WRITTEN EXERCISE #01 - T23.4

# TOPIC 23 MOTION, FORCE & ENERGY

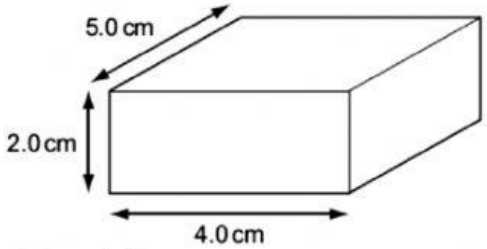
## *SUBTOPIC 23.4 DENSITY*

**ANSWER ALL QUESTIONS**

**1** Which of the following describes the density of a material?

**A** the amount of matter in the material
**B** the mass per unit volume of the material
**C** the pull of gravity on the material
**D** the volume per unit mass of the material

**2** The diagram shows a solid with dimensions 5 cm x 4 cm x 2 cm. It has a mass of 100 g.




What is the density of the solid?

**A** 0.40 g/cm$^3$ **B** 2.5 g/cm$^3$ **C** 5.0 g/cm$^3$ **D** 10 g/cm$^3$

**3** A container is filled with 5 kg of paint. The density of the paint is 2 g / cm$^3$.
Which volume of container is needed?

**A** 10 cm$^3$ **B** 400 cm$^3$ **C** 2500 cm$^3$ **D** 10 000 cm$^3$.

**4** The mass and density of four objects are given in the table.
Which object has the largest volume?

| | density kg/m$^3$ | mass / kg |
|---|---|---|
| A | 200 | 0.6 |
| B | 400 | 1.0 |
| C | 1000 | 2.0 |
| D | 1500 | 3.0 |

**5** Fig. 3.1 shows a measuring cylinder containing liquid paraffin.

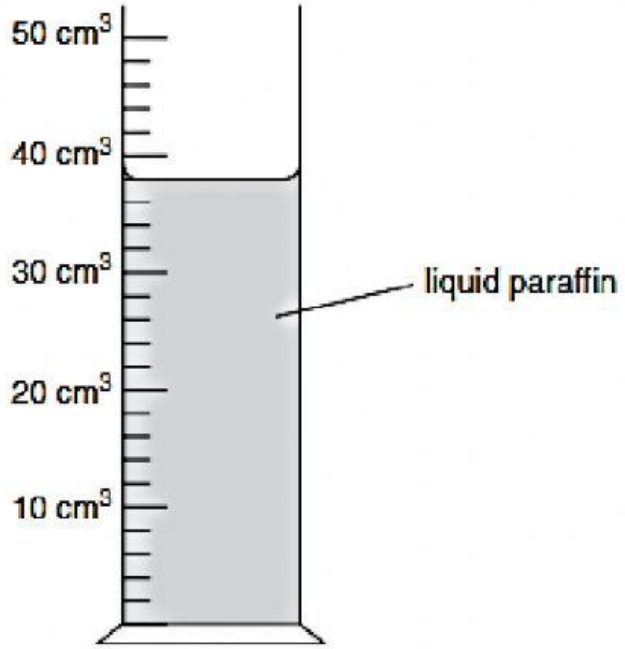



**Fig. 3.1**

**(a)** State the volume of the liquid paraffin shown in the measuring cylinder in Fig. 3.1.

..... $cm^3$ [1]

**(b)** A student measures the mass of the empty measuring cylinder and then containing the liquid paraffin. His results are shown in Fig. 3.2.

| | |
|---|---|
| mass of empty measuring cylinder | 20.2 g |
| mass of measuring cylinder containing the liquid paraffin | 50.6 g |

**Fig. 3.2**

Calculate

**(i)** the mass of the paraffin .....[1]

**(ii)** the density of the paraffin. [3]

**6** A measuring cylinder contains 80 cm3 of water and has a total mass of 300 g.

A stone is then lowered into the cylinder. The new reading of the volume is 110 $cm^3$ and the total mass is 390 g.

The readings are shown in Fig. 12.1.

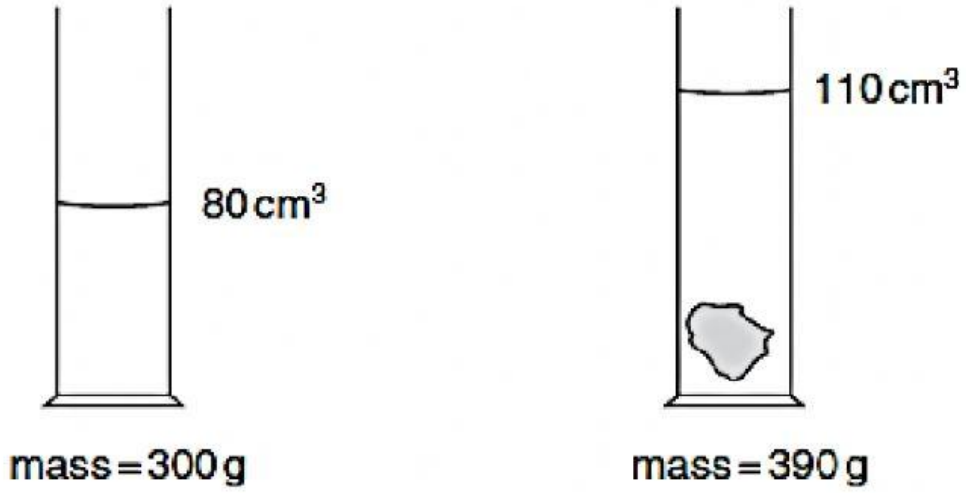



**Fig. 12.1**

**(a)** What is the mass of the stone? ..... g [1]

**(b)** What is the volume of the stone? ..... $cm^3$ [1]

**(c)** Use your answers to **(a)** and **(b)** to calculate the density of the stone.

[3]