

Solutions to Past Paper Questions – Pi, circles, sectors, arcs, cylinders

5) Circumference of semicircle = $\frac{1}{2} \times (\pi \times 12) = 18.8\text{cm}$
Total perimeter = $18.8 + 14 + 12 + 14 = 58.8\text{cm}$ (to 3sf)

5) $(\frac{1}{2} \times \pi \times 9) + 9 = 23.1 \text{ cm}$

18) (a) Arc RST = $\pi \times r \times \theta = 12.6\text{cm}$ (3sf)

(b) Area of semicircle = $\frac{1}{2} \times \pi \times 9^2 = 127.2 \text{ cm}^2$

Area of sector = $\frac{40}{360} \times \pi \times 18^2 = 113.1 \text{ cm}^2$

Total area = 240 cm^2 (3sf)

2) $\pi \times 4^2 \times 15 = 754 \text{ cm}^2$ (3sf)

6) (a) Curved SA = $2\pi rh = 2 \times \pi \times 54 \times 10 = 3390 \text{ cm}^2$ (3sf)

21) (a) Area = $\frac{171}{360} \times \pi \times 12^2 = 215 \text{ cm}^2$ (3sf)

(b) Length of the arc AB = $\frac{171}{360} \times 2 \times \pi \times 12 = 35.814 \text{ cm}$

This is now the circumference of the base of the cone.

So the radius of the base is $\frac{35.814}{2 \times \pi} = 5.7\text{cm}$

So by Pythagoras the height is $\sqrt{12^2 - 5.7^2} = 10.6 \text{ cm}$