



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

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**PHYSICS**

Paper 1 Multiple Choice

**0625/01**

**May/June 2008**

**45 minutes**

Additional Materials: Multiple Choice Answer Sheet  
Soft clean eraser  
Soft pencil (type B or HB recommended)



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**READ THESE INSTRUCTIONS FIRST**

Write in soft pencil.

Do not use staples, paper clips, highlighters, glue or correction fluid.

Write your name, Centre number and candidate number on the Answer Sheet in the spaces provided unless this has been done for you.

There are **forty** questions on this paper. Answer **all** questions. For each question there are four possible answers **A, B, C** and **D**.

Choose the **one** you consider correct and record your choice in **soft pencil** on the separate Answer Sheet.

**Read the instructions on the Answer Sheet very carefully.**

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.  
Any rough working should be done in this booklet.

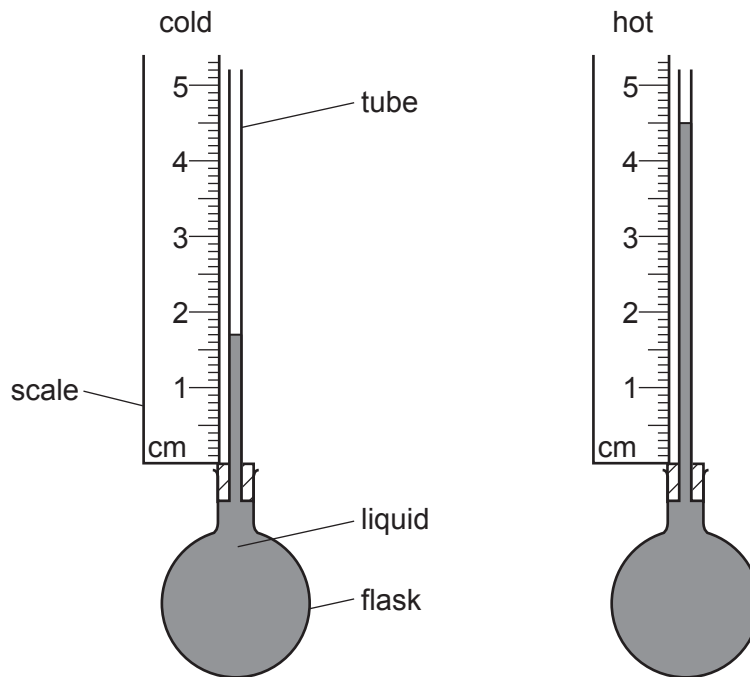
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This document consists of **18** printed pages and **2** blank pages.



- 1 Some liquid is heated in a flask.

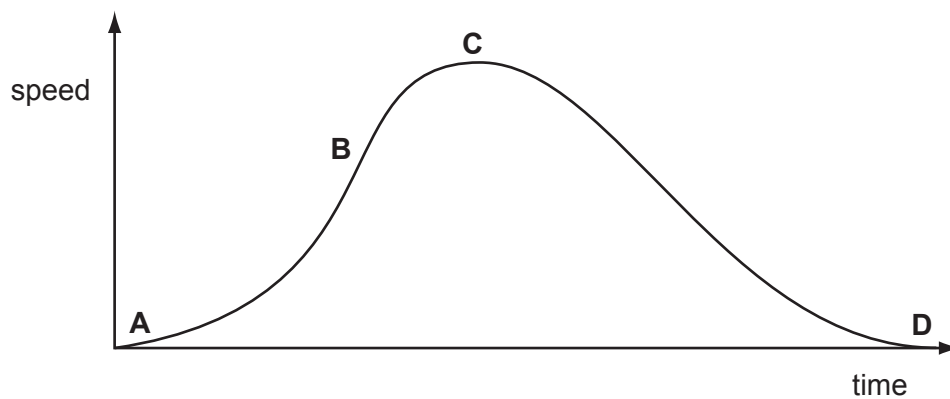
The diagrams show the height of the liquid in the tube when the liquid is cold and when it is hot.



What is the difference in the heights?

- A** 1.7 cm      **B** 2.8 cm      **C** 3.2 cm      **D** 4.5 cm
- 2 The speed-time graph shown is for a bus travelling between stops.

Where on the graph is the acceleration of the bus the greatest?



- 3 The circuit of a motor racing track is 3 km in length. In a race, a car goes 25 times round the circuit in 30 minutes.

What is the average speed of the car?

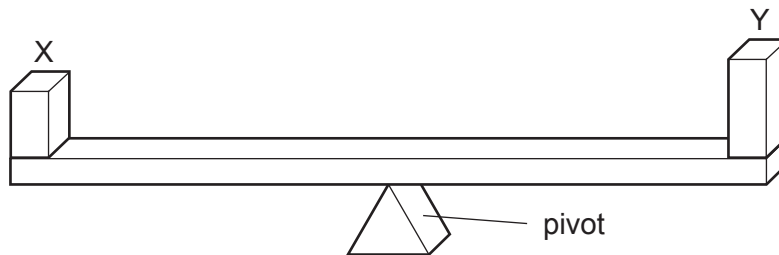
- A 75 km/hour
- B 90 km/hour
- C 150 km/hour
- D 750 km/hour

- 4 The force of gravity acting on an astronaut in an orbiting spacecraft is less than when she is on the Earth's surface.

Compared with being on the Earth's surface, how do her mass and weight change when she goes into orbit?

|          | mass in orbit | weight in orbit |
|----------|---------------|-----------------|
| <b>A</b> | decreases     | decreases       |
| <b>B</b> | decreases     | unchanged       |
| <b>C</b> | unchanged     | decreases       |
| <b>D</b> | unchanged     | unchanged       |

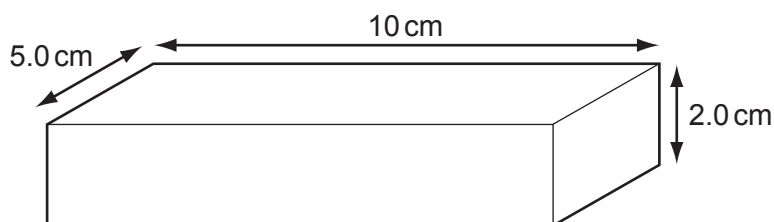
- 5 When two blocks X and Y are placed on a uniform beam, the beam balances on a pivot at its centre as shown.



What does this show about X and Y?

- A They have the same mass and the same density.
- B They have the same mass and the same weight.
- C They have the same volume and the same density.
- D They have the same volume and the same weight.

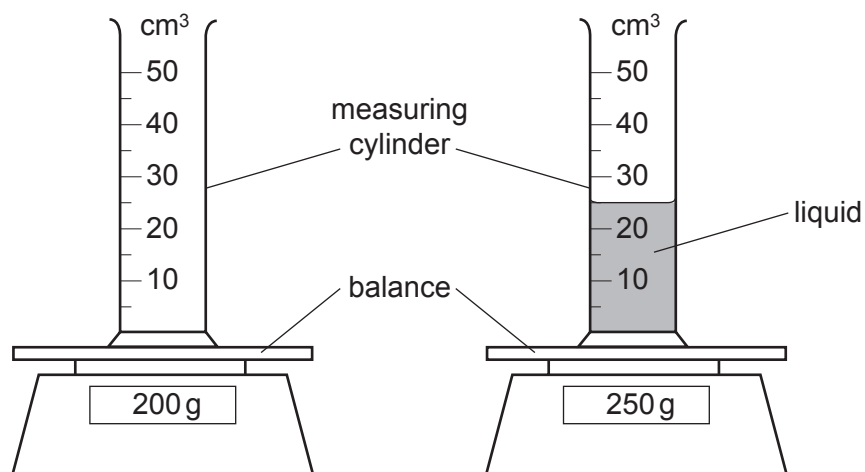
- 6 The diagram shows a rectangular metal block measuring  $10\text{ cm} \times 5.0\text{ cm} \times 2.0\text{ cm}$ .



Its mass is 250 g.

What is the density of the metal?

- A**  $0.20\text{ g/cm}^3$     **B**  $0.40\text{ g/cm}^3$     **C**  $2.5\text{ g/cm}^3$     **D**  $5.0\text{ g/cm}^3$
- 7 The diagram shows an experiment to find the density of a liquid.



What is the density of the liquid?

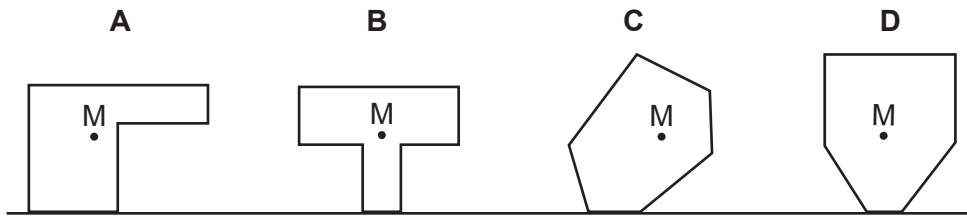
- A**  $0.5\text{ g/cm}^3$     **B**  $2.0\text{ g/cm}^3$     **C**  $8.0\text{ g/cm}^3$     **D**  $10.0\text{ g/cm}^3$
- 8 What are the conditions for equilibrium?

|          | resultant force acting | resultant turning effect acting |
|----------|------------------------|---------------------------------|
| <b>A</b> | yes                    | yes                             |
| <b>B</b> | yes                    | no                              |
| <b>C</b> | no                     | yes                             |
| <b>D</b> | no                     | no                              |

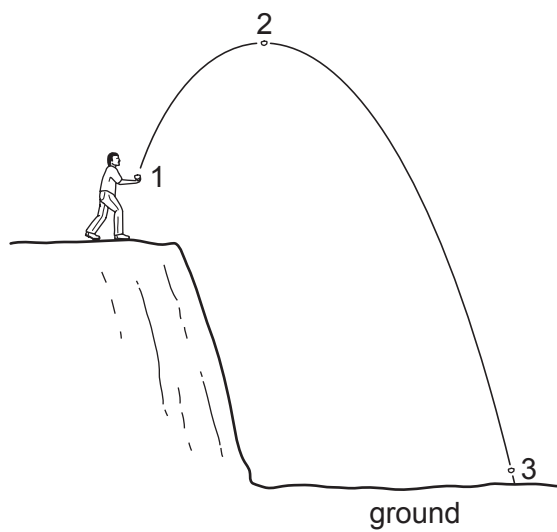
- 9 The diagram shows four objects standing on a flat surface.

The centre of mass of each object is marked M.

Which object will fall over?



- 10 A stone is thrown from the edge of a cliff. Its path is shown in the diagram.



In which position does the stone have its greatest kinetic energy and in which position does it have its least gravitational energy?

|          | greatest kinetic energy | least gravitational energy |
|----------|-------------------------|----------------------------|
| <b>A</b> | 1                       | 2                          |
| <b>B</b> | 2                       | 3                          |
| <b>C</b> | 3                       | 1                          |
| <b>D</b> | 3                       | 3                          |

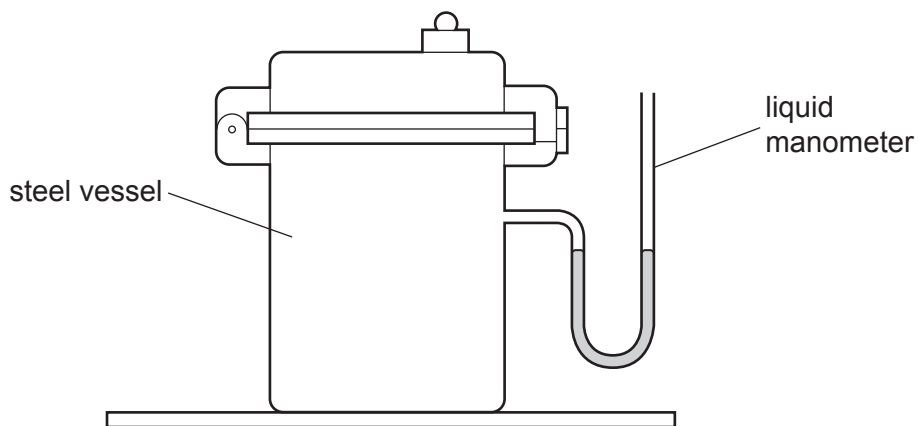
- 11** A worker is lifting boxes of identical weight from the ground onto a moving belt.

At first, it takes him 2 s to lift each box. Later in the day, it takes him 3 s.

Which statement is correct?

- A** Later in the day, less work is done in lifting each box.
- B** Later in the day, more work is done in lifting each box.
- C** Later in the day, less power is developed in lifting each box.
- D** Later in the day, more power is developed in lifting each box.

- 12** A manometer is used to indicate the pressure in a steel vessel, as shown in the diagram.

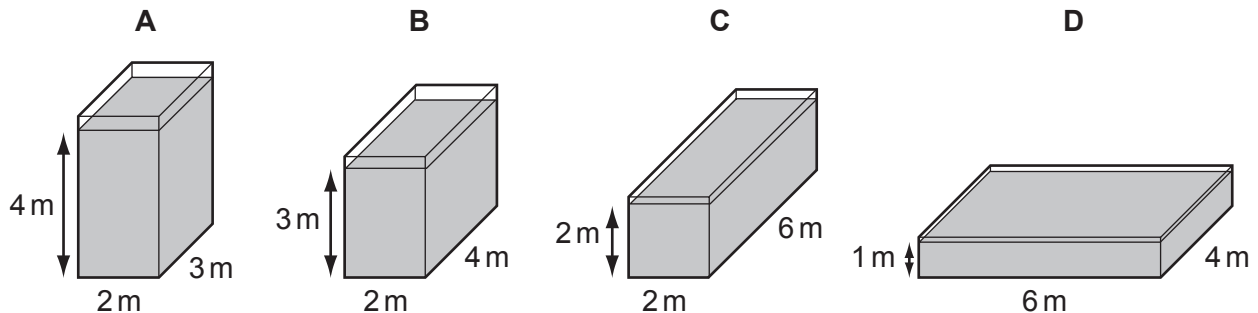


What value does the liquid manometer give for the pressure in the vessel?

- A** It is zero.
- B** It is between zero and atmospheric pressure.
- C** It is equal to atmospheric pressure.
- D** It is greater than atmospheric pressure.

- 13** Four glass tanks contain water.

In which tank is the pressure of the water on the base greatest?



- 14 Which line in the table describes the properties of solids and of liquids at a fixed temperature?

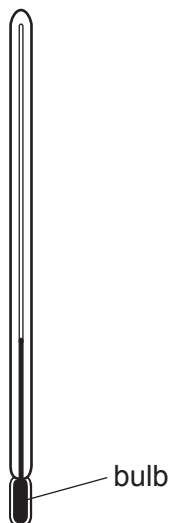
|          | solids                                | liquids                                  |
|----------|---------------------------------------|------------------------------------------|
| <b>A</b> | definite volume and definite shape    | no definite volume but definite shape    |
| <b>B</b> | no definite volume but definite shape | definite volume and definite shape       |
| <b>C</b> | definite volume and definite shape    | definite volume but no definite shape    |
| <b>D</b> | no definite volume but definite shape | no definite volume and no definite shape |

- 15 Air is pumped slowly into a car tyre to increase the pressure. The temperature of the air does not change.

Which line in the table is correct?

|          | number of molecules hitting $1\text{ cm}^2$ of the tyre each second | average speed at which molecules hit the tyre |
|----------|---------------------------------------------------------------------|-----------------------------------------------|
| <b>A</b> | increases                                                           | increases                                     |
| <b>B</b> | increases                                                           | unchanged                                     |
| <b>C</b> | unchanged                                                           | increases                                     |
| <b>D</b> | unchanged                                                           | unchanged                                     |

- 16 The thermometer in the diagram has no scale.



Where must the bulb be placed so that  $0^\circ\text{C}$  can be marked on the stem?

- A** in boiling water
- B** in cold water
- C** in a freezer
- D** in melting ice

**17** A sample of a solid is heated for 12 minutes and its temperature noted every minute.

The results are shown in the table.

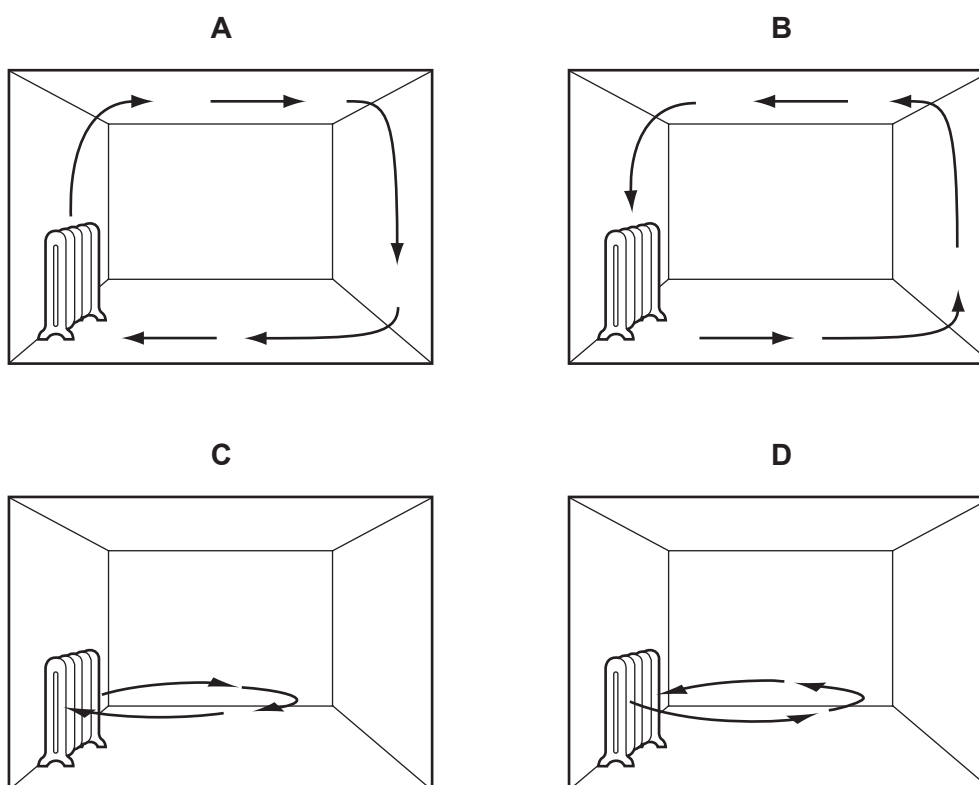
| time / min       | 0    | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   |
|------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| temperature / °C | 11.5 | 16.1 | 22.1 | 31.0 | 31.1 | 31.1 | 31.1 | 31.3 | 45.0 | 65.2 | 66.2 | 66.3 | 66.3 |

How should the sample be described at the end of the 12 minutes?

- A** all solid
- B** in the process of melting
- C** all liquid
- D** in the process of boiling

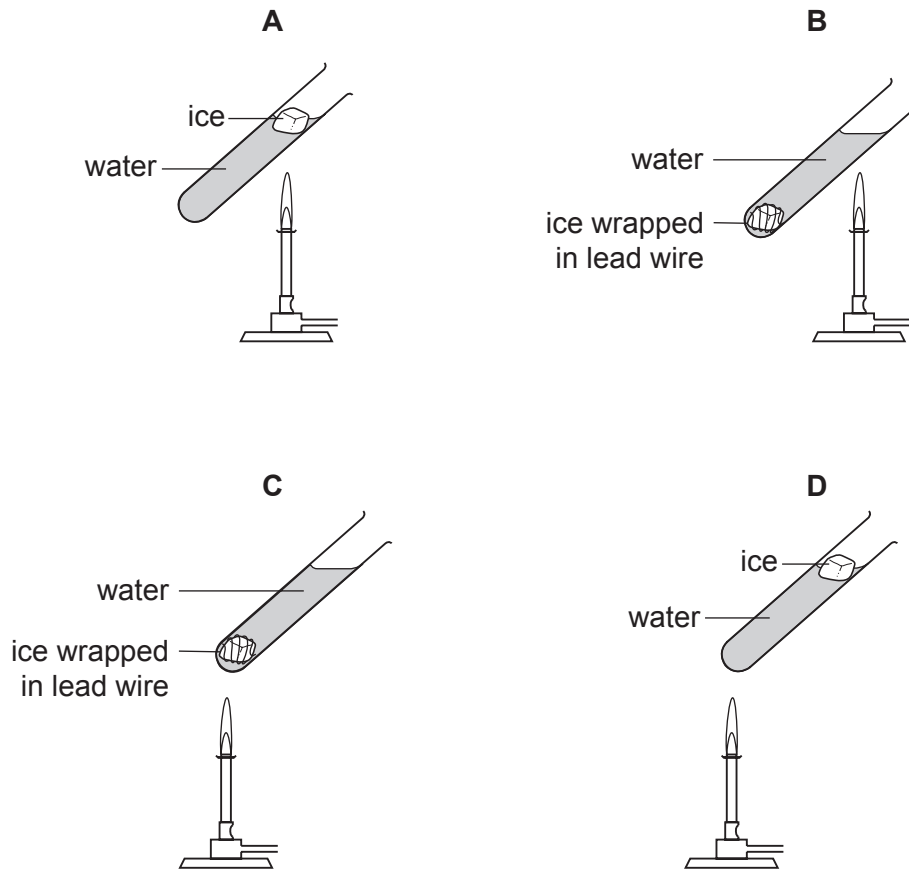
**18** A heater is placed in a room.

Which diagram shows the movement of air as the room is heated?

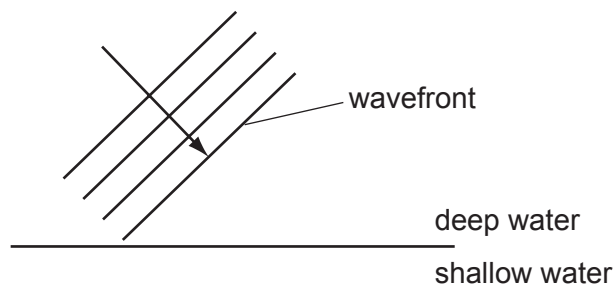


19 The diagrams show four identical pieces of ice that are heated in test-tubes of water.

In which test-tube will the ice take the longest time to melt?



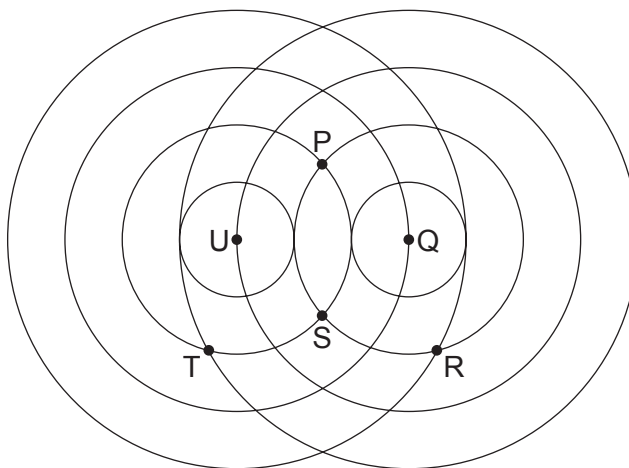
20 The diagram represents water waves about to move into shallow water from deep water.



Which property of the waves remains the same after the waves move into shallow water?

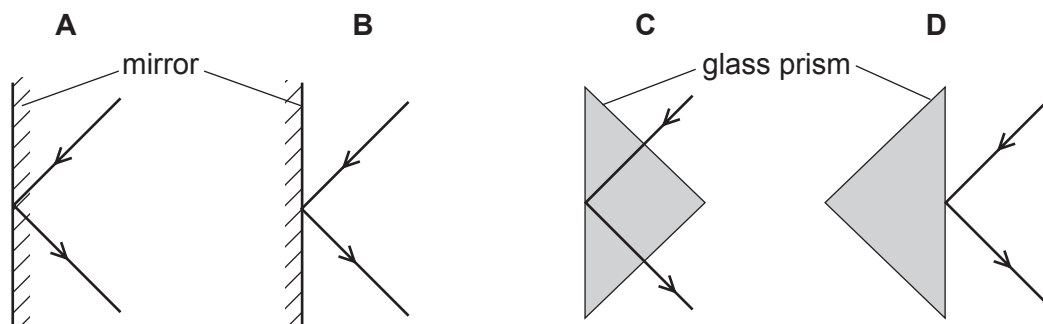
- A frequency
- B speed
- C wavefront direction
- D wavelength

- 21 Two sets of water waves overlap as shown in the diagram.

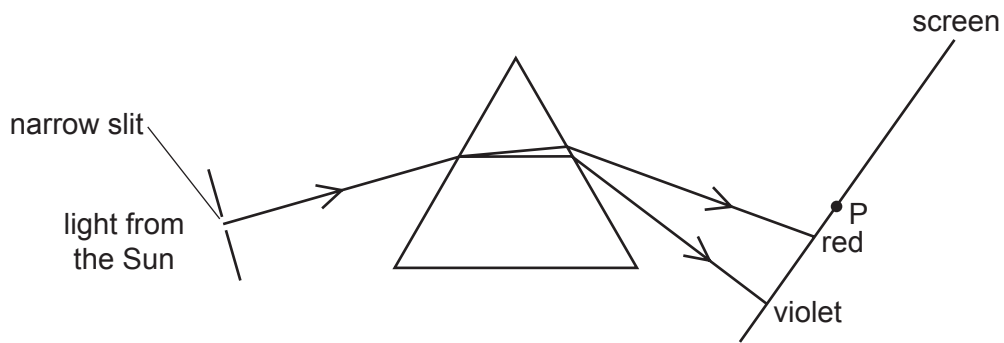


From which two points are the sets of waves coming?

- A P and S      B T and R      C Q and T      D U and Q
- 22 Which diagram shows total internal reflection of light?



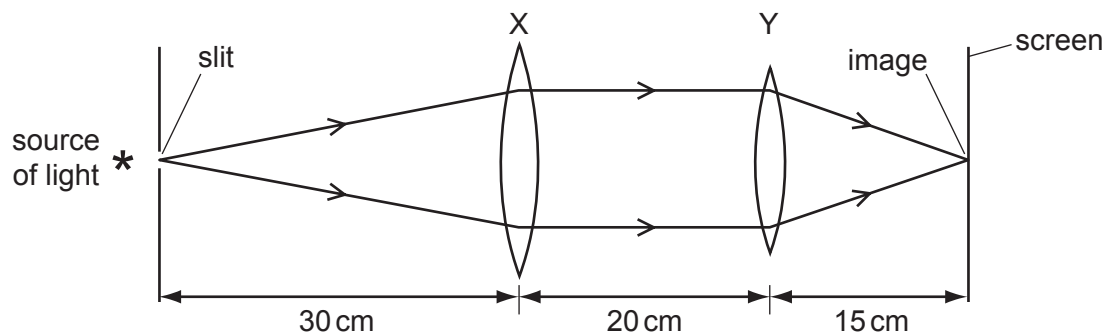
- 23 Light from the Sun passes through a narrow slit and a spectrum is produced on a screen.



A thermometer placed at P shows a large temperature rise.

Which type of radiation causes this?

- A infra-red
  - B microwave
  - C ultra-violet
  - D visible light
- 24 Two thin converging lenses X and Y are used as shown to give a focused image of an illuminated slit. The rays shown are parallel between X and Y.



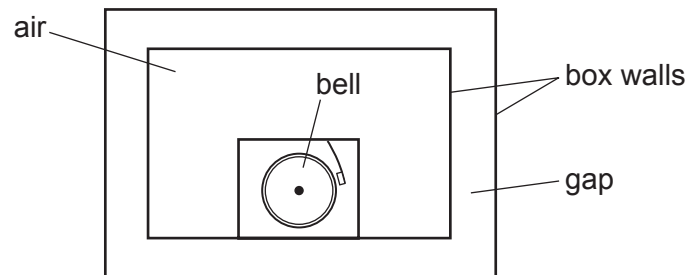
What are the correct values for the focal lengths of X and of Y?

|   | focal length<br>of X / cm | focal length<br>of Y / cm |
|---|---------------------------|---------------------------|
| A | 50                        | 35                        |
| B | 30                        | 20                        |
| C | 30                        | 15                        |
| D | 20                        | 20                        |

25 Which equation can be used to calculate the speed of sound?

- A  $\text{speed} = \frac{\text{distance}}{\text{time}}$
- B  $\text{speed} = \text{distance} \times \text{time}$
- C  $\text{speed} = \frac{\text{time}}{\text{distance}}$
- D  $\text{speed} = \text{time} + \text{distance}$

26 A battery-operated bell is surrounded by a box with double walls.



The bell is ringing but no sound at all is heard outside the box.

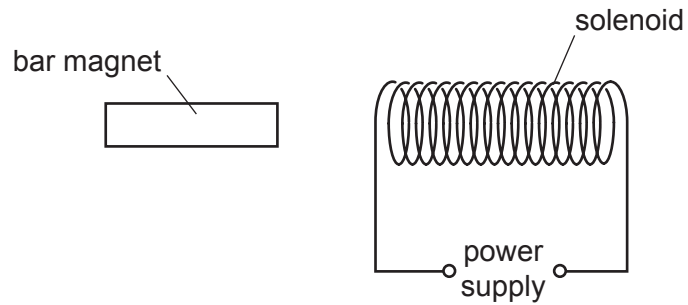
What is in the gap?

- A a solid
- B a liquid
- C a gas
- D a vacuum

27 Which line in the table shows whether iron and steel are ferrous or non-ferrous materials?

|          | iron        | steel       |
|----------|-------------|-------------|
| <b>A</b> | ferrous     | ferrous     |
| <b>B</b> | ferrous     | non-ferrous |
| <b>C</b> | non-ferrous | ferrous     |
| <b>D</b> | non-ferrous | non-ferrous |

28 A solenoid carrying a current is used to demagnetise a bar magnet.



Which conditions achieve demagnetisation?

|          | current through solenoid | movement of bar magnet      |
|----------|--------------------------|-----------------------------|
| <b>A</b> | a.c.                     | around the solenoid quickly |
| <b>B</b> | a.c.                     | through the solenoid slowly |
| <b>C</b> | d.c.                     | around the solenoid quickly |
| <b>D</b> | d.c.                     | through the solenoid slowly |

29 A polythene rod repels an inflated balloon hanging from a nylon thread.

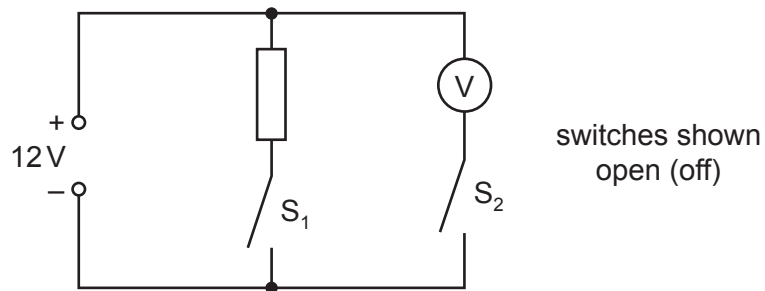
What charges must the rod and the balloon carry?

- A** The rod and the balloon carry opposite charges.
- B** The rod and the balloon carry like charges.
- C** The rod is charged but the balloon is not.
- D** The balloon is charged but the rod is not.

30 Which circuit symbol represents a component used to store energy?



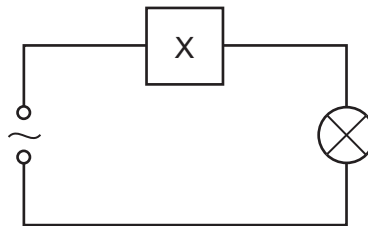
- 31 In the circuit shown, the switches  $S_1$  and  $S_2$  may be open (off) or closed (on).



Which line in the table shows the voltmeter reading for the switch positions given?

|          | $S_1$  | $S_2$  | voltmeter reading / V |
|----------|--------|--------|-----------------------|
| <b>A</b> | open   | open   | 12                    |
| <b>B</b> | closed | closed | 12                    |
| <b>C</b> | open   | closed | 0                     |
| <b>D</b> | closed | open   | 12                    |

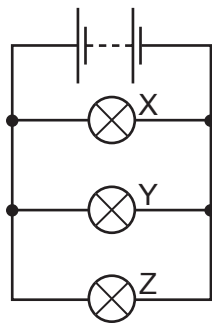
- 32 The device X in this circuit is designed to cut off the electricity supply automatically if too much current flows.



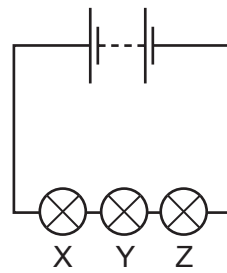
What is device X?

- A** a fuse
- B** a switch
- C** a resistor
- D** an ammeter

33 The diagrams show two ways in which three lamps may be connected.



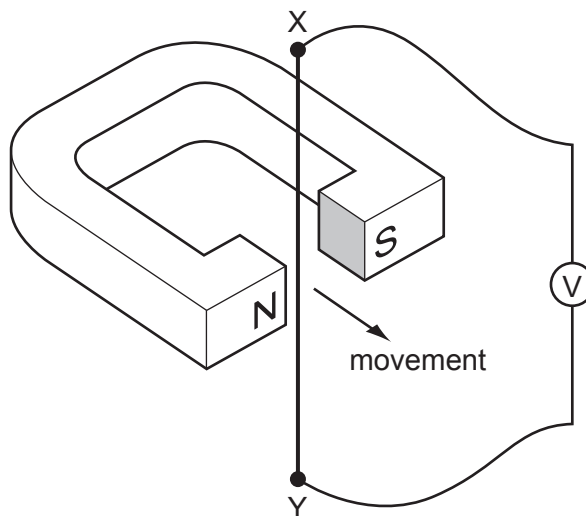
circuit 1



circuit 2

Which statement is correct?

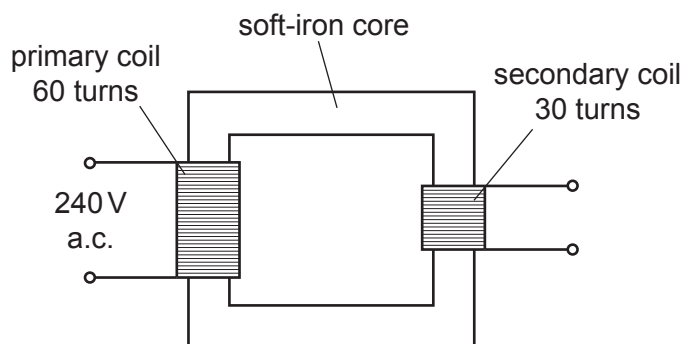
- A** If lamp Y breaks in circuit 1, both the other lamps will go out.
  - B** If lamp Y breaks in circuit 2, both the other lamps will go out.
  - C** If lamp Y breaks in circuit 1, lamp Z will go out, but lamp X will remain on.
  - D** If lamp Y breaks in circuit 2, lamp Z will go out, but lamp X will remain on.
- 34 The wire XY shown in the diagram is connected to a sensitive voltmeter with a centre zero. XY is then moved quickly once through the magnetic field.



What is observed on the voltmeter?

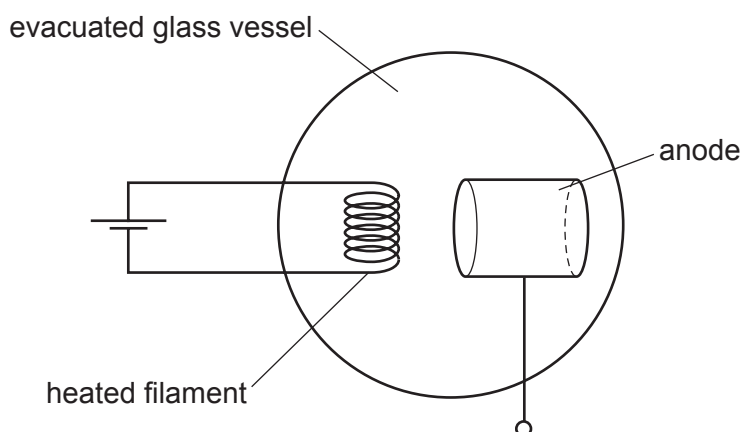
- A** The needle moves briefly in one direction and then returns to the centre.
- B** The needle moves quickly in one direction and stays deflected.
- C** The needle vibrates rapidly from side to side whilst XY is moving.
- D** The needle stays still.

- 35 The diagram shows a transformer connected to a 240 V a.c. supply.



What is the potential difference across the secondary coil of the transformer?

- A** 30 V                      **B** 120 V                      **C** 240 V                      **D** 480 V
- 36 In order to produce a beam of cathode rays, a heated filament is placed near to an anode in an evacuated glass vessel.

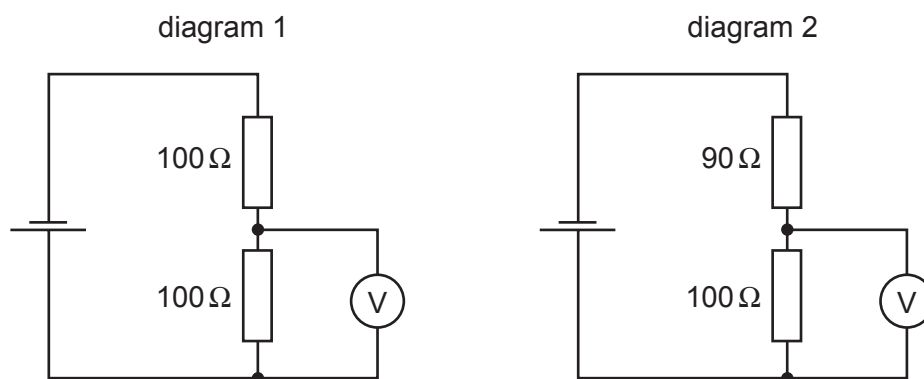


What is the type of charge on the anode and why is this charge chosen?

|          | charge   | reason               |
|----------|----------|----------------------|
| <b>A</b> | negative | to attract electrons |
| <b>B</b> | negative | to repel electrons   |
| <b>C</b> | positive | to attract electrons |
| <b>D</b> | positive | to repel electrons   |

37 Diagram 1 shows a potential divider circuit containing two  $100\ \Omega$  resistors.

One of the resistors is changed to  $90\ \Omega$ , as shown in diagram 2.



How does the reading on the voltmeter change when this is done?

- A It becomes zero.
- B It decreases a little.
- C It increases a little.
- D It stays the same.

38 What is a  $\beta$ -particle and from which part of a radioactive atom is it emitted?

|   | $\beta$ -particle | emitted from |
|---|-------------------|--------------|
| A | electron          | nucleus      |
| B | electron          | outer orbits |
| C | helium nucleus    | nucleus      |
| D | helium nucleus    | outer orbits |

39 A sample of radioactive uranium has mass 1 g. Another sample of the same material has mass 2 g.

Which property is the same for both samples?

- A the amount of radiation emitted per second
- B the half-life
- C the number of uranium atoms
- D the volume

**40** A particular nuclide has the symbol  $^{37}_{17}\text{Cl}$ .

What is true for atoms of this nuclide?

- A** There are 17 nucleons in the nucleus.
- B** There are 17 protons in the nucleus.
- C** There are 37 electrons in the nucleus.
- D** There are 37 neutrons in the nucleus.

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