


O Level • Cambridge (CIE) • Physics

 16 mins 16 questions

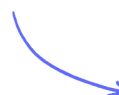
Multiple Choice Questions

1.4 Density

Density / Measuring Density

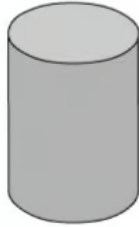
Easy (1 question)	/1
Medium (10 questions)	/10
Hard (5 questions)	/5
Total Marks	/16

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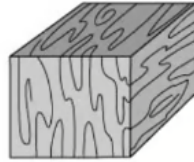


Easy Questions

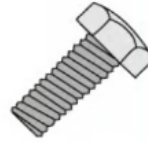
- 1 A student is given four objects, a mass balance and a metre ruler.



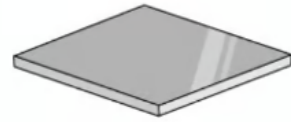
Aluminium



Wood



Bolt



Plastic

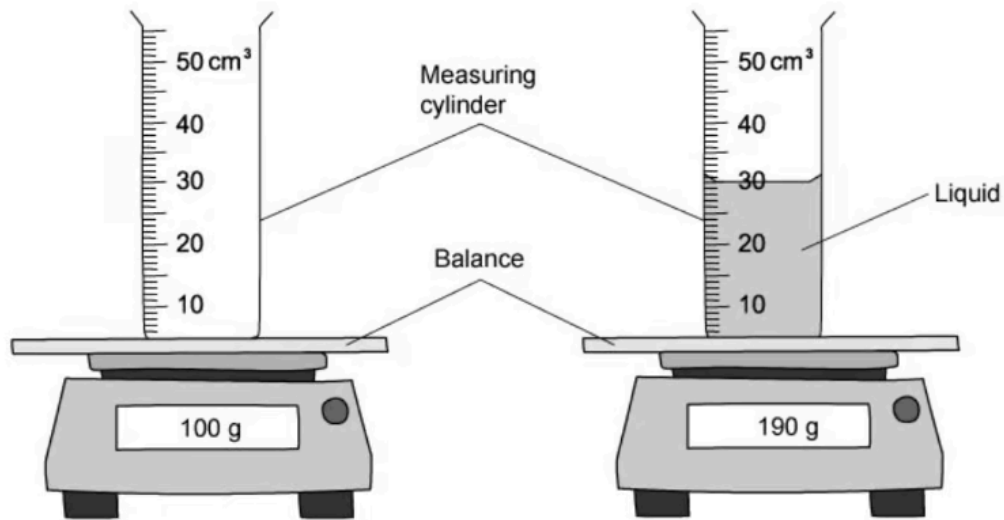
Which of the objects can he determine the density of , using only the metre ruler and the mass balance?

- A.** Bolt , aluminium and plastic
- B.** Wood, bolt and plastic
- C.** Aluminium , wood and plastic
- D.** Aluminium , wood and bolt

(1 mark)

Medium Questions

- 1 The diagram shows a measuring cylinder containing a liquid, and that same measuring cylinder when it is empty.

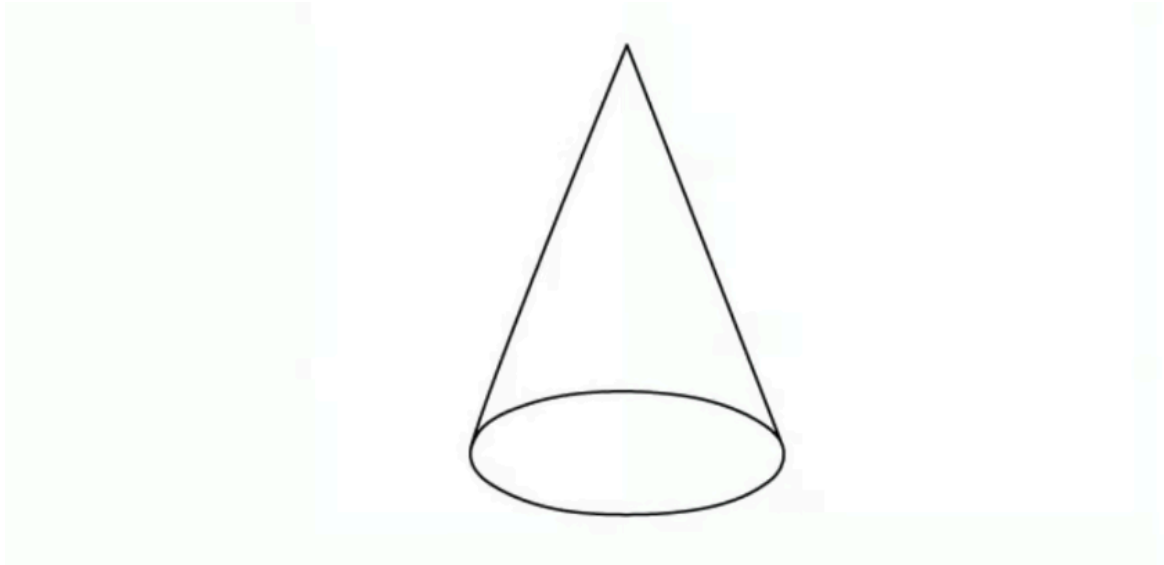


What is the density of the liquid?

- A. 6.30 g/cm^3
- B. 3.00 g/cm^3
- C. 0.33 g/cm^3
- D. 0.16 g/cm^3

(1 mark)

2 A geologist wants to determine the density of the object shown below.



What needs to be known in order to calculate its density ?

- A. The radius of the base of the cone and the weight of the cone.
- B. The surface area of the base of the cone and the height of the cone.
- C. The volume of the cone and the mass of the cone.
- D. The height of the cone and the mass of the cone.

(1 mark)

3 Two beams have the same rectangular cross section, but one is longer than the other.

Both beams are made from the same material.



Which quantity is the same in both beams?

- A. The volume
- B. The weight
- C. The mass

D. The density

(1 mark)

- 4** A student wants to measure the density of a piece of rock. She starts by measuring its mass , and finds that it is 2500 g.

Next she puts 500 cm³ of water into a large measuring cylinder , then adds the rock. The level in the measuring cylinder rises to 800 cm³.

What is the density of the rock?

- A.** 8.33 g/cm³
- B.** 3.125 g/cm³
- C.** 0.12 g/cm³
- D.** 0.32 g/cm³

(1 mark)

- 5** Some unknown liquid in a beaker has a mass of 200 g and a volume of 230 cm³.

The density of water is 1.0 g/cm³

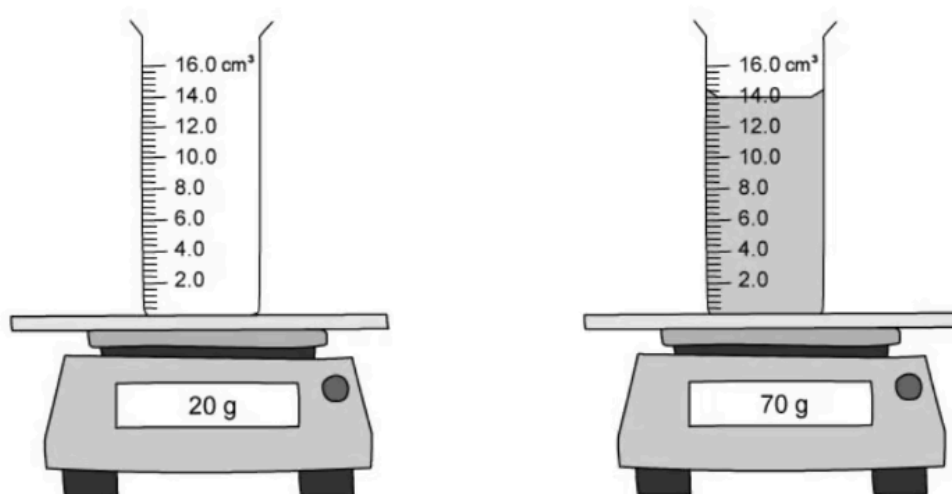
How does the density of the unknown liquid compare with the density of water?

- A.** Its density is greater than the density of water
- B.** Its density is less than the density of water
- C.** Its density is the same as the density of water
- D.** With the information given, it is impossible to tell.

(1 mark)

- 6** The two diagrams below show a measuring cylinder.

In the diagram on the left, the measuring cylinder is empty. In the diagram on the right, the measuring cylinder contains a liquid.



What is the density of the liquid?

- A.** 0.20 g/cm^3
- B.** 5.00 g/cm^3
- C.** 0.28 g/cm^3
- D.** 3.57 g/cm^3

(1 mark)

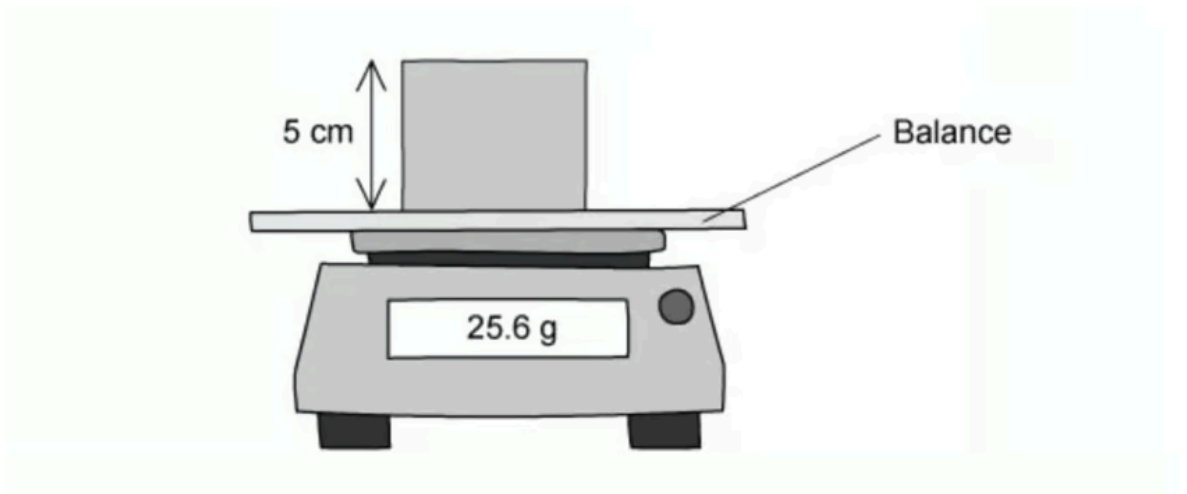
- 7** A lump of butter has a volume of 350 cm^3 and a mass of 319 g .

What is the density of the butter?

- A.** 31 g/cm^3
- B.** 1.10 g/cm^3
- C.** 1.00 g/cm^3
- D.** 0.911 g/cm^3

(1 mark)

- 8 A cube of side length 5 cm is placed on a mass balance.



What is the density of the cube?

- A. 1.0 g/cm^3
- B. 0.20 g/cm^3
- C. 5.12 g/cm^3
- D. 4.88 g/cm^3

(1 mark)

- 9 The density of a block of wood is 2.7 g/cm^3 and a mass of 583.3 g.

What is its volume?

- A. 0.5 cm^3
- B. 21.6 cm^3
- C. 216.0 cm^3
- D. 1574.9 cm^3

(1 mark)

10 Water is added to a measuring cylinder containing 100 cm^3 of liquid paraffin.

(The density of paraffin is 0.80 g / cm^3 and that of the water is 1.0 g / cm^3 .)

As the water is added, the level of the paraffin rises to 150 cm^3 . The paraffin and water do not mix.

What finally is the total mass of liquid in the measuring cylinder?

A. 130 g

B. 140 g

C. 167 g

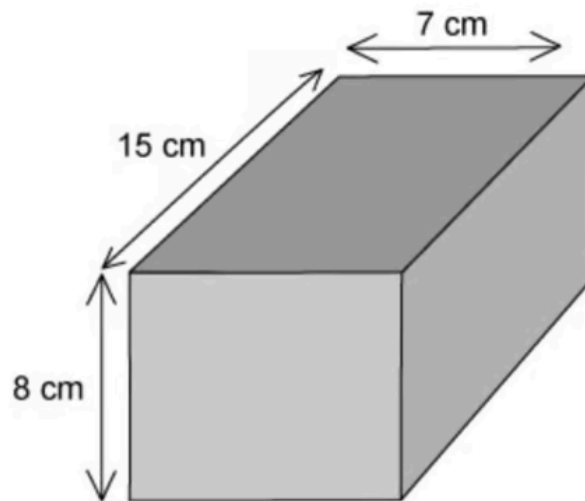
D. 175 g

(1 mark)

Hard Questions

- 1 A block of an unknown material is shown in the diagram.

It's mass is 500 g.



What is the density of the block?

- A. $\frac{7 \times 15 \times 7}{500} \text{ g/cm}^3$
- B. $\frac{7 \times 15}{500 \times 8} \text{ g/cm}^3$
- C. $\frac{500}{7 \times 15 \times 8} \text{ g/cm}^3$
- D. $\frac{500 \times 7}{8 \times 15} \text{ g/cm}^3$

(1 mark)

2 A teacher wants to measure the density of a wooden cylinder.

She measures the radius, height and mass of the cylinder.

Which of the measurements that she has taken are required to calculate the density of the cylinder?

- A.** Radius, height and mass
- B.** Radius and height only
- C.** Mass and height only
- D.** Mass only

(1 mark)

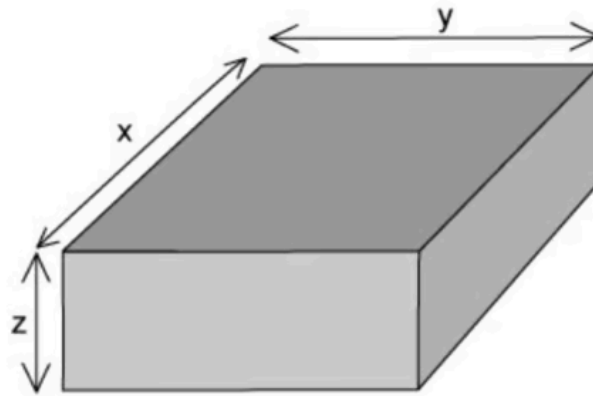
3 The masses and volumes of four different objects are given in the table.

Which of the objects has the lowest density?

	Mass / g	Volume / cm ³
A	100	100
B	150	50
C	85	17
D	10	20

(1 mark)

- 4 A block is shown in the diagram. It has a mass of m .



Which expression, below, could be used to calculate the density of the block?

A. $m \times x \times y \times z$

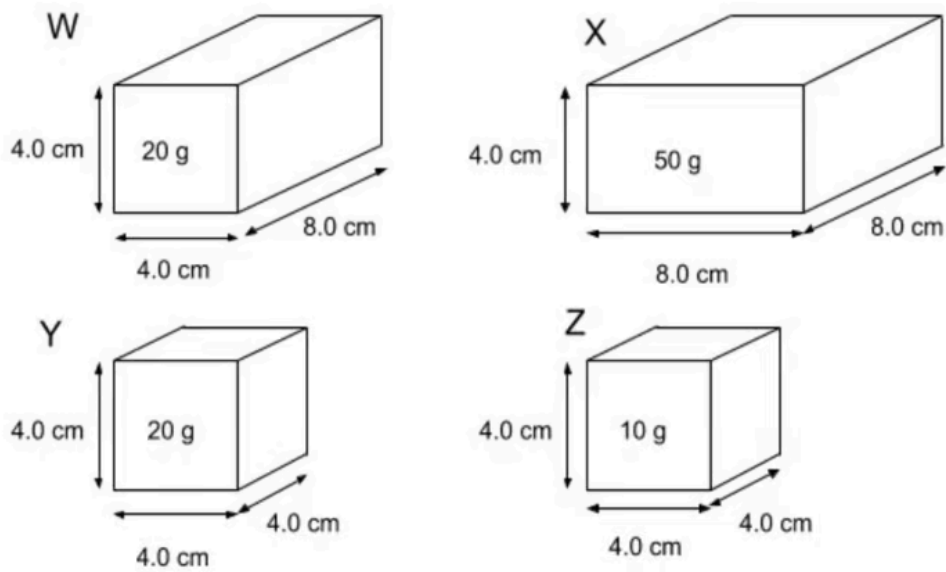
B. $x \times z \times y$

C. $\frac{x \times y \times z}{m}$

D. $\frac{m}{x \times y \times z}$

(1 mark)

5 Four blocks, **W**, **X**, **Y** and **Z** are shown below.



Which of the two blocks have the same density?

- A.** W and X
- B.** W and Y
- C.** Y and Z
- D.** W and Z

(1 mark)