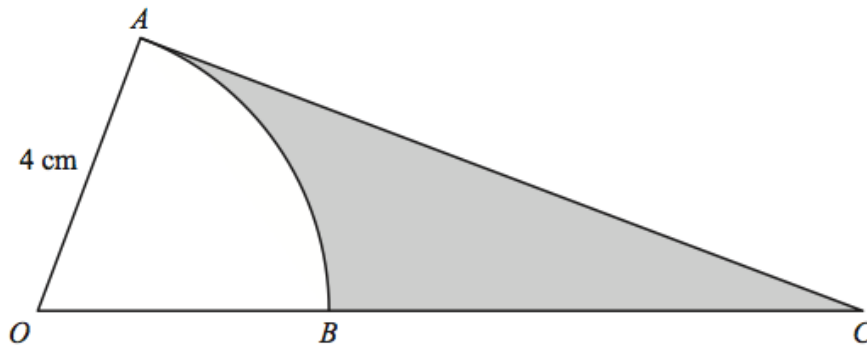# Circular Measures 3 (Radians)
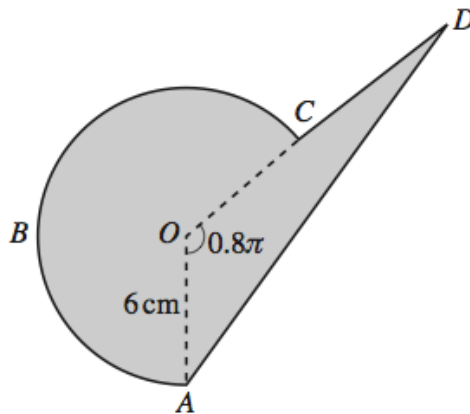
1)

The diagram shows a sector OAB of a circle, centre O, radius $4\,\text{cm}$. The tangent to the circle at A meets the line OB extended at C. Given that the area of the sector OAB is $10\,\text{cm}^2$, calculate

(i) the angle AOB in radians, [2]

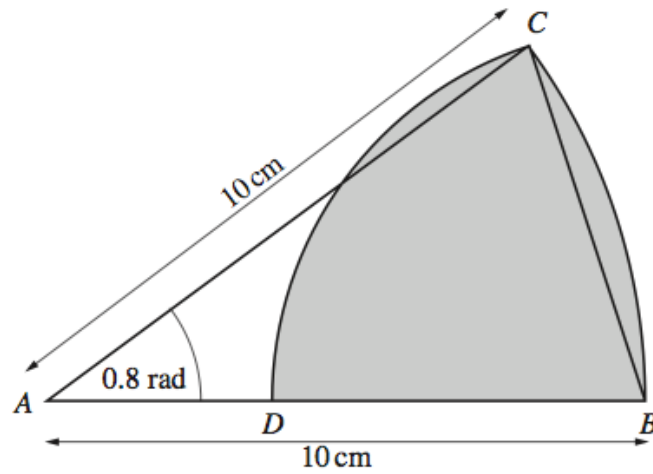(ii) the perimeter of the shaded region. [4]

2)

The diagram represents a company logo $ABCDA$, consisting of a sector $OABCO$ of a circle, centre O and radius $6\,\text{cm}$, and a triangle AOD. Angle $AOC = 0.8\pi$ radians and C is the mid-point of OD. Find

(i) the perimeter of the logo, [7]
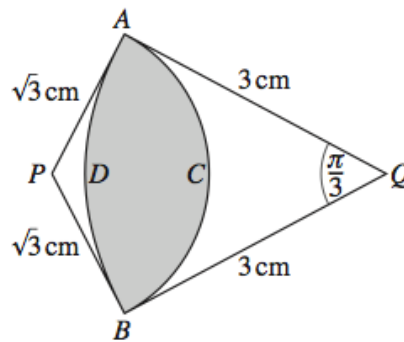
(ii) the area of the logo. [5]

3)

The diagram shows a sector ABC of the circle, centre A and radius $10\,\text{cm}$, in which angle $BAC = 0.8$ radians. The arc CD of a circle has centre B and the point D lies on AB.

(i)   Show that the length of the straight line BC is $7.79\,\text{cm}$, correct to 2 decimal places.   [2]

(ii) Find the perimeter of the shaded region.   [4]

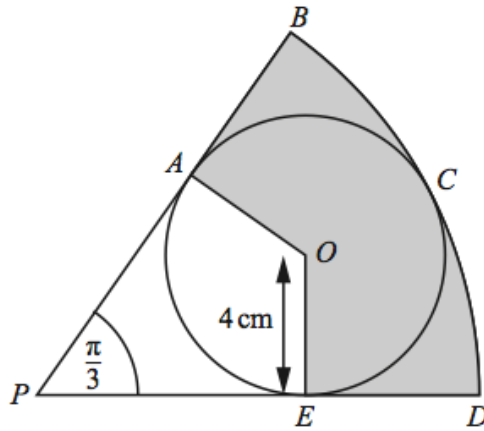(iii) Find the area of the shaded region.   [4]

4)

EITHER

In the diagram, ACB is an arc of a circle with centre P, and ADB is an arc of a circle with centre Q.

Angle $AQB = \frac{\pi}{3}$, $AQ = BQ = 3\,\text{cm}$ and $AP = BP = \sqrt{3}$ cm.

(i)   Show that angle $APB = \dfrac{2\pi}{3}$.   [2]

(ii) Find the perimeter of the shaded region.   [3]

(iii) Find the area of the shaded region.   [5]

5)

The diagram shows a circle, centre O, radius $4\,cm$, enclosed within a sector $PBCDP$ of a circle, centre P. The circle centre O touches the sector at points A, C and E. Angle BPD is $\frac{\pi}{3}$ radians.

(i) Show that $PA = 4\sqrt{3}$ cm and $PB = 12\,cm$.   [2]

Find, to 1 decimal place,

(ii) the area of the shaded region,   [4]

(iii) the perimeter of the shaded region.   [4]