

Solutions

2.1 Cylinder volume $V = \pi r^2 h = \pi(3 \text{ cm})^2(10 \text{ cm}) = 90\pi \text{ cm}^3$. Since 1000 cubic centimetres is one litre, capacity is $0.09\pi \text{ L}$, about 0.283 L. A rectangular face has perpendicular sides. Pythagoras gives $d = \sqrt{a^2 + b^2} = \sqrt{(6 \text{ cm})^2 + (8 \text{ cm})^2} = 10 \text{ cm}$. A diagonal is not an extra edge of the rectangle's perimeter.

3.1 Angle ACB is 90 degrees because an angle in a semicircle is a right angle. Triangle angles give $\angle ABC = 180 - 90 - 32 = 58$ degrees. By the alternate segment theorem, the angle between chord AC and the appropriate tangent ray equals angle ABC, 58 degrees. The other angle on the tangent's straight line is 122 degrees. Naming the acute angle selects 58; the drawing's apparent scale is unnecessary. The diameter and tangent facts are required hypotheses.

Local guidance: select and explain the relationship; calculate every requested result; check units, scope, conditions and completeness. These are authored classroom criteria.