Convert every measurement to the same unit before you calculate. Use the π key unless a question says otherwise. Give answers to one decimal place where they are not exact.

1 **Derive these conversions.** Do not just write them down.

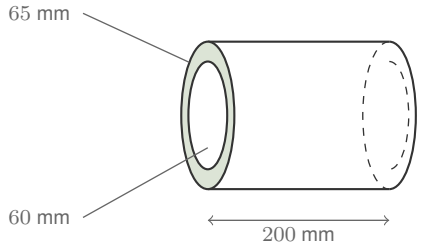
(a) A cube of side 1 cm is how many millimetres along each edge? (1)

(b) **Use that to show how many mm^3 are in 1 cm^3.** (2)

(c) **Use the same argument for 1 m^3 in cm^3.** (2)

(5 marks)

2 A steel pipe has inner radius 60 mm, outer radius 65 mm and length 200 mm. Find the volume of steel in cm^3, to three significant figures.



(a) **Convert the three measurements to centimetres.** (2)

(b) Find the area of the cross-section (2)

(c) Find the volume of steel (2)

(6 marks)

3 A box measures 0.5 m by 30 cm by 200 mm.

(a) **Write all three measurements in centimetres.** (2)

(b) Find the volume in cm^3 (1)

(c) Write the volume in m^3 (2)

(5 marks)

4 A tank has volume 0.75 m^3.

(a) Write this in cm^3 (2)

(b) **Given that 1 litre $= 1000$ cm^3, write it in litres.** (2)

(4 marks)