4 A regular 12-sided polygon has side length 6 cm.
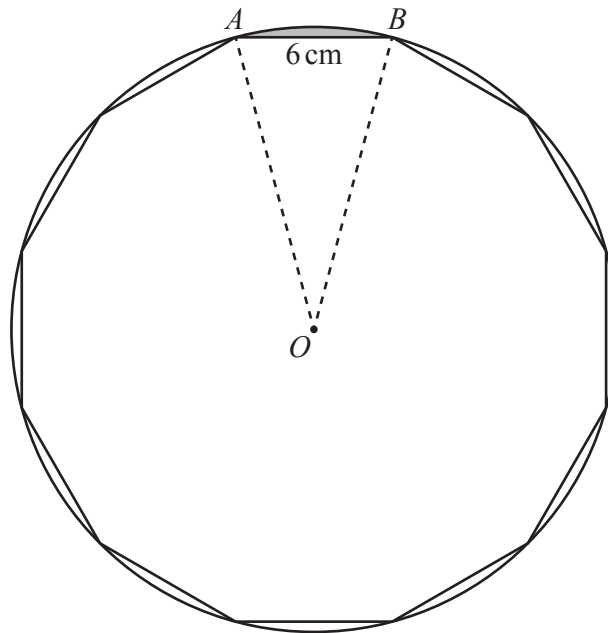
   (a) Show that one interior angle of the polygon is 150°.

                                                                                 [1]

   (b) The polygon is enclosed by a circle, centre O, so that each vertex touches the circumference of the circle.

       (i) Show that the radius, AO, of the circle is 11.6 cm, correct to 1 decimal place.

                                                                                   [3]

(ii) Calculate

    (a) the circumference of the circle,

.... cm [2]

    (b) the perimeter of the shaded **minor** segment formed by the chord *AB*.

.... cm [2]

(c) The regular 12-sided polygon is the cross-section of a prism of length 2 cm.

Calculate the volume of the prism.

.... cm³ [3]