14 Calculate the circumference of a circle with radius 4.7 cm.
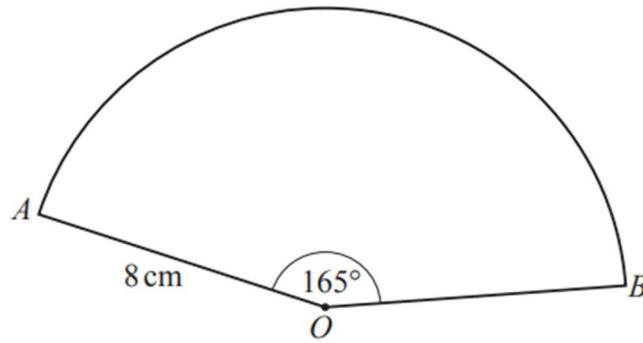
.... cm [2]

8
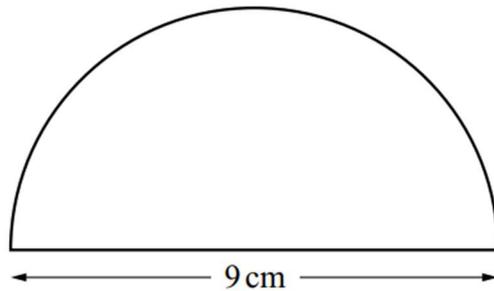
NOT TO
SCALE

The diagram shows a semicircle with diameter 9 cm.

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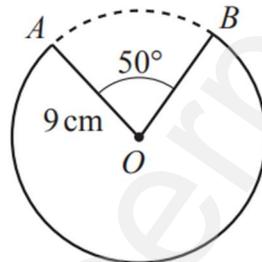Give your answer in exact form.

.... cm [3]

9

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

(a) Calculate the total perimeter of the sector.

.... cm [3]

(e)
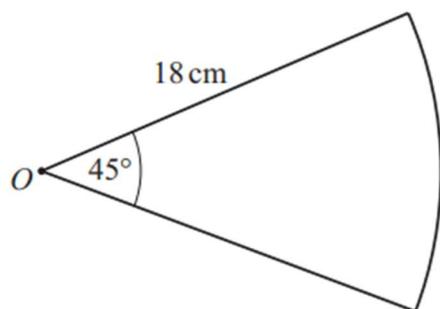
The diagram shows a circle of radius 9 cm, centre O.
The minor sector AOB, with sector angle $50°$, is removed from the circle.

Calculate the length of the major arc AB.

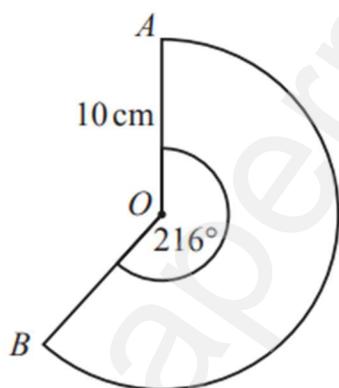.. cm [3]

18 cm

45°

O

NOT TO
SCALE

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

Find the value of n.

$n =$ .... [2]

(b)

A

10 cm

O

216°

B
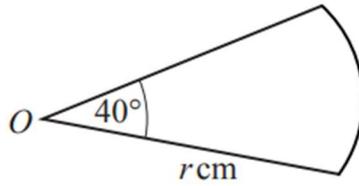
NOT TO
SCALE

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

(i) Calculate the length of the arc of this sector.
Give your answer as a multiple of π.

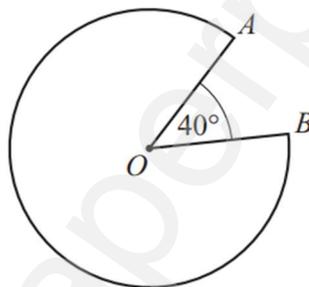...cm [2]

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]

20

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 π.

.... cm [3]

12 The total perimeter of a semicircle is 19.02 cm.
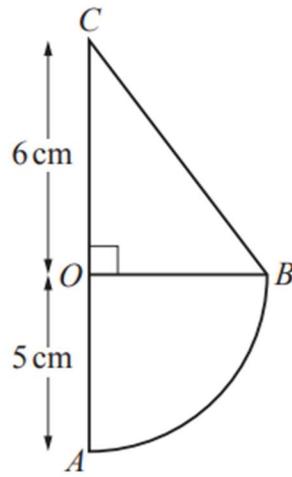
Calculate the radius of the semicircle.

.... cm [3]

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

Calculate the angle of this sector.
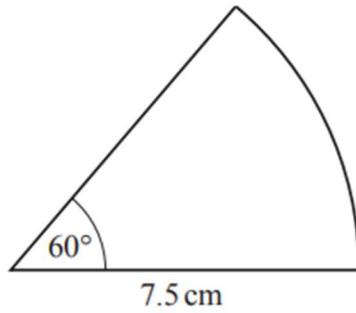
.... [3]

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.

.... cm^2 [3]

9 Calculate the area of the sector of a circle with radius 65 mm and sector angle 42°.
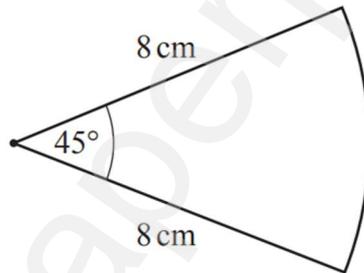Give your answer in square centimetres.

.... cm^2 [3]

15

NOT TO SCALE

Calculate the area of this sector of a circle.

.... cm^2 [2]
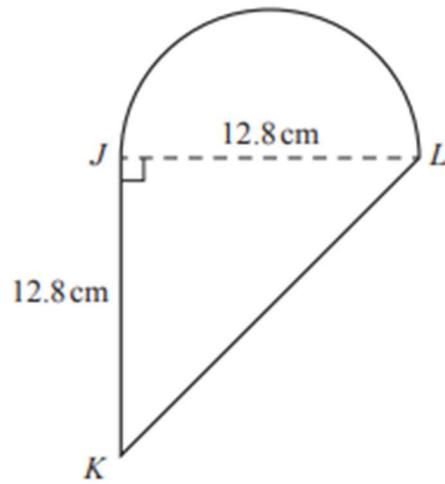
6 Find the area of the sector.
Give your answer, in terms of π, in its simplest form.

NOT TO SCALE

.... cm^2 [2]

7

12.8 cm
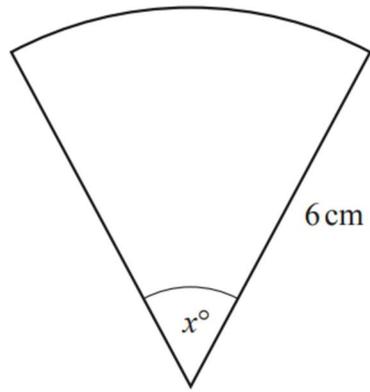
J ⌐ - - - - - - - - - - *L*

12.8 cm

K

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.

.... cm² [3]

(b) Calculate the perimeter of this shape.

.... cm [4]

12

6 cm

NOT TO
SCALE

$x°$

The area of this sector is 5π cm^2.

Find the value of x.

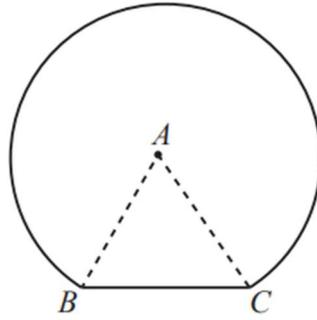$x =$ .... [3]

24

P

8 cm

NOT TO
SCALE

6.4 cm

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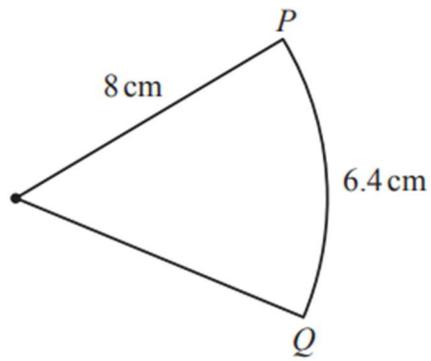
The diagram shows a sector of a circle of radius 8 cm.
The length of the arc PQ is 6.4 cm.

Find the area of the sector.

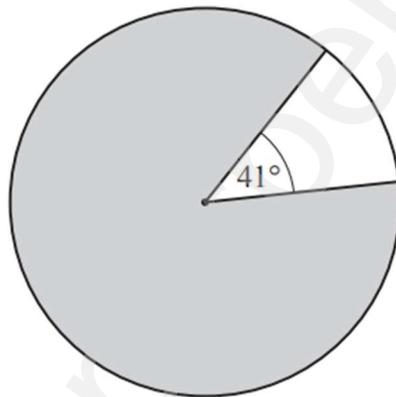... cm^2 [4]

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.

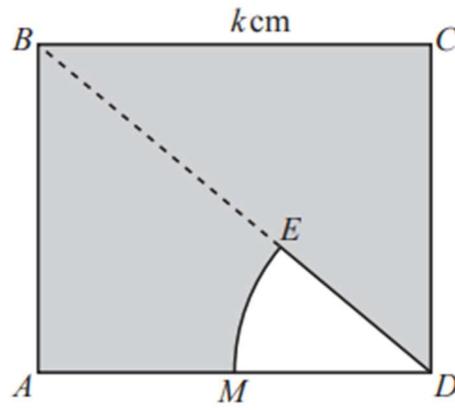... cm [3]

(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 cm^2.

Calculate the radius of the circle.

.... cm [3]

B k cm   C

NOT TO SCALE

E

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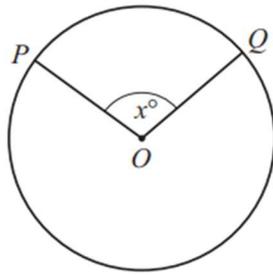
The diagram shows a square $ABCD$ with side length k cm.
MDE is a sector of a circle, centre D.
E lies on the diagonal, BD, of the square.
M is the midpoint of AD.

Find the percentage of the square that is shaded.

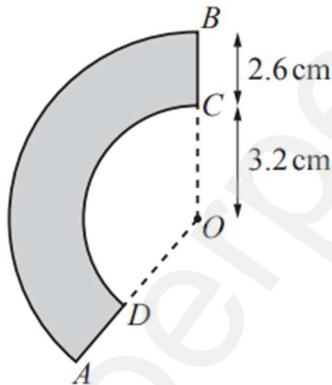.. % [4]

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]

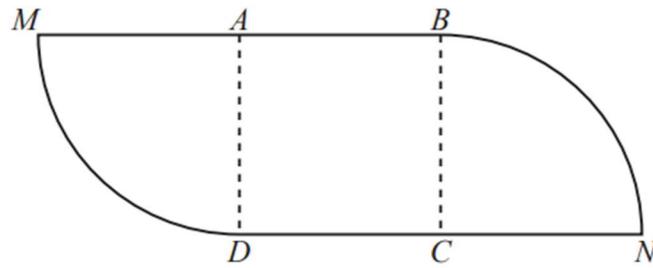**11**

2.6 cm

3.2 cm

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 $140°$, $OC = 3.2$ cm and $CB = 2.6$ cm.
The area of the shape is $k\pi$ cm^2.

Find the value of k.

$k =$ .... [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.
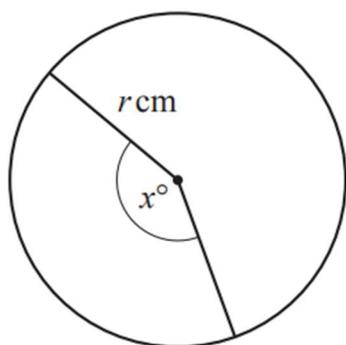*MAB* and *DCN* are straight lines.

(i) Calculate the area of the shape.

.... cm² [3]

(ii) Calculate the perimeter of the shape.

.... cm [3]

(c)

NOT TO
SCALE

The diagram shows a circle, radius r cm and minor sector angle $x°$.
The **perimeter** of the major sector is three times the **perimeter** of the minor sector.

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

[4]