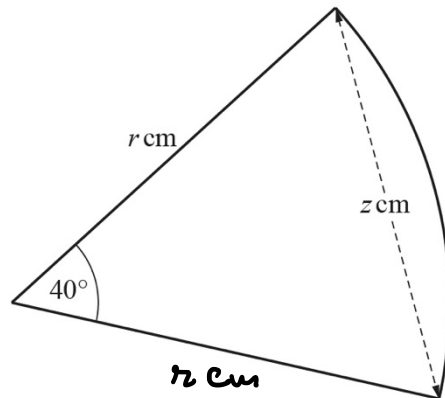## Problem 0580/41/O/N/21 Q9(C)

(c)

This sector of a circle has radius r and perimeter $20\,\text{cm}$.

Find the value of z.

$$20 = 2r + 2\pi r \frac{\cancel{40}}{\cancel{360}\,9}$$

$$20 = 2r + \frac{2\pi}{9}r$$

$$20 = \left(2 + \frac{2\pi}{9}\right)r$$

$$r = \frac{20}{2 + \frac{2\pi}{9}} = 7.41$$

by cosine rule

$$z = \sqrt{7.41^2 + 7.41^2 - 2 \times 7.41 \times 7.41 \times \cos 40}$$

$$= 5.07\,\text{cm}$$