

## CHAPTER 1

- 1 A rectangular block of wood has dimensions  $240\text{ mm} \times 20.5\text{ cm} \times 0.040\text{ m}$ . Calculate its volume in  $\text{cm}^3$ .
- 2 Ten identical lengths of wire are laid closely side-by-side. Their combined width is measured and found to be  $14.2\text{ mm}$ . Calculate:
  - a the radius of a single wire
  - b the volume in  $\text{mm}^3$  of a single wire if its length is  $10.0\text{ cm}$ . (Volume of a cylinder =  $\pi r^2 h$ , where  $r$  = radius and  $h$  = height.)
- 3 State the measurements shown in Figure 1.8 on the scale of
  - a the vernier callipers
  - b the micrometer screw gauge.

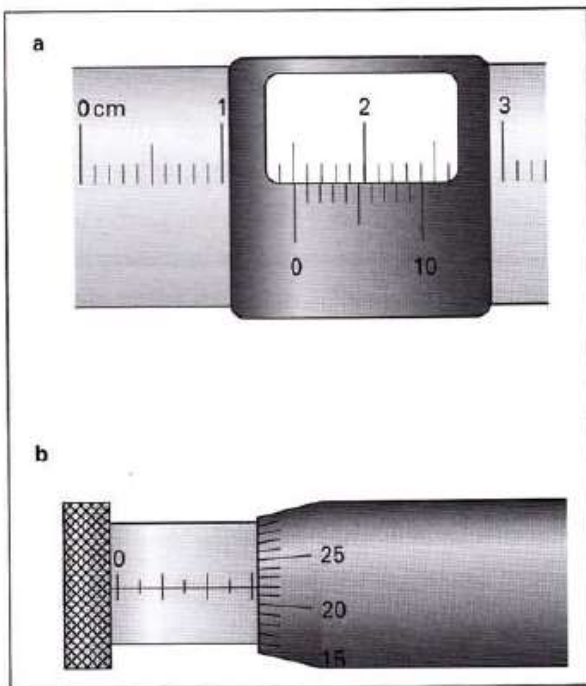


Figure 1.8 For Question 3.

- 4 Figure 1.9 shows how the volume of a piece of wood (which floats in water) can be measured. Write a brief paragraph to describe the procedure. State the volume of the wood.

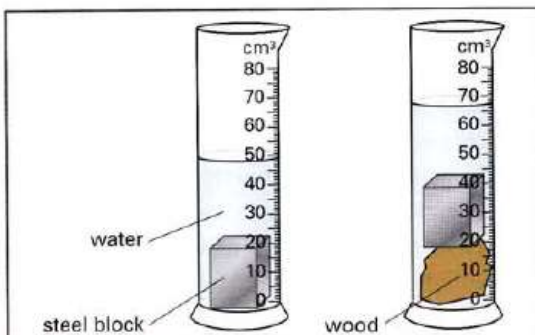
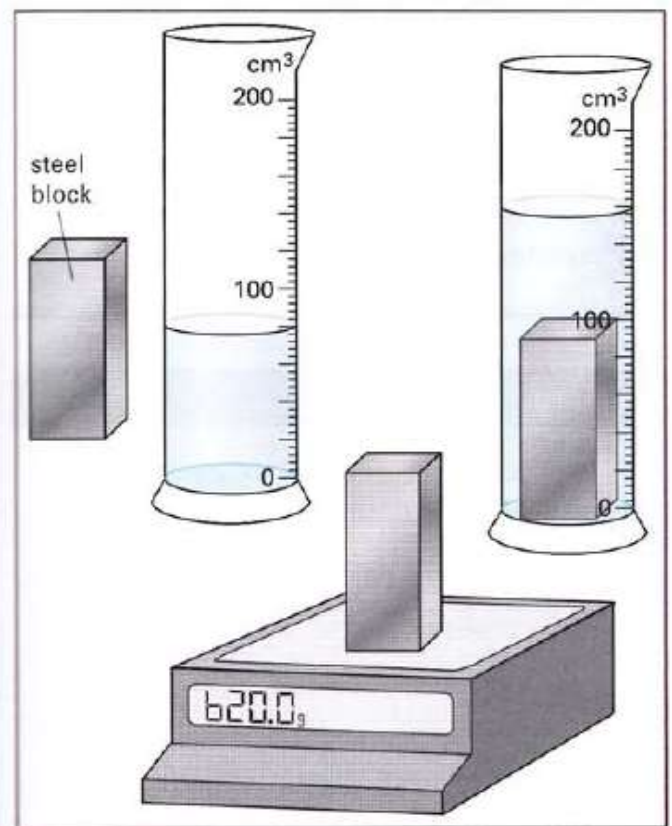


Figure 1.9 For Question 4.

- 5 Calculate the density of mercury if  $500\text{ cm}^3$  has a mass of  $6.60\text{ kg}$ . Give your answer in  $\text{g}/\text{cm}^3$ .
- 6 A steel block has mass  $40\text{ g}$ . It is in the form of a cube. Each edge of the cube is  $1.74\text{ cm}$  long. Calculate the density of the steel.
- 7 A student measures the density of a piece of steel. She uses the method of displacement to find its volume. Figure 1.11 shows her measurements. Calculate the volume of the steel and its density.



- 8 Many television sets show 25 images, called 'frames', each second. What is the time interval between one frame and the next?
- 9 A pendulum is timed, first for 20 swings and then for 50 swings:
 

time for 20 swings =  $17.4\text{ s}$   
time for 50 swings =  $43.2\text{ s}$

Calculate the average time per swing in each case. The answers are slightly different. Can you suggest any experimental reasons for this?