SQA Past paper questions

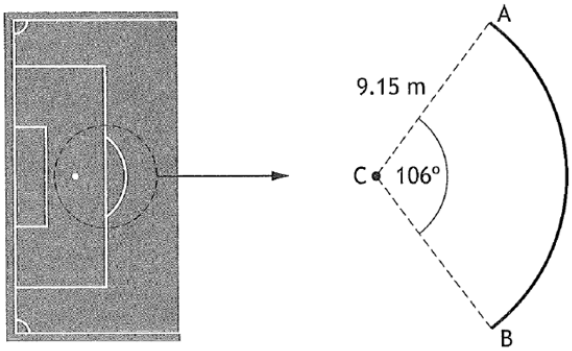
There are four main ways that this topic could be assessed in the final exam.

1. "Easy paper 2" calculating an arc or sector area
2. Non-calculator calculating an arc or sector area
3. Working backwards to find an angle, radius or diameter
4. Problem solving questions

1. "Easy paper 2" calculating an arc or sector area

2023 - Paper 2 - Question 3

The diagram shows part of a football pitch.



The penalty spot is marked at point C.

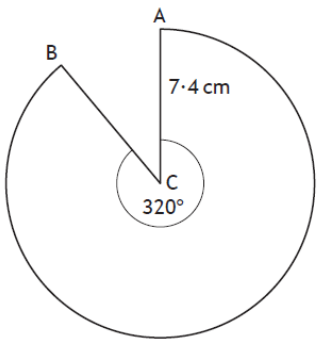
AB is an arc of a circle, centre C, radius 9.15 metres.

Calculate the length of the arc AB. 3

Click here for video solution.

2018 - Paper 2 - Question 2

The diagram below shows a sector of a circle, centre C.



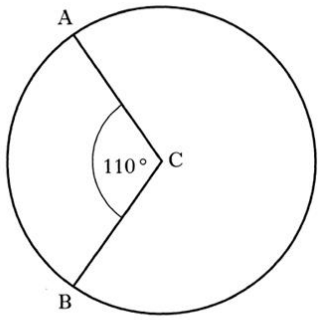
The radius of the circle is 7·4 centimetres.

Calculate the length of the major arc AB. 3

Click here for video solution.

2012 - Paper 2 - Question 1

The diagram below shows a circle, centre C.

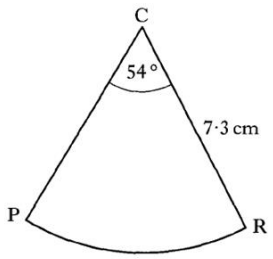


The circumference of the circle is 40·8 centimetres.
Calculate the length of the minor arc AB. **2**

Click here for video solution.

2011 - Paper 2 - Question 9

The diagram below shows a sector of a circle, centre C.

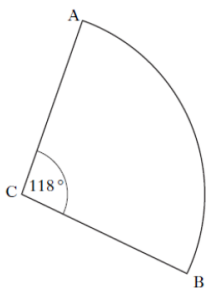


The radius of the circle is 7·3 centimetres and angle PCR is 54°.
Calculate the area of the sector PCR. **3**

Click here for video solution.

2007 - Paper 2 - Question 2

The diagram below shows a sector of a circle, centre C.

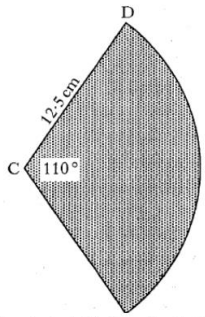


The radius of the circle is 10·5 centimetres and angle ACB is 118°.
Calculate the length of arc AB. **3**

Click here for video solution.

2005 - Paper 2 - Question 5

The diagram below shows a sector of a circle, centre C.



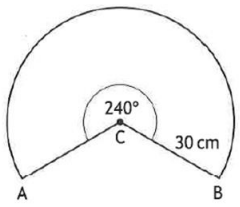
The radius of the circle is 12·5 centimetres and angle DCE is 110°.
Calculate the area of the sector CDE. 3

Click here for video solution.

2. Non-calculator calculating an arc or sector area

2019 - Paper 1 - Question 4

The diagram below shows a sector of a circle, centre C.

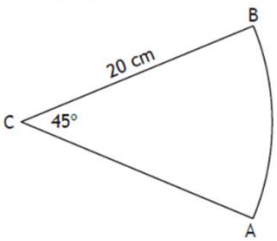


The radius of the circle is 30 centimetres.
Calculate the length of the major arc AB.
Take $\pi = 3{\cdot}14$. 3

Click here for video solution.

2016 - Paper 1 - Question 3

The diagram shows a sector of a circle, centre C.

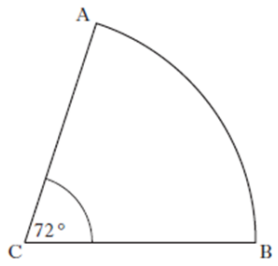


The radius of the circle is 20 centimetres and angle ACB is 45°.
Calculate the area of the sector. 3

Click here for video solution.

2013 - Paper 1 - Question 3

The diagram below shows a sector of a circle, centre C.



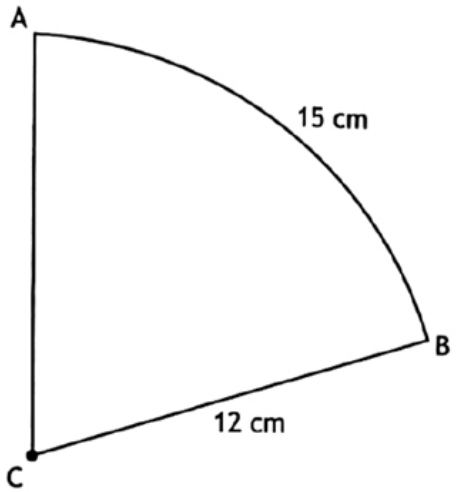
The radius of the circle is 5 centimetres and angle ACB is 72°.
Calculate the length of arc AB.
Take π = 3·14. 3

Click here for video solution.

3. Working backwards to find an angle, radius or diameter

2024 - Paper 2 - Question 15

The diagram shows a sector of a circle, centre C.



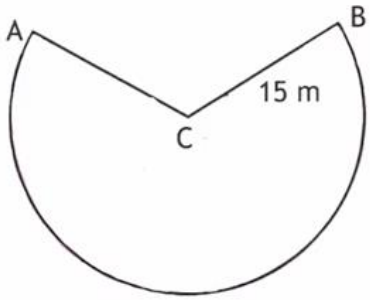
The radius of the circle is 12 centimetres.
The length of arc AB is 15 centimetres.
Calculate the area of the sector. 3

Click here for video solution.

2022 - Paper 2 - Question 10

An attraction at a theme park has a carriage attached to an arm.

The arm swings from A to B along the arc of a circle, centre C, as shown in the diagram below.



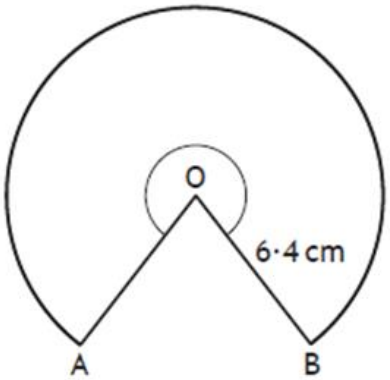
- The length of the arm, CB, is 15 metres.
- The length of the major arc, AB, is 69.4 metres.

Calculate the size of the reflex angle ACB. 3

Click here for video solution.

2017 - Paper 2 - Question 14

The diagram below shows part of a circle, centre O.



The radius of the circle is 6·4 centimetres.

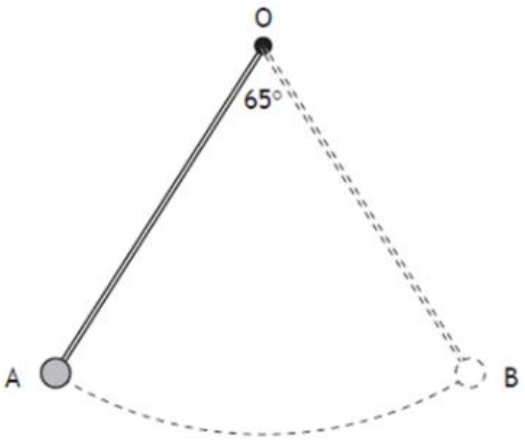
Major arc AB has length 31·5 centimetres.

Calculate the size of the reflex angle AOB. 3

Click here for video solution.

2015 - Paper 2 - Question 10

The pendulum of a clock swings along an arc of a circle, centre O.



The pendulum swings through an angle of 65°, travelling from A to B.

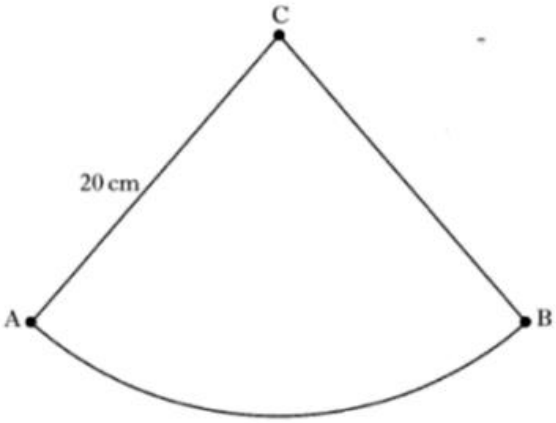
The length of the arc AB is 28·4 centimetres.

Calculate the length of the pendulum. 4

Click here for video solution.

2002 - Paper 2 - Question 4

A pendulum travels along an arc of a circle, centre C.



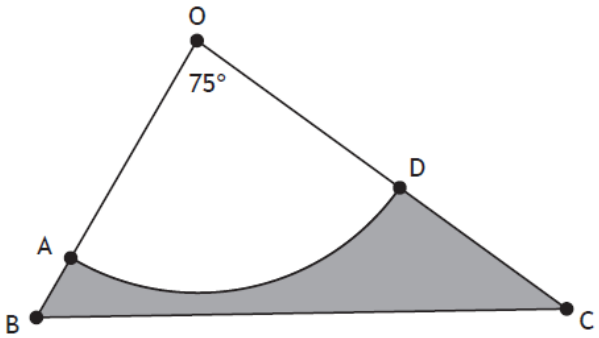
The length of the pendulum is 20 centimetres.
The pendulum swings from A to B.
The length of the arc AB is 28·6 centimetres.
Find the angle through which the pendulum swings from A to B. 4

Click here for video solution.

4. Problem solving questions

2018 - Paper 2 - Question 17

In the diagram below AOD is a sector of a circle, with centre O, and BOC is a triangle.



In sector AOD:

- radius = 30 centimetres
- angle AOD = 75°.

In triangle OBC:

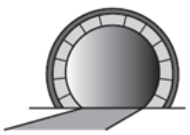
- OB = 38 centimetres
- OC = 55 centimetres.

Calculate the area of the shaded region, ABCD. **5**

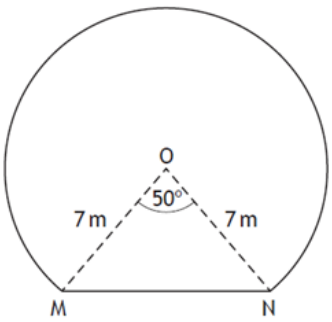
Click here for video solution.

2014 - Paper 2 - Question 13

The picture shows the entrance to a tunnel which is in the shape of part of a circle.



The diagram below represents the cross-section of the tunnel.



- The centre of the circle is O.
- MN is a chord of the circle.
- Angle MON is 50°.
- The radius of the circle is 7 metres.

Calculate the area of the cross-section of the tunnel. **5**

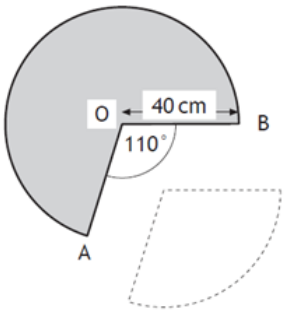
Click here for video solution.

Specimen - Paper 2 - Question 11

A cone is formed from a paper circle with a sector removed as shown.

The radius of the paper circle is 40 centimetres.

Angle AOB is 110°.



(a) Calculate the area of the sector removed from the circle. **3**

(b) Calculate the circumference of the base of the cone. **3**

Click here for video solution.

2010 - Paper 2 - Question 9

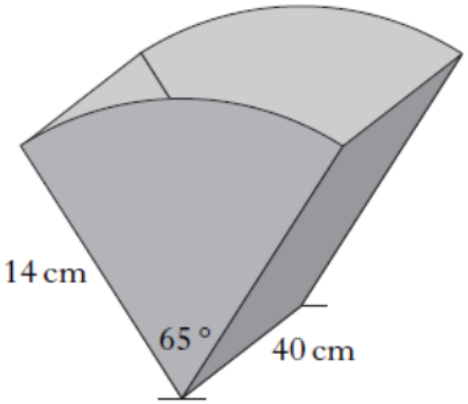
The ends of a magazine rack are identical.

Each end is a sector of a circle with radius 14 centimetres.

The angle in each sector is 65°.

The sectors are joined by two rectangles, each with length 40 centimetres.

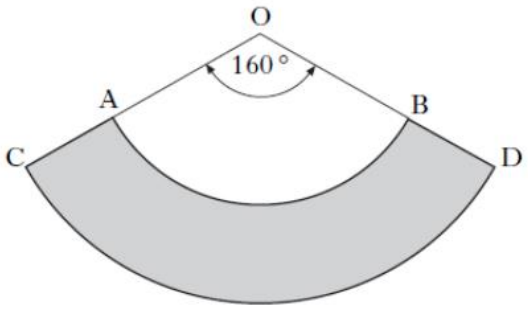
The exterior is covered by material.
What area of material is required? **4**



Click here for video solution.

2009 - Paper 2 - Question 5

A pet shop manufactures protective dog collars.
In the diagram below the shaded area represents one of these collars.

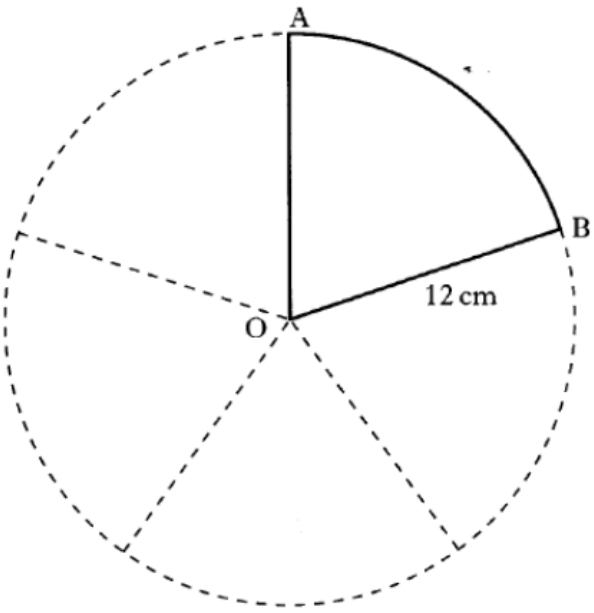


AB and CD are arcs of the circles with centres at O.
The radius, OA, is 10 inches and the radius, OC, is 18 inches.
Angle AOB is 160°.

Calculate the area of a collar. **4**

Click here for video solution.

2004 - Paper 2 - Question 4

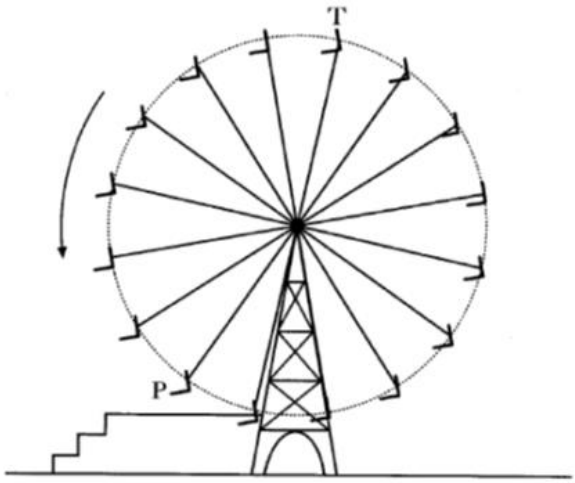


A circle, with centre O and radius 12 centimetres, is cut into 5 equal sectors.
Calculate the perimeter of sector OAB. **3**

Click here for video solution.

2003 - Paper 2 - Question 8

The diagram below shows a big wheel at a fairground.



The wheel has sixteen chairs equally spaced on its circumference.
The radius of the wheel is 9 metres.
As the wheel rotates in an anticlockwise direction, find the distance a chair travels in moving from position T to position P in the diagram. **4**

Click here for video solution.