9 Circular measure

1 Express each angle in radians. Leave your answer in terms of π.

0.3^c is another way of writing 0.3 radians.

a) 60°

b) 270°

c) 27°

d) 108°

2 Express each angle in degrees. Answer to 1 d.p. where necessary.

a) $\frac{\pi}{3}$

b) $\frac{2\pi}{9}$

c) 0.3^c

d) $\frac{3\pi}{5}$

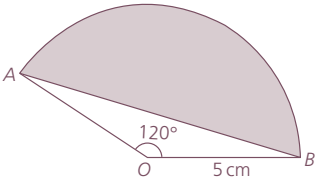
3 Complete the table, which gives information about some sectors of circles.

Radius, r (cm)	**Angle at centre, θ (degrees)**	**Arc length, s (cm)**	**Area, A (cm^2)**
12	150		
8		20	
	75	12	
15			100
	30		60

4 Complete the table, which gives information about some sectors of circles. Leave your answers as a multiple of π where possible.

Radius, r (cm)	**Angle at centre θ (radians)**	**Arc length, s (cm)**	**Area A (cm^2)**
8	$\frac{2\pi}{3}$		
15		15	
	$\frac{\pi}{4}$	12	
6			20π
	$\frac{2\pi}{5}$		50

5 Look at this diagram:

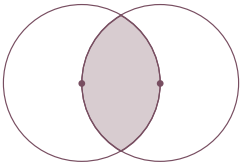


a) Calculate the area of the sector OAB.

b) Calculate the area of the triangle OAB.

c) Find the area of the shaded segment.

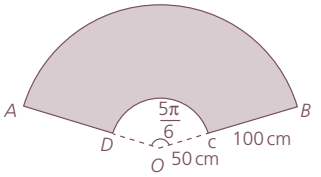
6 The diagram shows two circles, each of radius 5 cm, with each one passing through the centre of the other.



a) Calculate the area of the shaded region.

b) Calculate the perimeter of the shaded region.

7 The shaded region in the diagram is the top of a desk that is to be covered in leather. AB and DC are arcs of circles with centre O and radii and angle as shown.



a) Work out the area of the desk to be covered. Give the answer in square metres.

b) **(i)** The leather is sold in rectangular strips 140 cm wide, and is sold in units of 10 cm. What length must be purchased?

(ii) How much is wasted?