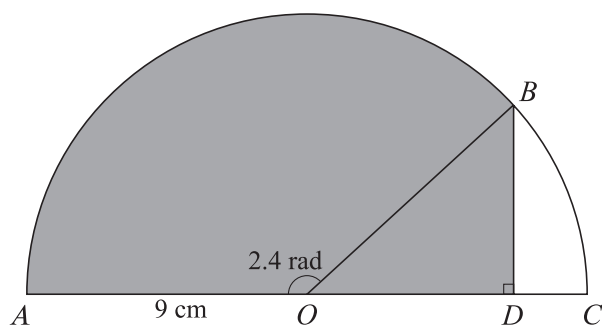**8**

In the diagram, ABC is a semicircle, centre O and radius 9 cm. The line BD is perpendicular to the diameter AC and angle $AOB = 2.4$ radians.

  (i) Show that $BD = 6.08$ cm, correct to 3 significant figures. [2]

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

  (iii) Find the area of the shaded region. [3]