Density – 2023 IGCSE Physics 0625

1. Nov/2023/Paper_ 0625/11/No.5

A student has a bottle of cooking oil.

She determines the density of the cooking oil.

Which apparatus does she need?

	balance	measuring cylinder	ruler	thermometer
A	✓	✓	✓	✓
B	✓	✓	✓	✗
C	✓	✓	✗	✗
D	✓	✗	✗	✗

key

✓ = needed

✗ = not needed

2. Nov/2023/Paper_ 0625/12/No.5

Which equation is correct?

A density = mass × volume

B density = weight × volume

C mass = density × volume

D weight = density × volume

3. Nov/2023/Paper_ 0625/13/No.5

A student carries out an experiment to determine the density of an irregularly shaped solid. The solid is placed on a balance and a reading is taken. The solid is then immersed in a liquid in a measuring cylinder.

Which values should be used in the calculation?

	value from measuring cylinder	value from balance
A	increase in reading after immersion of the solid	mass
B	increase in reading after immersion of the solid	weight
C	reading after immersion of the solid	mass
D	reading after immersion of the solid	weight

4. Nov/2023/Paper_ 0625/22/No.4

A plastic ball has a mass of 4.0 g and a volume of 20 cm^3.

There is a crack in the ball's surface.

The ball is placed in a bath of water. Water leaks into the ball without changing the volume of the ball and eventually the ball sinks.

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

Which mass of water has entered the ball when the top of the ball is first level with the water surface?

A 5.0 g **B** 16 g **C** 20 g **D** 24 g

5. Nov/2023/Paper_ 0625/31/No.2(a)

The mass of a solid metal cylinder is 400 g and its volume is 52 cm^3.

(a) Calculate the density of the metal. Include the unit.

density = ... [4]

6. Nov/2023/Paper_ 0625/33/No.3(b, c)

The mass of a glass bottle is 0.18 kg.

(b) The bottle contains 2.7 kg of cooking oil. The density of the cooking oil is 0.92 g/cm^3.

Calculate the volume of the cooking oil.

volume = ... cm^3 [4]

(c) A cookery student pours some cooking oil into a glass bowl containing water, as shown in Fig. 3.1.

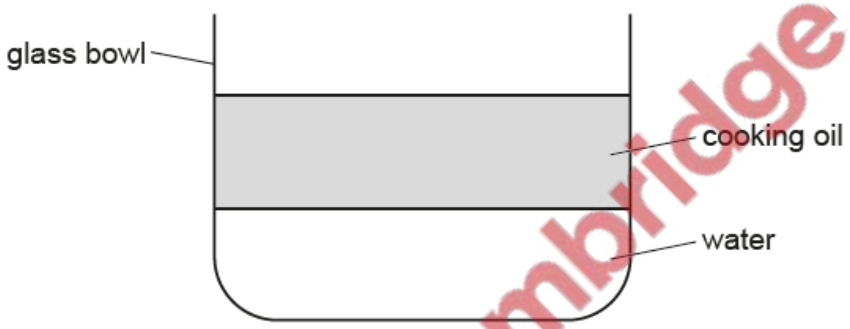


Fig. 3.1

The student accidently drops a plastic spoon and a metal spoon into the bowl.
The densities of the spoons and liquids are shown in Table 3.1.

Table 3.1

material	density / g/cm^3
plastic spoon	0.76
metal spoon	8.7
cooking oil	0.92
water	1.0

On Fig. 3.1, label a suggested position for each spoon after each has fallen into the bowl.

Use the letter P to label the position of the plastic spoon and the letter M to label the position of the metal spoon. [2]

(a) Oil of density 0.80 g/cm^3 is poured gently onto the surface of water of density 1.0 g/cm^3. The oil and the water do **not** mix.

Describe and explain the final position of the oil relative to the water.

description .....

.....

explanation .....

.....

[2]

(b) An irregularly shaped solid object has a density of 2.7 g/cm^3.

(i) Describe a method to measure the volume of the irregularly shaped solid object.

.....

.....

..... [2]

(ii) The volume of the object is 83 cm^3.

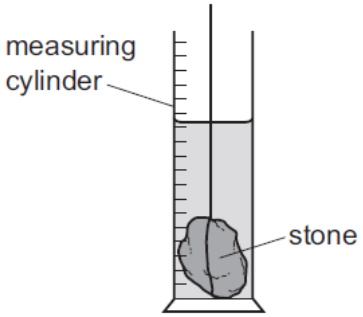
Calculate the mass of the object.

mass = ... [3]

[Total: 7]

8. June/2023/Paper_0625/11/No.6

A student determines the density of an irregularly shaped stone. The stone is slowly lowered into a measuring cylinder partly filled with water.



Which other apparatus does the student need to calculate the density of the irregularly shaped stone?

A a balance

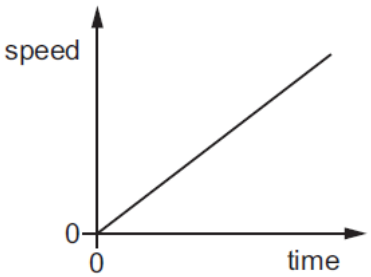
B a thermometer

C a metre rule

D a stop-watch

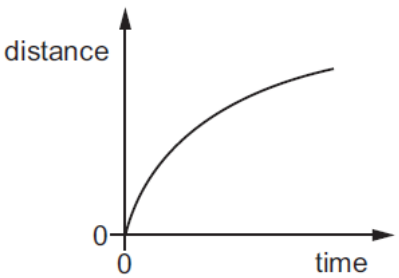
9. June/2023/Paper_0625/12/No.5

The speed–time graph represents a short journey.



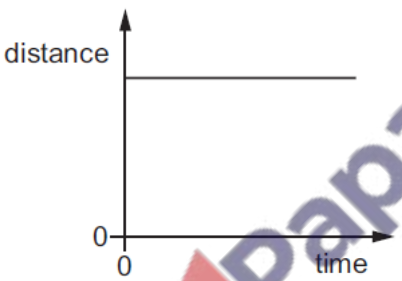
Which distance–time graph represents the same journey?

A

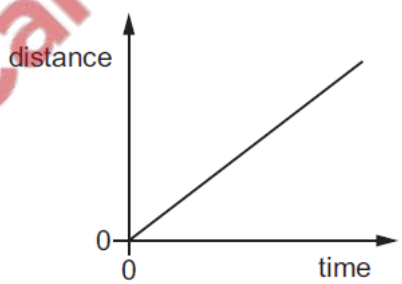


B

C



D



10. June/2023/Paper_0625/13/No.5

A measuring cylinder containing 50 cm^3 of water is put on a balance.

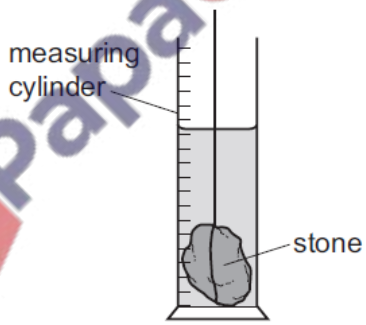
A solid object is put in the cylinder and the water level rises to 75 cm^3.

What is the density of the object?

A 0.80 g / cm^3 **B** 2.4 g / cm^3 **C** 2.8 g / cm^3 **D** 8.4 g / cm^3

11. June/2023/Paper_0625/21/No.6

A student determines the density of an irregularly shaped stone. The stone is slowly lowered into a measuring cylinder partly filled with water.



Which other apparatus does the student need to calculate the density of the irregularly shaped stone?

A a balance

B a thermometer

C a metre rule

D a stop-watch

12. June/2023/Paper_0625/22/No.6

Which two quantities must be known to determine the density of a material?

A mass and area

B mass and volume

C weight and area

D weight and volume

13. June/2023/Paper_0625/32/No.1(b)

A student measures the diameter of some identical steel balls. Fig. 1.1 shows the arrangement she uses.

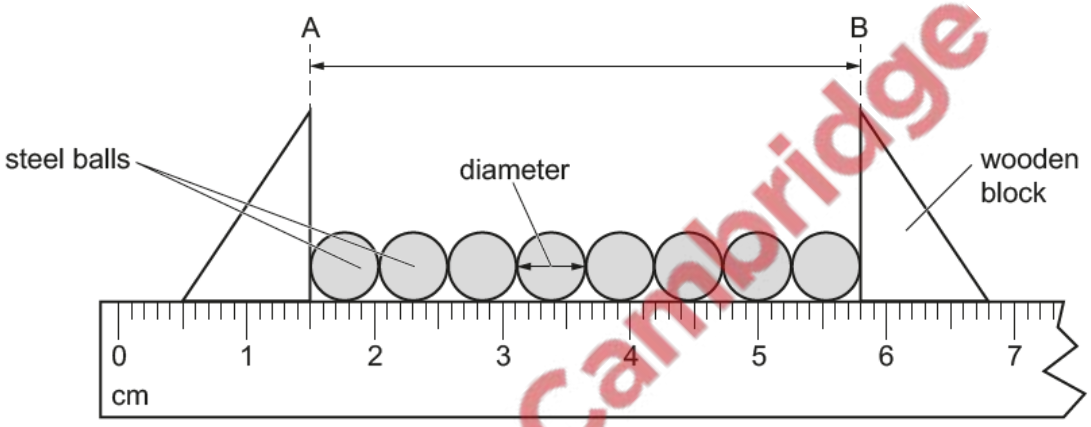


Fig. 1.1 (not to scale)

(b) The mass of some steel balls is 54 g and the total volume of these steel balls is 6.9 cm^3.

Calculate the density of the steel.

density of steel = ... g/cm^3 [3]