Density

Question Paper 1

Level	IGCSE
Subject	Physics (0625/0972)
Exam Board	Cambridge International Examinations (CIE)
Topic	General Physics
Sub-Topic	Density
Booklet	Question Paper 1

Time allowed: **20 minutes**

Score: **/16**

Percentage: **/100**

Grade Boundaries:

9	8	7	6	5	4	3	2	1
>85%	75%	68%	60%	55%	50%	43%	35%	<30%

The diagram shows an experiment to find the density of a liquid.
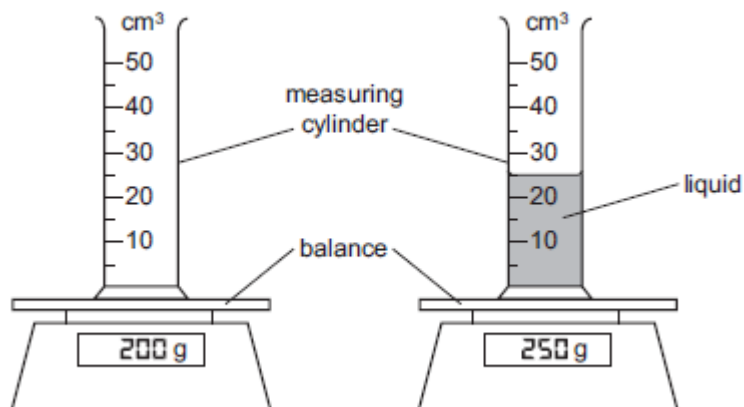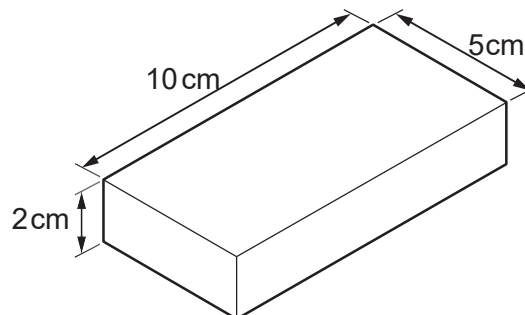

What is the density of the liquid?

A   0.5 g/cm³   B   2.0 g/cm³   C   8.0 g/cm³   D   10.0 g/cm³

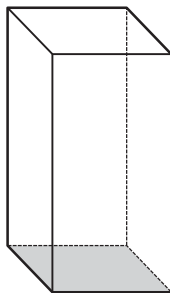A metal block has the dimensions shown. Its mass is 1000 g.

What is the density of the metal?

A $\left(\dfrac{5 \times 10}{1000 \times 2}\right)$ g/cm³

B $\left(\dfrac{2 \times 5 \times 10}{1000}\right)$ g/cm³

C $\left(\dfrac{1000 \times 2}{5 \times 10}\right)$ g/cm³

D $\left(\dfrac{1000}{2 \times 5 \times 10}\right)$ g/cm³

A student wishes to determine the density of the solid block shown.

Which quantities must be known?

A   the area of the shaded face and the volume of the block

B   the area of the shaded face and the weight of the block

C   the mass of the block and the height of the block

D   the mass of the block and the volume of the block

Two cylinders are made of the same metal. Both cylinders have the same cross-sectional area but one is longer than the other.

cylinder 1   cylinder 2

Which quantity is the same for both cylinders?

A.   density

B.   mass

C.   resistance

D.   volume

The mass of a piece of metal is 1200 g.

A measuring cylinder contains 150 cm^3 of water.

The piece of metal is put into the measuring cylinder. The water level rises to 250 cm^3 and covers the metal.

What is the density of the metal?

A   3.0 g/cm^3 B   4.8 g/cm^3 C   8.0 g/cm^3 D   12.0 g/cm^3

A person measures the length, width, height and mass of a metal block with rectangular sides.

Which of these measurements must be used in order to calculate the density of the metal?

A.   mass only

B.   height and mass only

C.   length, width and height only

D.   length, width, height and mass

A liquid has a volume of 100 cm^3 and a mass of 85g.

The density of water is 1.0 g/cm^3.

How does the density of the liquid compare with the density of water?

A   Its density is higher than that of water.

B   Its density is lower than that of water.

C   Its density is the same as that of water.
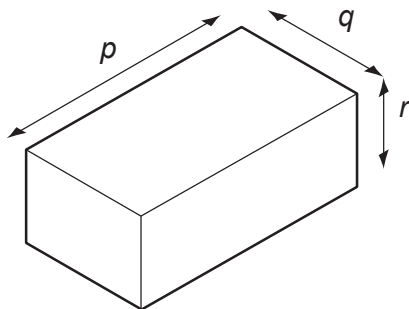
D   It is impossible to say with only this data.

The table gives the volumes and masses of four objects.

Which object has the greatest density?

	mass/g	volume/cm^3
A	5.4	2.0
B	13	3.0
C	15	6.0
D	18	5.0

The diagram shows the dimensions of a rectangular block of metal of mass *m*.

Which expression is used to calculate the density of the metal?

A. $m \times p \times q$

B. $m \times p \times q \times r$

C $\dfrac{m}{(p \times q)}$

D $\dfrac{m}{(p \times q \times r)}$

Diagram 1 shows an empty measuring cylinder on a balance.

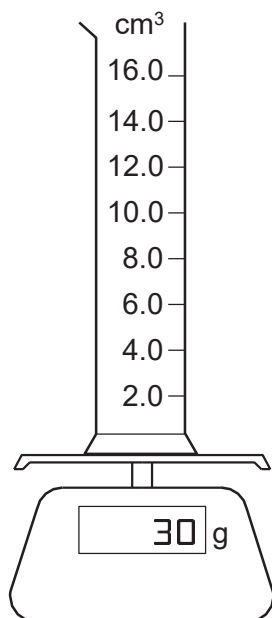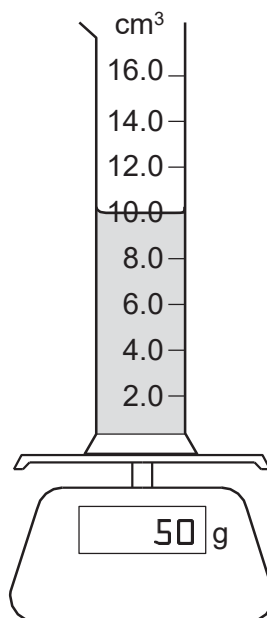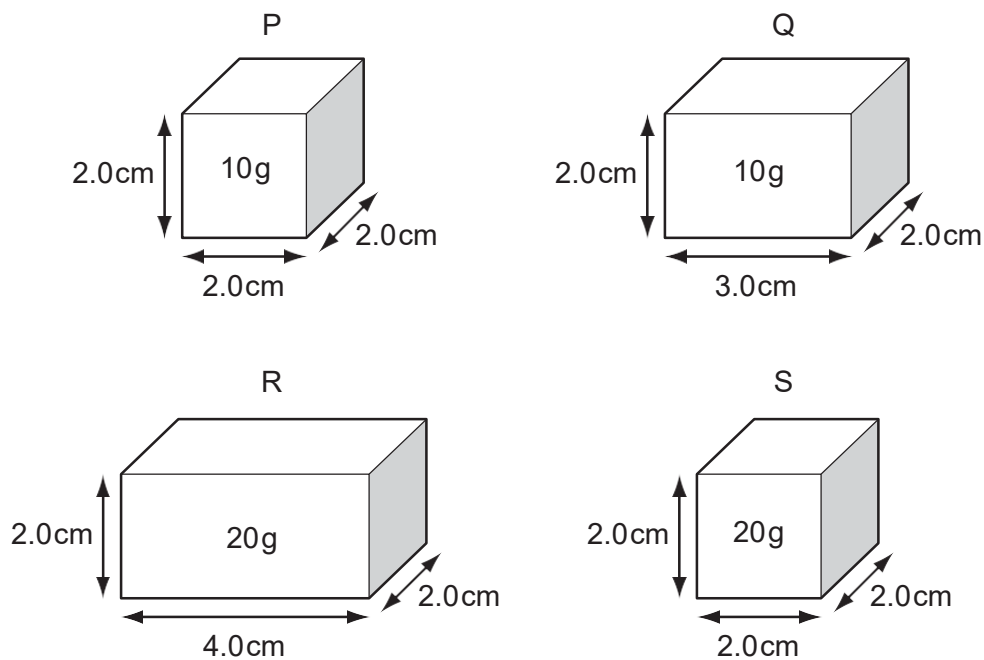Diagram 2 shows the same measuring cylinder on the balance, but it now contains a liquid.

diagram 1   diagram 2

What is the density of the liquid?

A $0.2\,g/cm^3$ B $0.5\,g/cm^3$ C $2.0\,g/cm^3$ D $5.0\,g/cm^3$

Four rectangular blocks, P, Q, R and S are shown. Each block is labelled with its size and its mass.

P

2.0cm | 10g | 2.0cm
2.0cm

Q

2.0cm | 10g | 2.0cm
3.0cm

R

2.0cm | 20g | 2.0cm
4.0cm

S

2.0cm | 20g | 2.0cm
2.0cm

Which two blocks have the same density?

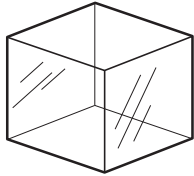A   P and Q   B   P and R   C   Q and R   D   R and S

A student is given four different objects and a metre rule.
Each object has a known mass. She is asked to determine the densities of the materials from which the four objects are made.

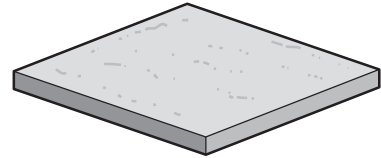The objects are a copper cylinder, a glass cube, a steel spanner and a stone tile.

| copper | glass | steel | stone |

Using only the metre rule, she is able to find the densities of only three of the four materials.

Which three materials are these?

A   copper, glass and steel

B   copper, glass and stone

C   copper, steel and stone

D   glass, steel and stone

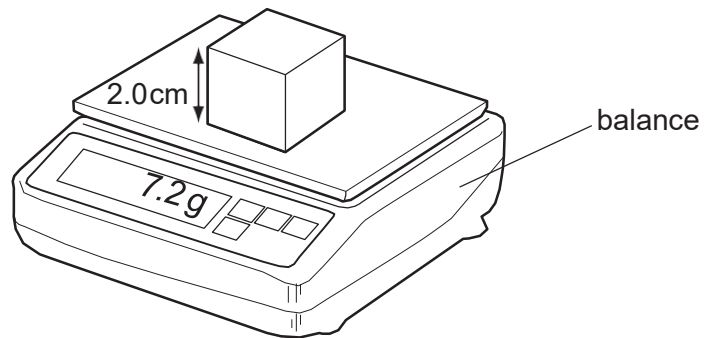# Question 13

A stone has a volume of $0.50\,cm^3$ and a mass of $2.0\,g$.

What is the density of the stone?

A $0.25\,g/cm^3$

B $1.5\,g/cm^3$

C $2.5\,g/cm^3$

D $4.0\,g/cm^3$

A cube of side 2.0cm is placed on a balance.

What is the density of the cube?

A $0.90 \, \text{g/cm}^3$ B $1.2 \, \text{g/cm}^3$ C $1.8 \, \text{g/cm}^3$ D $3.6 \, \text{g/cm}^3$

A student is told to measure the density of a liquid and also of a large cube of metal.

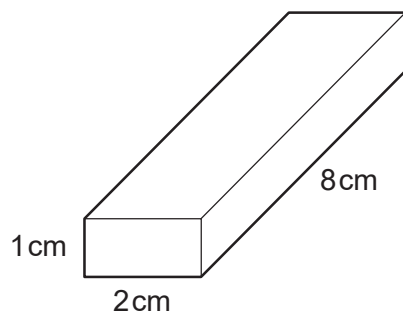Which pieces of equipment are sufficient to be able to take the measurements needed?

A. balance, measuring cylinder and ruler

B. balance and thermometer

C. measuring cylinder and ruler
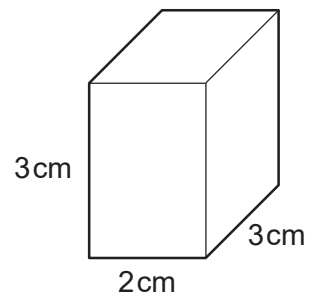
D. measuring cylinder, ruler and thermometer

The diagrams show four blocks with the same mass.

Which block is made from the least dense material?

A

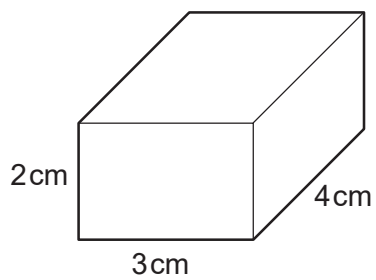8 cm

1 cm

2 cm

B

3 cm

3 cm

2 cm

C

2 cm

4 cm

3 cm

D

5 cm

2 cm

2 cm