Sc!ence

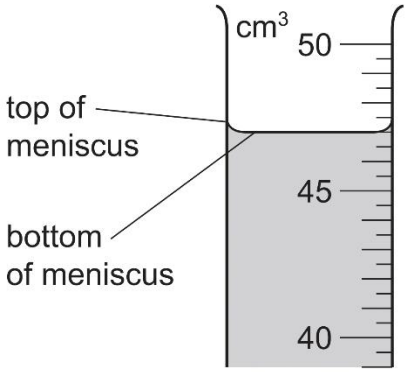
Name: …… **( )**

Class: ……

Date: …… **/** …… **/** ……

Multiple-choice Questions on Physical Properties of Matter

1. A student uses a measuring cylinder to measure the volume of some water. The diagram shows part of the measuring cylinder. The top and bottom of the meniscus are labelled.

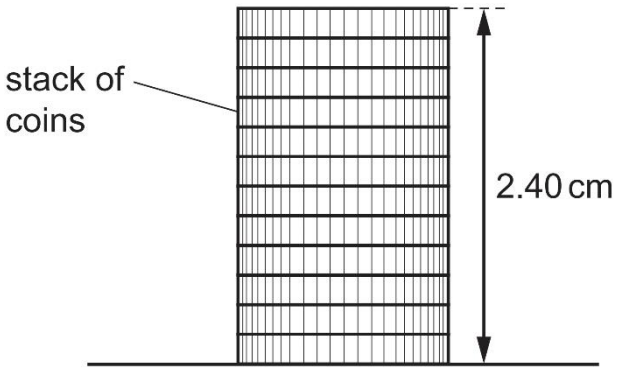


What is the volume of the water?

A 47.0 cm^3 **B** 47.5 cm^3

C 49.0 cm^3 **D** 49.5 cm^3

2. The diagram shows the height of a stack of identical coins.



What is the thickness of one coin?

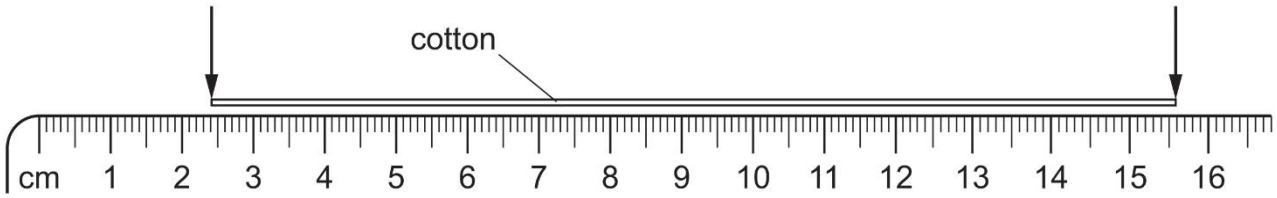
A 0.20 mm **B** 2.0 mm

C 0.24 cm **D** 2.0 cm

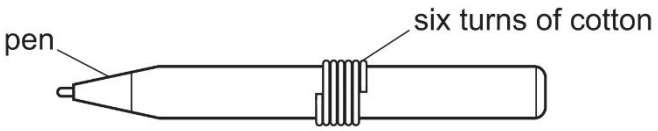
3. A metal has a density of 8.0 g/cm^3. A solid cube of mass 1.0 kg is made from this metal. How long is each side of the cube?

A 0.50 cm **B** 2.0 cm **C** 5.0 cm **D** 42 cm

4. A length of cotton is measured between two points on a ruler.



When the length of cotton is wound closely around a pen, it goes round six times.

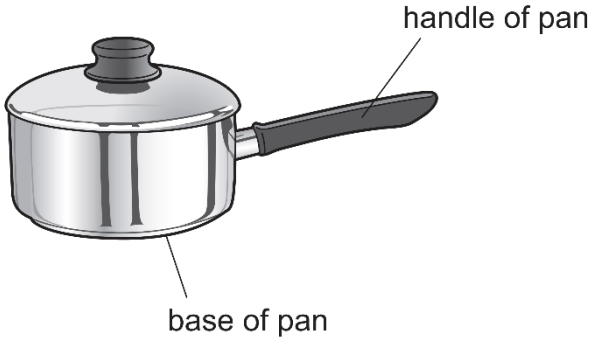


What is the distance once round the pen?

A 2.2 cm **B** 2.6 cm

C 13.2 cm **D** 15.6 cm

5. The diagram shows a pan used for cooking food.



Which row is correct for the materials used to make the base and the handle of the pan?

	base of pan		handle of pan
A	high melting point	good conductor of heat	poor conductor of heat
B	high melting point	poor conductor of heat	good conductor of heat
C	low melting point	good conductor of heat	poor conductor of heat
D	low melting point	poor conductor of heat	good conductor of heat

6. Which instrument is used to compare the masses of objects?

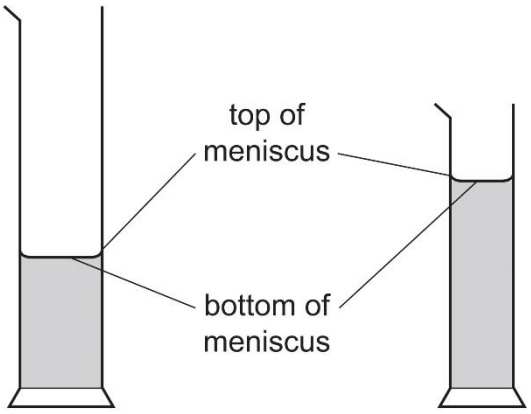
A A balance

B A barometer

C A manometer

D A measuring cylinder

7. A student wishes to measure accurately the volume of approximately 40 cm^3 of water. She has two measuring cylinders, a larger one that can hold 100 cm^3, and a smaller one that can hold 50 cm^3. The water forms a meniscus where it touches the glass.



Which measuring cylinder should the student use and which water level should she use to ensure an accurate result?

	cylinder	water level
A	larger one	bottom of meniscus
B	larger one	top of meniscus
C	smaller one	bottom of meniscus
D	smaller one	top of meniscus

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

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.

9. A person measures the length, width, height and mass of a metal cube with regular sides.

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

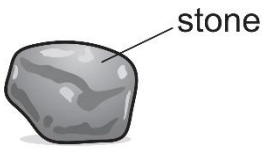
A Mass only

B Height and mass only

C Length, width and height only

D Length, width, height and mass

10. A student wishes to find the volume of a small, irregularly-shaped stone.



A ruler and a measuring cylinder containing some water are available.

Which apparatus is needed?

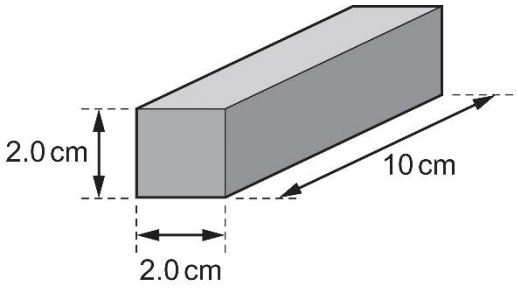
A Neither the ruler nor the measuring cylinder.

B The measuring cylinder only.

C The ruler and the measuring cylinder.

D The ruler only.

11. The diagram shows a cuboid block made from a metal of density 2.5 g/cm^3.



What is the mass of the block?

A 8.0 g **B** 16 g **C** 50 g **D** 100 g

12. The diameter of a copper wire is thought to be approximately 0.3 mm.

Which instrument should be used to obtain a more accurate measurement of the diameter of the wire?

A Measuring tape **B** Metre rule

C Micrometre **D** Ruler

13. A copper ball is found to have a uniform density of 8.96 g/cm^3. Cindy cuts a 2.00 cm^3 section out of the copper ball. What is the density of the remaining copper ball?

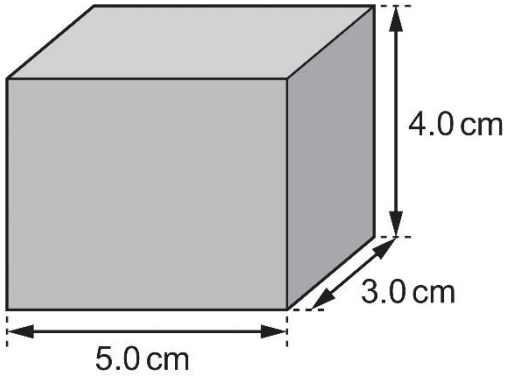
A 8.96 g/cm^3

B 8.96 – 2.00 g/cm^3

C 8.96 × 2.00 g/cm^3

D 8.96 ÷ 2.00 g/cm^3

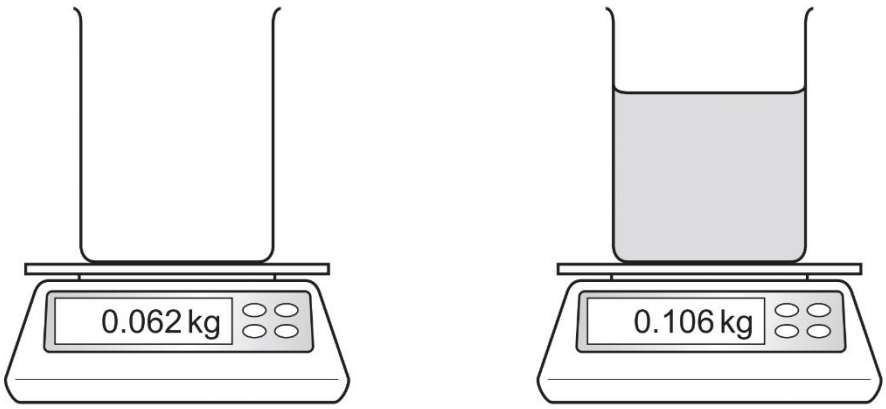
14. The block of metal shown has a mass of 240g.



What is the density of the metal?

A 0.25 g/cm^3 **B** 4.0 g/cm^3 **C** 16 g/cm^3 **D** 14400 g/cm^3

15. An empty beaker is placed on a top-pan balance. Some water is now poured into the beaker.



empty beaker beaker + water

What is the mass of the water?

A 0.44 kg **B** 0.168 kg **C** 168 g **D** 44 g

16. A digital stop-clock measures time in minutes and seconds.

The stop-clock reads 00:50 when it is started (*i.e.* 00 minutes 50 seconds).

It reads 02:10 when it is stopped.

What is the shortest possible time that has elapsed between starting and stopping the stop-clock?

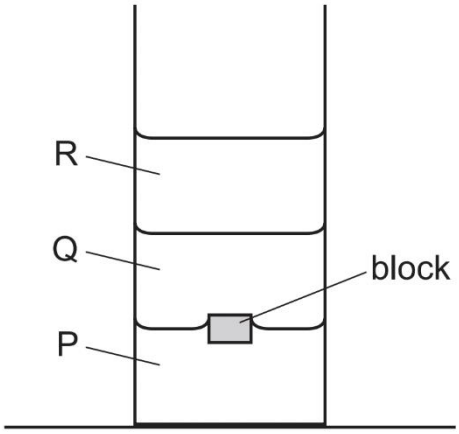
A 20 seconds

B 1 minutes 20 seconds

C 2 minutes 20 seconds

D 3 minutes 00 seconds

17. Three liquids **P**, **Q** and **R** have different densities and do not mix. The liquids are placed in a measuring cylinder and allowed to settle. A small block is then dropped into the measuring cylinder and comes to rest, as shown.



Which statement about the density of the block is correct?

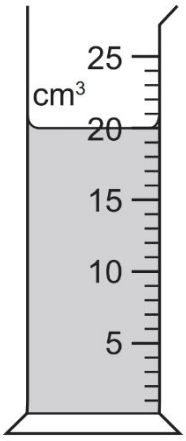
A It is equal to the density of **Q**.

B It is greater than the density of **P**.

C It is greater than the density of **R**.

D It is less than the density of **Q**.

18. The diagram shows some liquid in a measuring cylinder.
The mass of the liquid is 16 g.



What is the density of the liquid?

A 0.80 g/cm^3 **B** 1.25 g/cm^3 **C** 36 g/cm^3 **D** 320 g/cm^3

19. Two objects **P** and **Q** are placed in a beaker containing a liquid.

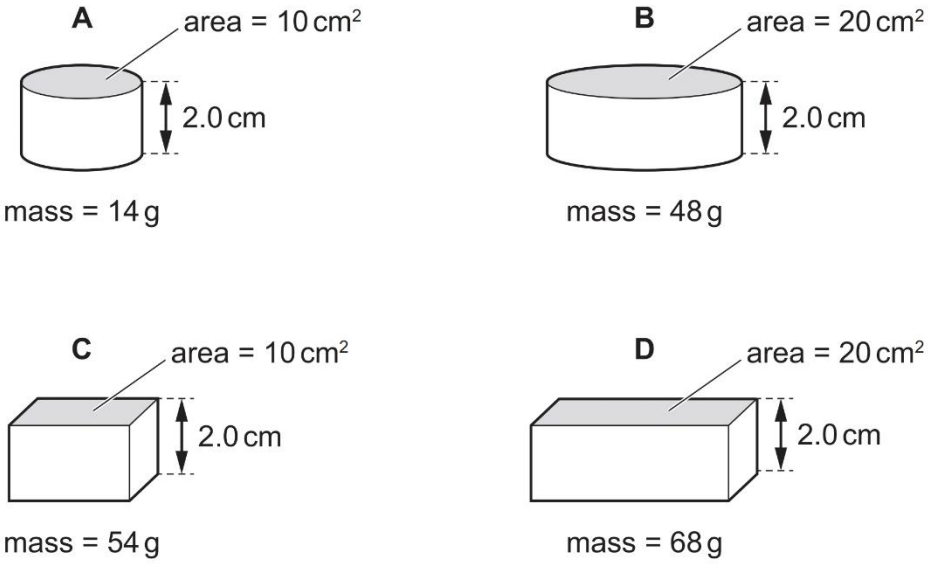
Object **P** floats in the liquid and object **Q** sinks.

Which row for the densities of object **P**, object **Q** and the liquid is possible?

	density of object **P** / g/cm^3	density of object **Q** / g/cm^3	density of liquid / g/cm^3
A	1.2	0.6	0.8
B	1.2	1.4	1.0
C	11.3	8.9	13.6
D	11.3	19.3	13.6

20. The diagram shows four solid blocks with their dimensions and masses.

Which block has the greatest density?



21. The mass of a measuring cylinder is 190 g.

400 cm^3 of liquid is put into the measuring cylinder.

The total mass of the measuring cylinder and the liquid is 560g.

Four solid objects are lowered in turn into the liquid. The densities of the objects are shown.

1 0.40 g/cm^3

2 0.90 g/cm^3

3 1.2 g/cm^3

4 2.7 g/cm^3

Which objects will float in the liquid?

A 1 only

B 1 and 2 only

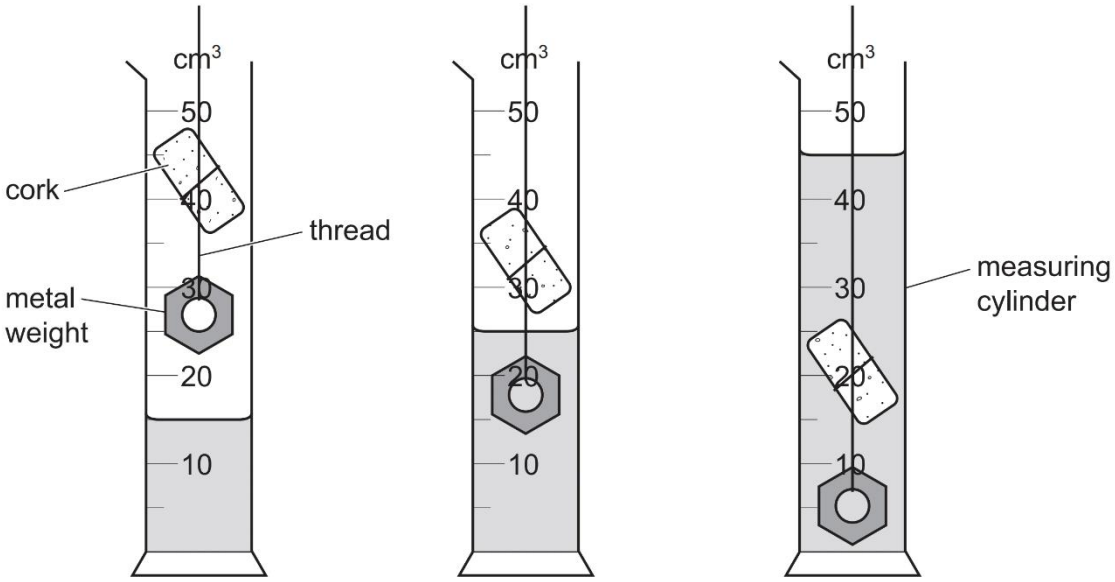
C 1, 2 and 3 only

D 3 and 4 only

22. Diagram 1 shows a measuring cylinder containing water. A metal weight with a cork attached by a thread is held above the water.

Diagram 2 shows the apparatus after the weight has been lowered into the water.

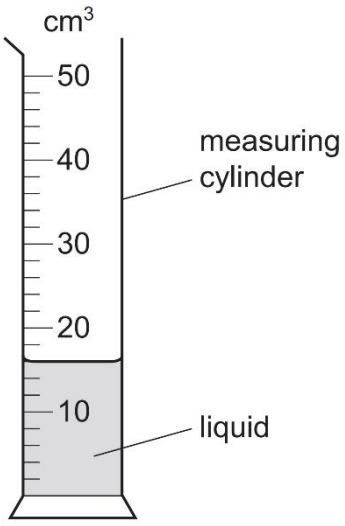
Diagram 3 shows the apparatus after the weight and the cork have been submerged.



What is the volume of the cork?

A 20 cm^3 **B** 30 cm^3 **C** 45 cm^3 **D** 70 cm^3

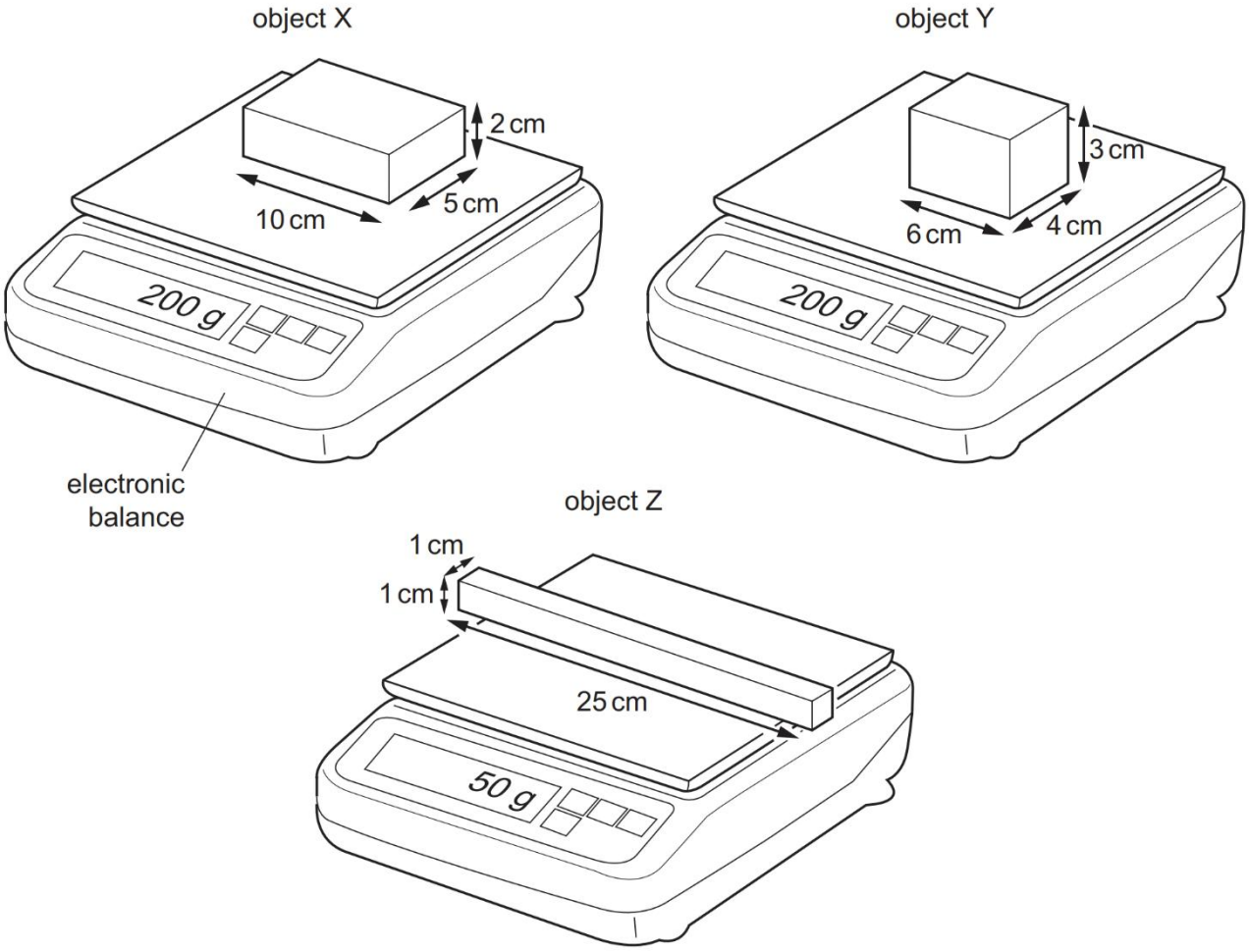
23. The diagram shows a measuring cylinder containing liquid.



What is the reading for the volume of liquid in the cylinder?

A 13.0 cm^3 **B** 13.5 cm^3 **C** 16.0 cm^3 **D** 17.0 cm^3

24. X, Y and Z are three regularly shaped solid objects. Their dimensions and masses are shown in the diagrams.



Which objects have the same density?

A X, Y and Z **B** X and Y only

C X and Z only **D** Y and Z only

25. Water has a density of 1000 kg/m^3.

A rectangular swimming pool has an average depth of 1.6 m. The length of the pool is 25 m. The width of the pool is 10 m.

What is the mass of the water in the swimming pool?

A 2.5 kg **B** 400 kg **C** 400 000 kg **D** 800 000 kg

26. A rectangular gymnasium is 50 m long, 25 m wide and 8.0 m high.

The density of air is 1.2 kg/m^3.

What is the best estimate of the mass of air in the gymnasium?

A 0.00012 kg **B** 100 kg **C** 8300 kg **D** 12 000 kg

27. Diagram 1 shows a solid, rectangular-sided block.

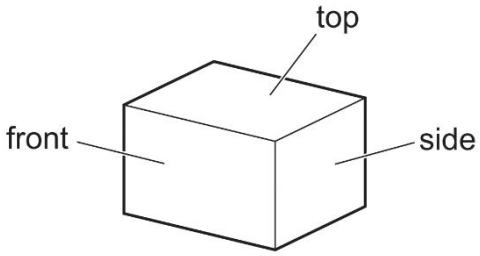


diagram 1

Diagram 2 shows the same block from the front and from the side.

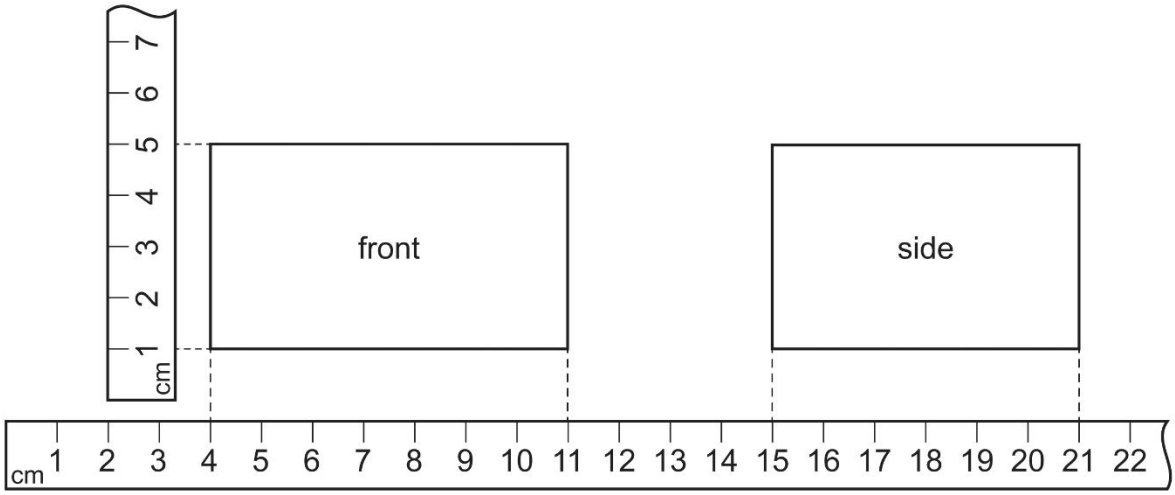


diagram 2

Metre rules have been shown close to the edges of the block.

What is the volume of the block?

A 120 cm^3 **B** 168 cm^3 **C** 264 cm^3 **D** 1155 cm^3

29. A length of copper wire is labelled: length 0.50 m and diameter 0.50 mm.

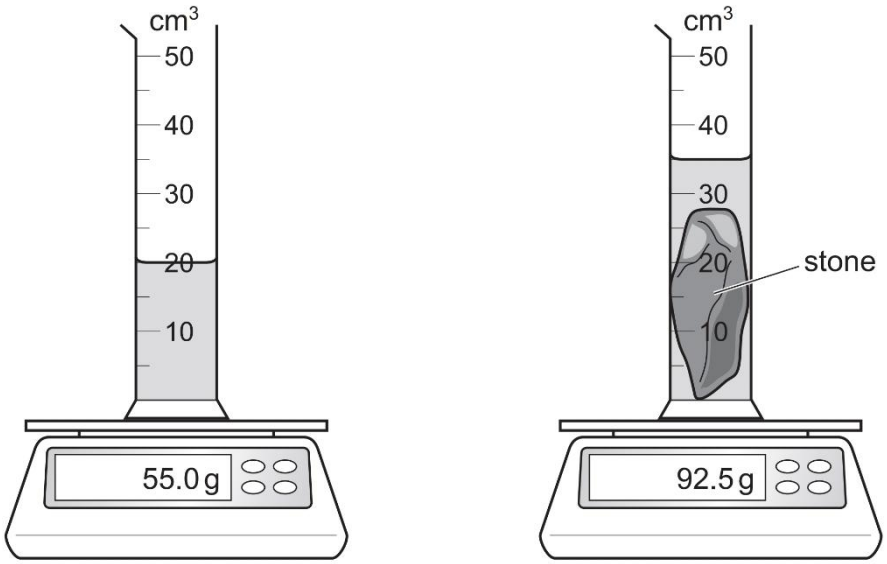
Which instruments are most suitable to measure accurately the length and the diameter of the wire?

	length	diameter
A	metre rule	metre rule
B	metre rule	micrometre
C	calipers	metre rule
D	calipers	micrometre

30. A measuring cylinder containing water is placed on a balance.

A stone is placed into the water.

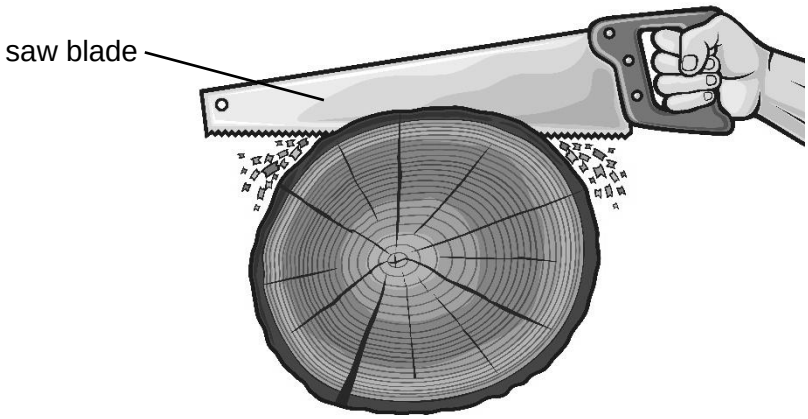
The diagram shows the readings on the balance and on the measuring cylinder.



What is the density of the stone?

A 1.1 g/cm^3 **B** 1.5 g/cm^3 **C** 2.5 g/cm^3 **D** 2.6 g/cm^3

31. A carpenter uses a saw to cut through wood.



What are the desired properties of the saw blade, and what is the best material to make the saw blade from?

	desired properties of saw blade	best material to make saw blade from
A	hard and brittle	metal
B	hard and brittle	plastic
C	hard and strong	metal
D	hard and strong	plastic

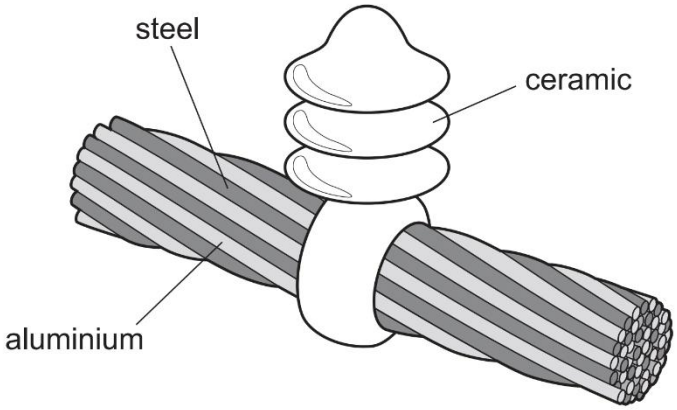
32. A measuring cylinder contains 50 small, dry metal spheres.

When 25 cm^3 of water is poured into the cylinder, the meniscus is at the 60 cm^3 mark.

What is the volume of one sphere?

A $\frac{50 - 25}{60}$ **B** $\frac{50 + 25}{60}$ **C** $\frac{60 - 25}{50}$ **D** $\frac{60 + 25}{50}$

33. The diagram shows a section of an overhead power cable.



Which statement explains why a particular substance is used?

A Aluminium has a low density and is a good conductor of electricity.

B Ceramic is a good conductor of electricity.

C Steel can rust in damp air.

D Steel is more damp than aluminium.

- Scan the QR code below to view the answers to this assignment.

https://www.nygh.sg/lower_secondary_science/sec_one_science/sec_one_physics/physical_properties_ans.pdf