b) Work out the greatest number of CDs that can be cut from one rectangular sheet.

.....
(2)
(Total 4 marks)

Pearson Edexcel - Tuesday 9 November 2010 - Paper 3 (Non-Calculator) Higher Tier

7.

5.

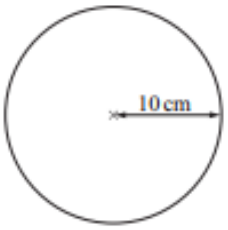


Diagram **NOT** accurately drawn

The radius of a circle is 10 cm.

Work out the area of this circle.
Use $\pi = 3.14$

.....cm^2

(Total 2 marks)

Pearson Edexcel - Friday 11 June 2010 - Paper 4 (Calculator) Higher Tier

8.

7. A circle has a diameter of 12 cm.

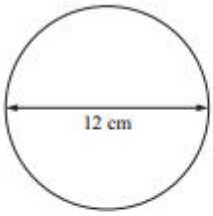


Diagram **NOT** accurately drawn

Work out the circumference of the circle.
Give your answer correct to 3 significant figures.

..... cm

(Total 2 marks)

Pearson Edexcel - Tuesday 10 November 2009 - Paper 4 (Calculator) Higher Tier

9.

7. A circle has a radius of 5 cm.

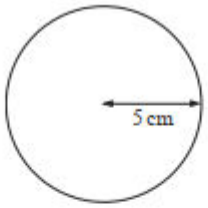


Diagram **NOT** accurately drawn

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

..... cm^2

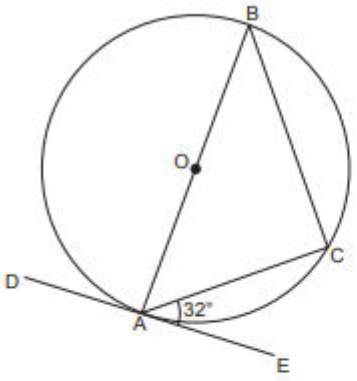
(Total 2 marks)

OCR GSCE – Monday 9 November 2020 – Paper 6 (Calculator) Higher Tier

10.

16 The diagram shows a circle, centre O.

Points A, B and C lie on the circumference of the circle.
Line AOB is a diameter.
Line DAE is a tangent to the circle.
Angle CAE = 32°.



Not to scale

(a) Give a reason why angle ACB is a right angle.

.....

..... **[1]**

(b) The radius of the circle is 8 cm.

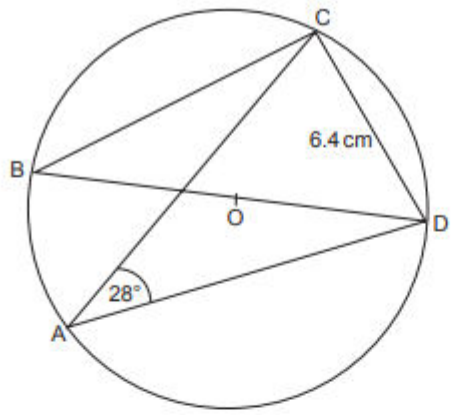
Calculate length BC.

(b) ..... cm **[4]**

OCR GSCE – Thursday 24 May 2018 – Paper 4 (Calculator) Higher Tier

11.

8 A, B, C and D are points on the circumference of a circle, centre O.



Not to scale

Angle CAD = 28° and CD = 6.4 cm.
BD is a diameter of the circle.

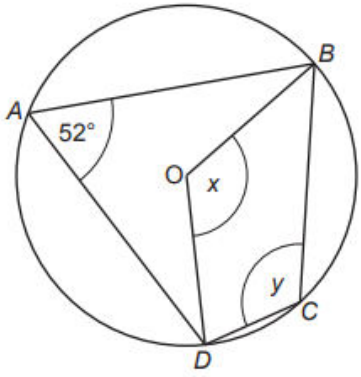
Calculate the area of the circle.

..... cm^2 **[5]**

OCR GSCE – Thursday 8 June 2017 – Paper 5 (Non - Calculator) Higher Tier

12.

16 A, B, C and D are points on the circumference of a circle, centre O.



Not to scale

Angle BAD = 52°.

(a) Work out angle *x*.
Give a reason for your answer.

x = ... ° reason .....

..... **[2]**

(b) Work out angle *y*.
Give a reason for your answer.

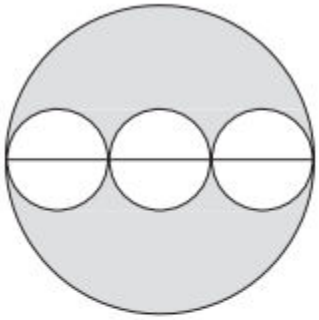
y = ... ° reason .....

..... **[2]**

OCR GSCE – Sample Papers – Paper 5 (Non - Calculator) Higher Tier

13.

12 Three identical small circles are drawn inside one large circle, as shown in the diagram.
The centres of the small circles lie on the diameter of the large circle.



Find the fraction of the large circle that is shaded.

..... **[3]**

AQA GSCE – Tuesday 19 May 2020 – Paper 1 (Non - Calculator) Higher Tier

14.

12 Two wire shapes make an earring.

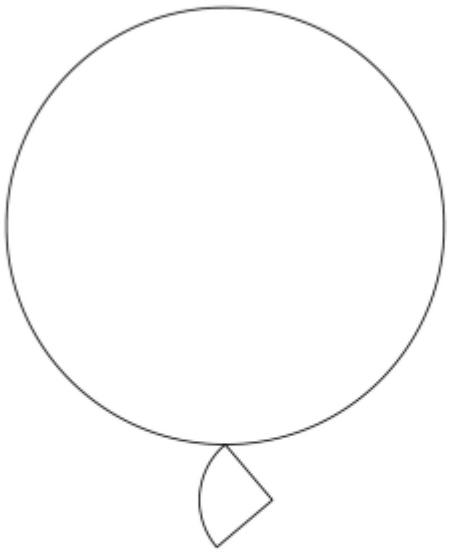
The shapes are

a circle with radius 21 mm

and

a quarter circle.

Not drawn accurately



radius of circle : radius of quarter circle = 7 : 2

12 (a) Show that the radius of the quarter circle is 6 mm

[1 mark]

12 (b) Work out the **total** length of the wire in the earring.

Give your answer in the form $a\pi + b$ where a and b are integers.

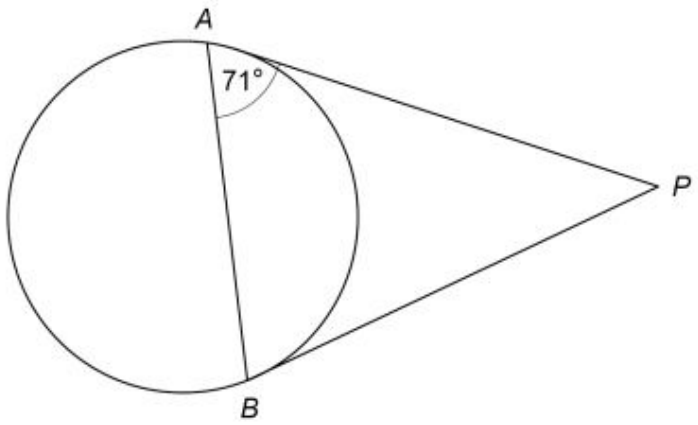
[4 marks]

Answer _____ mm

AQA GSCE – Thursday 8 June 2020 – Paper 3 (Calculator) Higher Tier

15.

21 (a) *A* and *B* are points on a circle.
PA and *PB* are tangents.



Not drawn accurately

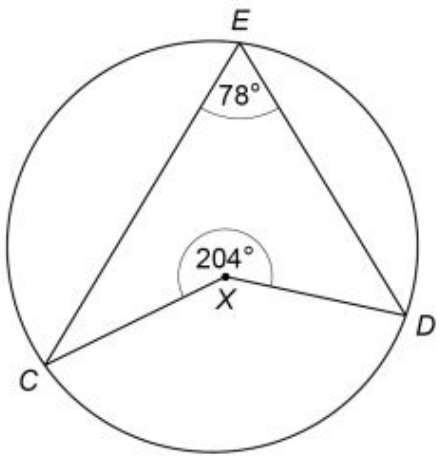
Work out the size of angle *APB*.

[2 marks]

Answer _____ degrees

21 (b) *C*, *D* and *E* are points on a different circle.

Not drawn accurately



Is *X* the centre of the circle?

Tick a box.

☐ Yes ☐ No

Show working to support your answer.

[2 marks]

AQA GSCE – Tuesday 21 May 2019 – Paper 1 (Non - Calculator) Higher Tier

16.

3 Work out the arc length, in metres, of a semicircle of radius 6 metres.

Circle your answer.

[1 mark]

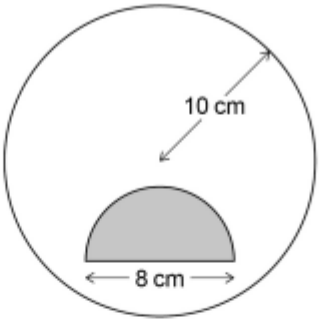
3π 6π 12π 18π

AQA GSCE – Tuesday 21 May 2019 – Paper 1 (Non - Calculator) Higher Tier

17.

9 A shaded semicircle is inside a circle as shown.

Not drawn accurately



The **radius** of the circle is 10 cm

The **diameter** of the semicircle is 8 cm

How many times bigger is the unshaded area than the shaded area?

[4 marks]

Answer _____

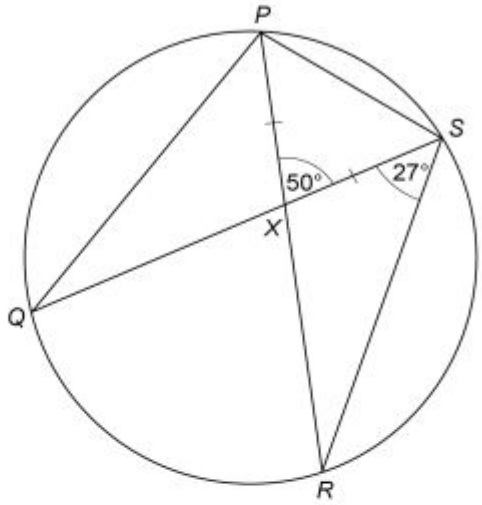
AQA GSCE – Tuesday 6 November 2018 – Paper 1 (Non - Calculator) Higher Tier

18.

20 *P*, *Q*, *R* and *S* are points on a circle.

PXR and *QXS* are straight lines.

PX = *SX*



Not drawn accurately

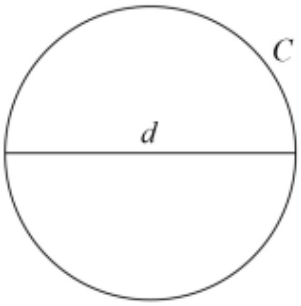
Prove that *QS* is **not** a diameter of the circle.

[4 marks]

AQA GSCE – Thursday 8 November 2018 – Paper 2 (Calculator) Higher Tier

19.

5 A circle has circumference C and diameter d.



$C = kd$

What **value** does the constant k represent?

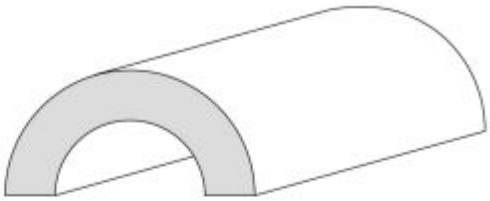
[1 mark]

Answer _____

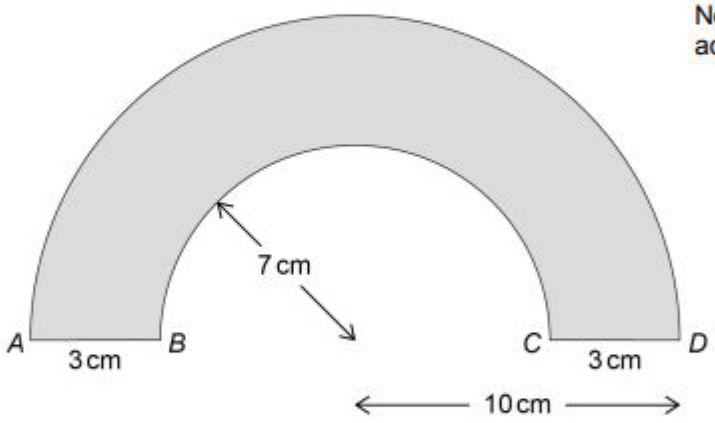
AQA GSCE – Monday 24 May 2018 – Paper 1 (Non - Calculator) Higher Tier

20.

18 Here is a tunnel for a toy train.



The diagram below shows the cross section of the tunnel.



AD is a semicircular arc of radius 10 cm
BC is a semicircular arc of radius 7 cm
The length of the tunnel is 30 cm

Work out the total area of all **six** faces of the tunnel.

Give your answer in terms of π.

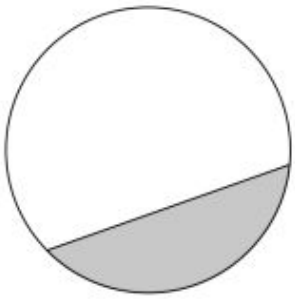
[5 marks]

Answer _____ cm^2

AQA GSCE – Thursday 7 June 2018 – Paper 2 (Calculator) Higher Tier

21.

1 Here is a circle.



Circle the word that describes the shaded part.

[1 mark]

segment chord sector arc

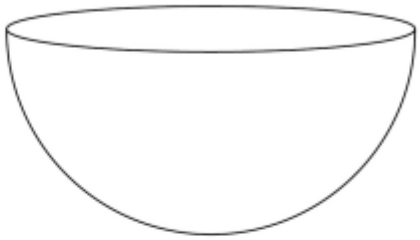
AQA GSCE – Thursday 7 June 2018 – Paper 2 (Calculator) Higher Tier

22.

10

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

A container is a hemisphere of radius 30 cm



Sand fills the container at a rate of 4000 cm^3 per minute.

Does it take **less than** a quarter of an hour to fill the container?

You **must** show your working.

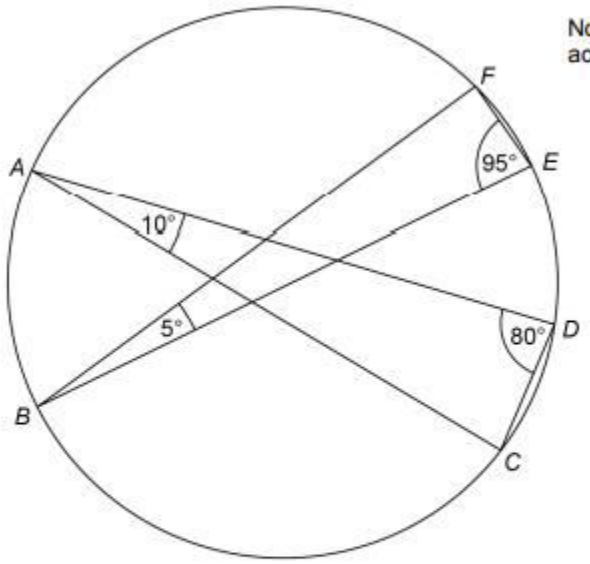
[3 marks]

Answer _____

AQA GSCE – Thursday 8 June 2017 – Paper 2 (Calculator) Higher Tier

23.

12 *A*, *B*, *C*, *D*, *E* and *F* are points on a circle.



Circle the line that is a diameter of the circle.

[1 mark]

BE *AD* *AC* *BF*

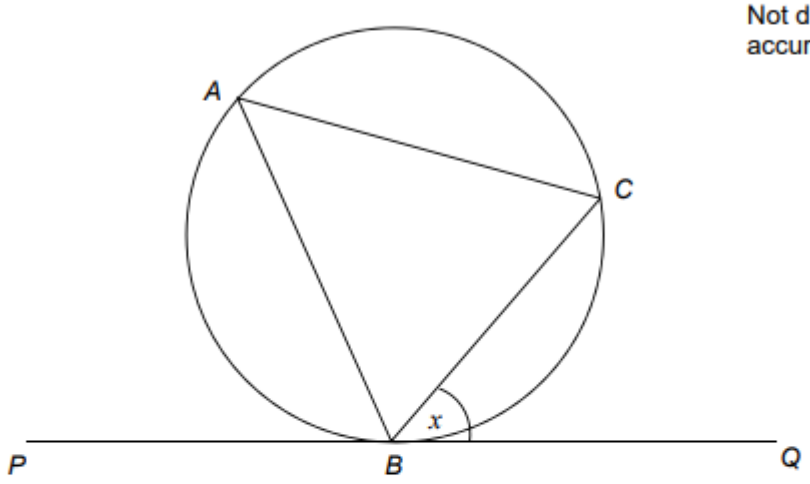
AQA GSCE – Sample Paper 1 (Non - Calculator) Higher Tier

24.

21 *A*, *B* and *C* are points on a circle.

- *BC* bisects angle *ABQ*.
- *PBQ* is a tangent to the circle.

Not drawn accurately



Angle $CBQ = x$

Prove that $AC = BC$

[3 marks]