

# Maths.scot



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## National 5 Maths

### Arcs and Sectors: Sector Area

### SQA past paper and specimen paper questions and answers by topic

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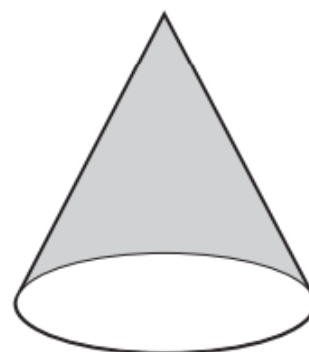
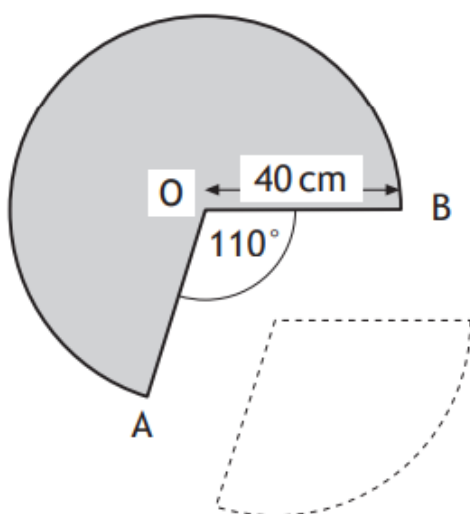
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A cone is formed from a paper circle with a sector removed as shown.  
The radius of the paper circle is 40 centimetres.  
Angle AOB is  $110^\circ$ .

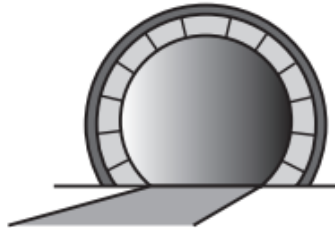


- (a) Calculate the area of the sector removed from the circle. 3
- (b) Calculate the circumference of the base of the cone. 3

Answers:

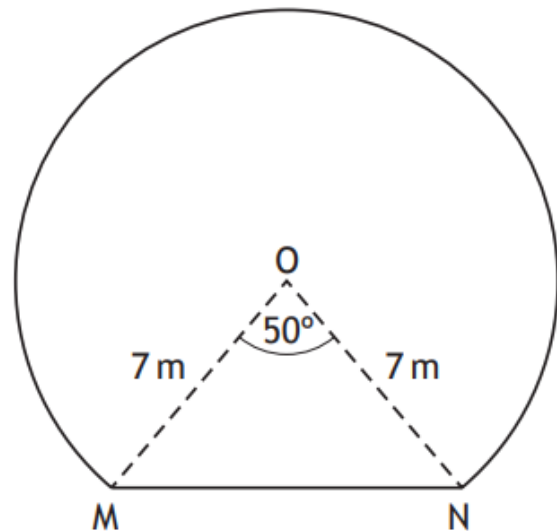
- (a)  $1536 \text{ cm}^2$
- (b) 175 cm (approximately)

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  $50^\circ$ .
- The radius of the circle is 7 metres.



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

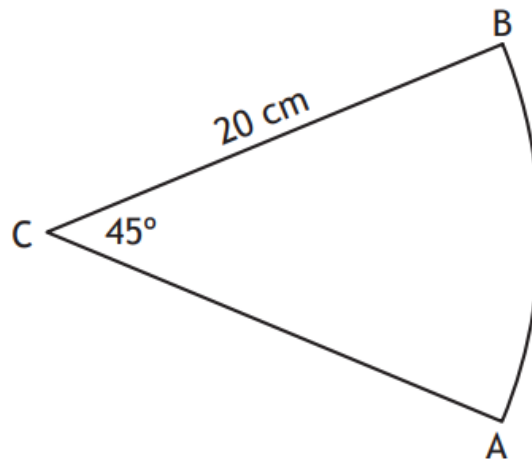
5

Answer:

151.3 m<sup>2</sup>



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.

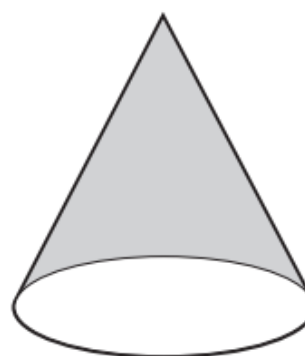
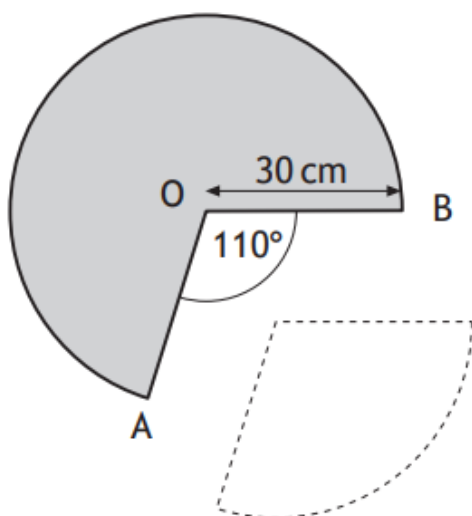
Take  $\pi = 3.14$ .

3

Answer:

157 cm<sup>2</sup>

A cone is formed from a paper circle with a sector removed as shown.  
The radius of the paper circle is 30 centimetres.  
Angle AOB is  $110^\circ$ .



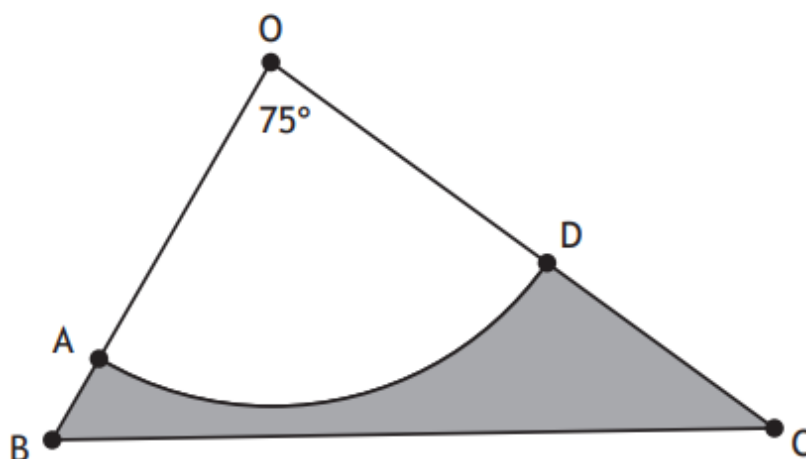
- (a) Calculate the area of the sector removed from the circle. 3
- (b) Calculate the circumference of the base of the cone. 3

Answers:

- (a)  $864 \text{ cm}^2$
- (b) 131 cm (approximately)



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 =  $75^\circ$ .

In triangle OBC:

- OB = 38 centimetres
- OC = 55 centimetres.

Calculate the area of the shaded region, ABCD.

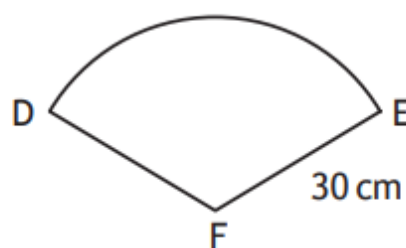
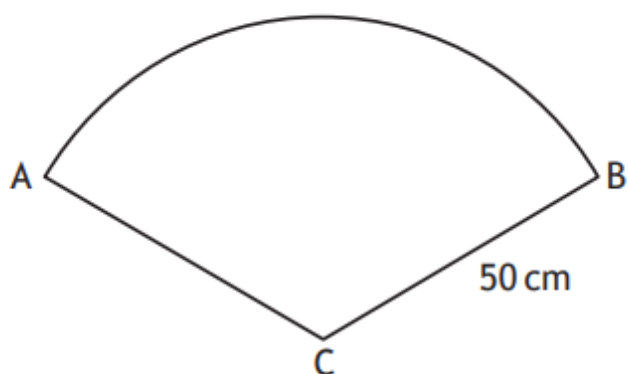
5

Answer:

420.3 cm<sup>2</sup>

In the diagram

- ABC is a sector of a circle, centre C
- DEF is a sector of a circle, centre F.



The sectors are mathematically similar.

The area of the larger sector, ABC, is 2750 square centimetres.

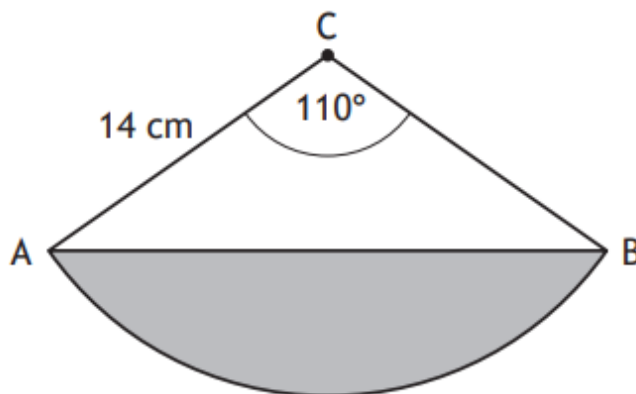
- (a) Calculate the area of the smaller sector, DEF. 3
- (b) Calculate the size of angle ACB. 3

Answers:

- (a)  $990 \text{ cm}^2$   
(b)  $126.1^\circ$

The diagram shows a sector of a circle, with centre C and radius 14 centimetres.

Angle ACB is  $110^\circ$ .



AB splits the sector into the shaded segment and triangle ABC.

Find the area of the shaded segment.

5

Answer:

$96.1 \text{ cm}^2$