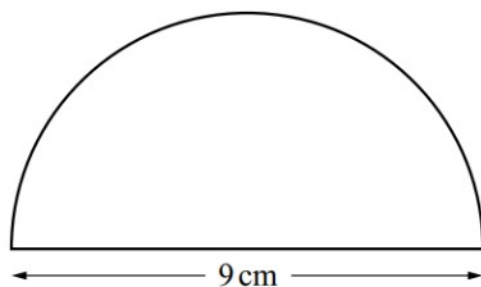


**Q Circles and Sectors**

- 14** Calculate the circumference of a circle with radius 4.7 cm.

..... cm [2]

**8**

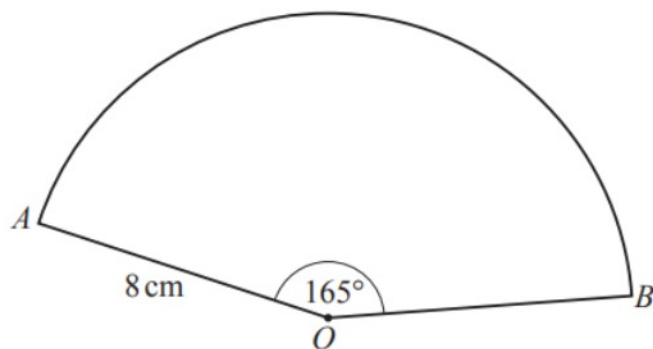


NOT TO  
SCALE

The diagram shows a semicircle with diameter 9 cm.

Calculate the total perimeter of this semicircle.  
Give your answer in exact form.

..... cm [3]



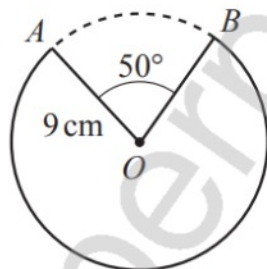
NOT TO  
SCALE

The diagram shows a sector of a circle with centre  $O$ , radius 8 cm and sector angle  $165^\circ$ .

- (a) Calculate the total perimeter of the sector.

..... cm [3]

(e)



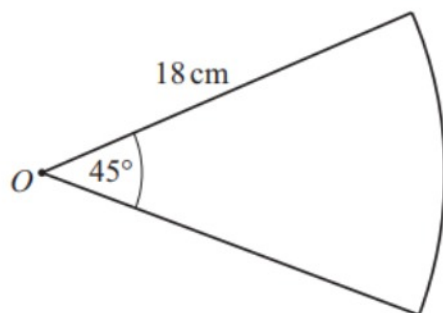
NOT TO  
SCALE

The diagram shows a circle of radius 9 cm, centre  $O$ .

The minor sector  $AOB$ , with sector angle  $50^\circ$ , is removed from the circle.

Calculate the length of the major arc  $AB$ .

..... cm [3]



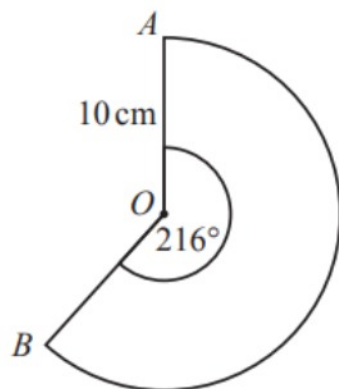
NOT TO  
SCALE

The diagram shows a sector of a circle, centre  $O$ .  
The length of the arc is  $n\pi\text{ cm}$ .

Find the value of  $n$ .

$n = \dots\dots\dots$  [2]

(b)



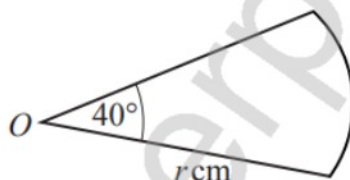
NOT TO  
SCALE

$AOB$  is a sector of a circle, centre  $O$ .  
 $AO = 10$  cm and the sector angle is  $216^\circ$ .

- (i) Calculate the length of the arc of this sector.  
Give your answer as a multiple of  $\pi$ .

.....cm [2]

9

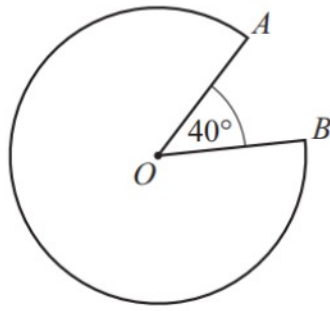


NOT TO  
SCALE

The diagram shows an arc of a circle, centre  $O$ , radius  $r$  cm.  
The length of the arc is  $k\pi r$  cm.

Find the value of  $k$ .  
Give your answer as a fraction in its simplest form.

$k =$  ..... [2]



NOT TO  
SCALE

The diagram shows a sector of a circle, centre  $O$ .  
The radius of the circle is 6 cm.

Calculate the length of the major arc  $AB$ .  
Give your answer in its simplest form in terms of  $\pi$ .

.....cm [3]

- 12 The total perimeter of a semicircle is 19.02 cm.

Calculate the radius of the semicircle.

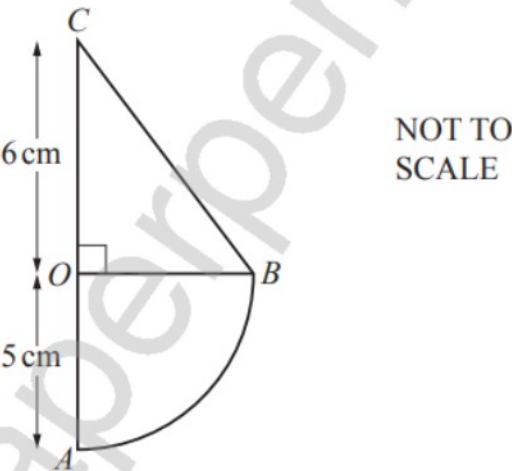
..... cm [3]

15 The perimeter of a sector of a circle with radius 8 cm is 26 cm.

Calculate the angle of this sector.

..... [3]

12



The diagram shows a shape made from a quarter-circle,  $OAB$ , and a right-angled triangle  $OBC$ . The radius of the circle is 5 cm and  $OC = 6$  cm.

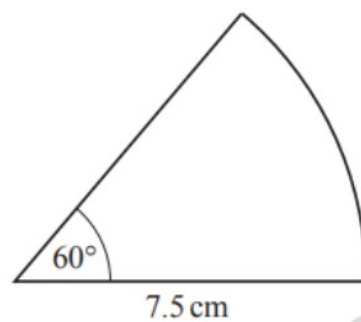
Calculate the area of the shape.

.....  $\text{cm}^2$  [3]

- 9 Calculate the area of the sector of a circle with radius 65 mm and sector angle  $42^\circ$ .  
Give your answer in square centimetres.

.....  $\text{cm}^2$  [3]

15

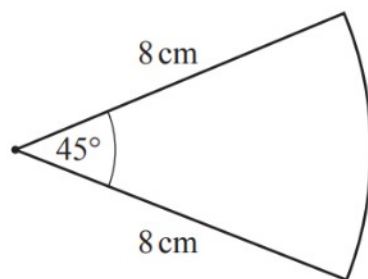


NOT TO  
SCALE

Calculate the area of this sector of a circle.

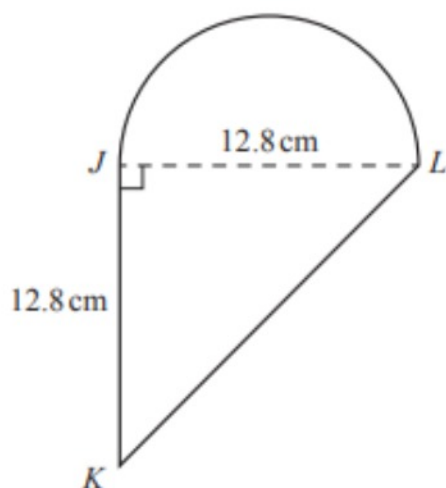
.....  $\text{cm}^2$  [2]

- 6 Find the area of the sector.  
Give your answer, in terms of  $\pi$ , in its simplest form.



NOT TO  
SCALE

..... cm<sup>2</sup> [2]



NOT TO  
SCALE

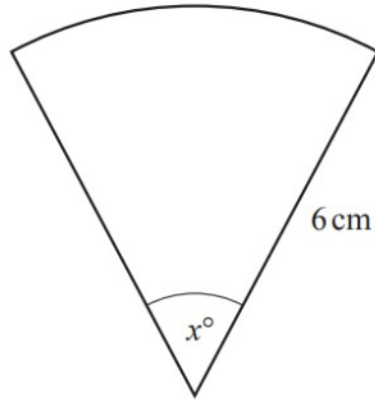
The diagram shows a shape made from a triangle  $JKL$  and a semicircle with diameter  $JL$ .  $JKL$  is an isosceles right-angled triangle with  $JK = JL = 12.8$  cm.

- (a) Calculate the area of this shape.

..... cm<sup>2</sup> [3]

- (b) Calculate the perimeter of this shape.

..... cm [4]

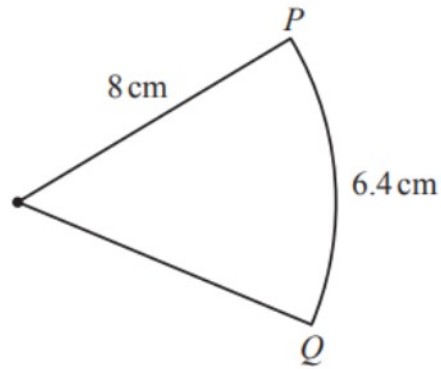


NOT TO  
SCALE

The area of this sector is  $5\pi \text{ cm}^2$ .

Find the value of  $x$ .

$x =$  ..... [3]



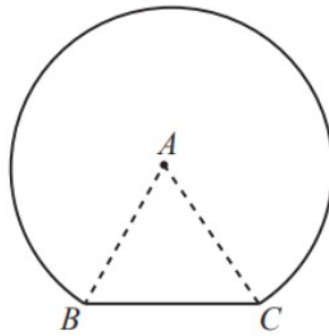
NOT TO  
SCALE

The diagram shows a sector of a circle of radius 8 cm.  
The length of the arc  $PQ$  is 6.4 cm.

Find the area of the sector.

.....  $\text{cm}^2$  [4]

19 (a)



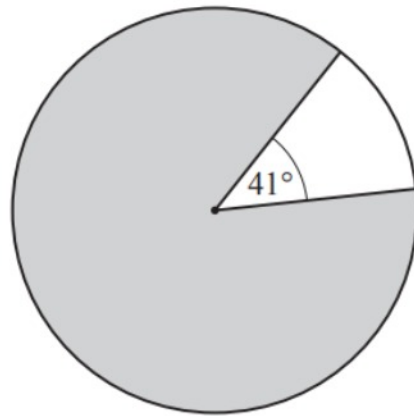
NOT TO  
SCALE

The diagram shows a shape made from an equilateral triangle  $ABC$  and a sector of a circle. Points  $B$  and  $C$  lie on the circle, centre  $A$ . The side length of the equilateral triangle is 12.4 cm.

Work out the perimeter of the shape.

..... cm [3]

(b)

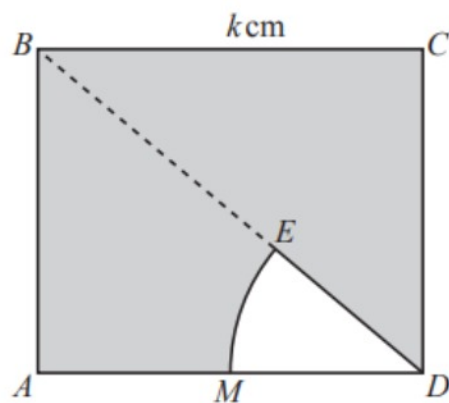


NOT TO  
SCALE

The diagram shows two sectors of a circle.  
The major sector is shaded.  
The area of the major sector is  $74.5 \text{ cm}^2$ .

Calculate the radius of the circle.

..... cm [3]



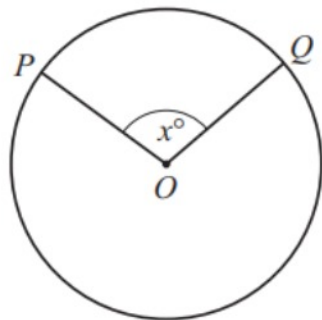
NOT TO  
SCALE

The diagram shows a square  $ABCD$  with side length  $k$  cm.  
 $MDE$  is a sector of a circle, centre  $D$ .  
 $E$  lies on the diagonal,  $BD$ , of the square.  
 $M$  is the midpoint of  $AD$ .

Find the percentage of the square that is shaded.

..... % [4]

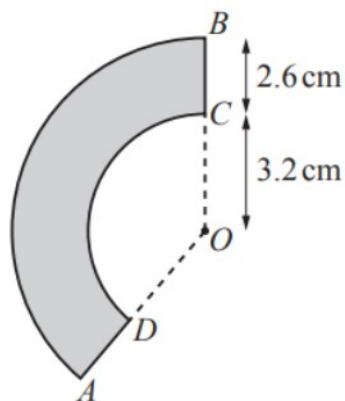
11 (a)



NOT TO  
SCALE

In the circle, centre  $O$ , the length of the minor arc  $PQ$  is  $\frac{3}{7}$  of the length of the major arc  $PQ$ .  
Show that  $x = 108$ .

[3]



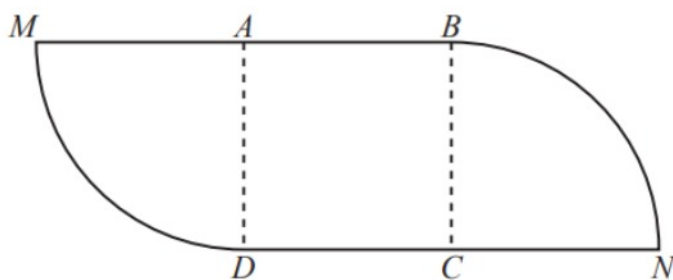
NOT TO  
SCALE

The diagram shows a shape,  $ABCD$ , formed by the sectors of two circles with the same centre  $O$ . Both sector angles are  $140^\circ$ ,  $OC = 3.2\text{ cm}$  and  $CB = 2.6\text{ cm}$ . The area of the shape is  $k\pi\text{ cm}^2$ .

Find the value of  $k$ .

$k = \dots\dots\dots$  [3]

9 (a)



NOT TO  
SCALE

The diagram shows a shape made from a square  $ABCD$  and two equal sectors of a circle.  
The square has side 11 cm.  
 $MAB$  and  $DCN$  are straight lines.

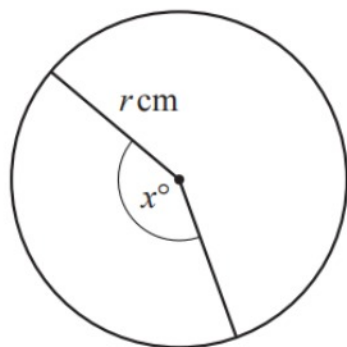
- (i) Calculate the area of the shape.

.....  $\text{cm}^2$  [3]

- (ii) Calculate the perimeter of the shape.

..... cm [3]

(c)



NOT TO  
SCALE

The diagram shows a circle, radius  $r \text{ cm}$  and minor sector angle  $x^\circ$ .  
The **perimeter** of the major sector is three times the **perimeter** of the minor sector.

Show that  $x = \frac{90(\pi - 2)}{\pi}$ .

[4]

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