6. Radian measure arcs sectors and segments

Name:	Class:	Date:

Mark	/ 15	%

1) Convert the following angle in radians to degrees [1]

$\frac{\pi}{15}$

2) Convert the following angle in degrees to radians, giving your answer as multiples of π. [1]

45

3) Find the value of the following using your calculator. Give your answer to 3 significant figures [1]

$\sin\left(\frac{18\pi}{5}\right)$

4) An arc AB of a circle, centre O and radius r, subtends an angle x radians at O. The length of the AB is l .

[3]

a) Find l given $r = 9$ m and $x = \frac{3\pi}{5}$.

b) Find r given $l = 14.9$ cm and $x = 2.98^c$.

c) Find x given $l = \frac{49\pi}{9}$ m and $r = 7$.

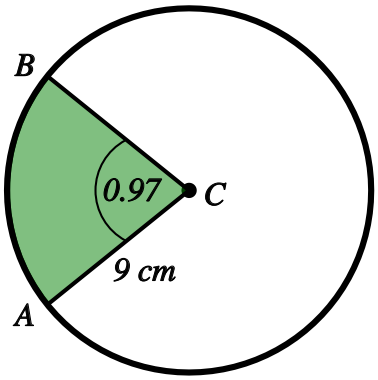
5) A minor arc CD of a circle, centre O and radius 12 m, subtends an angle $3x$ at O. The major arc CD subtends an angle $7x$ at O. Find, in terms of π, the length of the minor arc CD.

[1]

6) A sector of a circle of radius 17 cm contains an angle of x radians. Given that the perimeter of the sector is 53 cm, find the value of x.

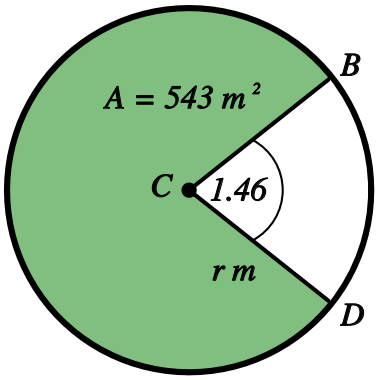
[1]

7) Find the area of the shaded sector in the following diagram. Give your answer to 3 significant figures.



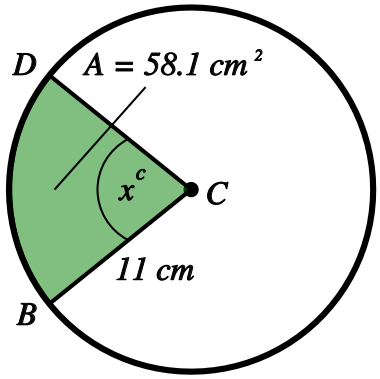
[1]

8) In the diagram below the area A of the shaded area and the angle are given. Find the value of the radius.



[1]

9) In the diagram below the area A of the shaded area and the radius are given. Find the value of the angle x, giving your answer to two decimal places.



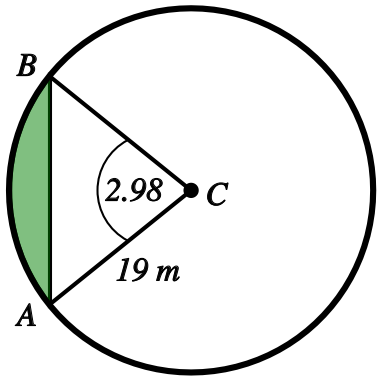
[1]

10) The arc EF of a circle, centre O and radius 30 m, has length 83 m. Find the area of the minor sector to 3 significant figures.

[1]

11) The area of a sector of a circle of radius 11 m is 16.5 m ^{2}. Find the perimeter of the sector. [1]

12) Find the area of the shaded segment in the following diagram. Give your answer to 3 significant figures.



[1]

13) The arc AB of a circle, centre O and radius r m, is such that the angle AOB is 2.22 ^{c}. Given that the perimeter of the minor sector AOB is 80 m. Find the area of the segment enclosed by the chord AB and the minor arc AB.

[1]

Solutions for the assessment 6. Radian measure arcs sectors and segments

1) $12°$

2) $\frac{\pi^c}{4}$

3) $\sin\left(\frac{18\pi}{5}\right) = -0.951$

4) a) $l = \frac{27\pi}{5}$ m or $l = 17.0$ m

b) $r = 5$ cm

c) $x = \frac{7\pi}{9}$ m or $x = 2.44$ m

5) The length of the minor arc is $\frac{12\pi}{5}$ m or 7.54 m

6) The value of x is 1.12^c

7) The area of the shaded sector is 39.3 cm^2

8) The value of the radius is 15 m

9) The value of the angle x is 0.96^c

10) The area of the minor sector is 1250 m^2

11) The perimeter of the sector is 25 m

12) The area of the shaded segment is 509 m^2

13) The area of the segment is 256 m^2