



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

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**PHYSICS**

**0625/01**

Paper 1 Multiple Choice

**May/June 2007**

**45 minutes**

Additional Materials:      Multiple Choice Answer Sheet

Soft clean eraser

Soft pencil (type B or HB is 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.

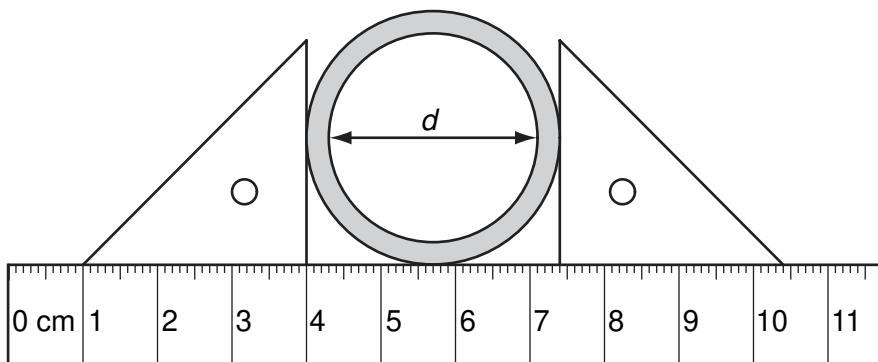
Any rough working should be done in this booklet.

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



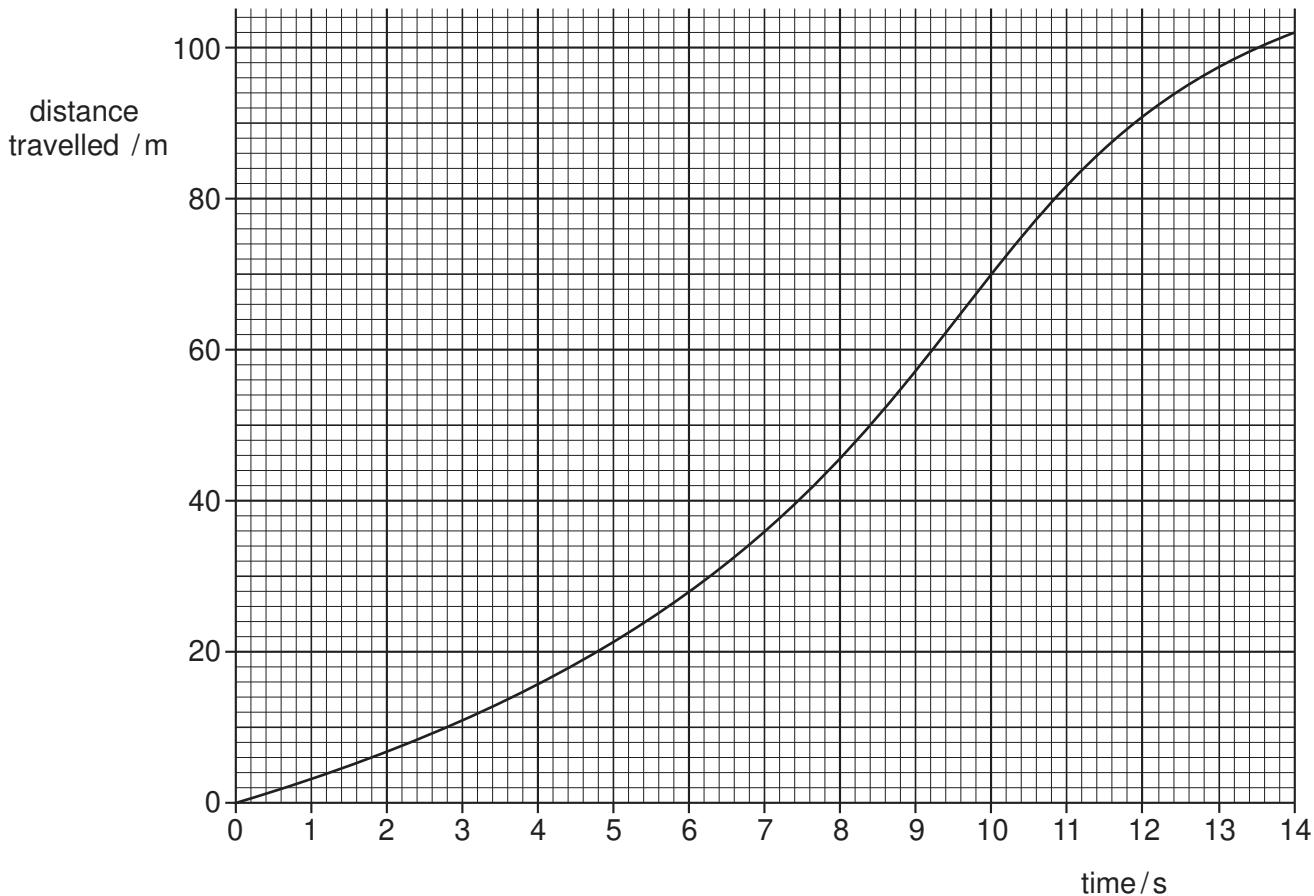
- 1 The diagram shows a thick-walled tube. The thickness of the wall is 3 mm.



What is the internal diameter  $d$  of the tube?

- A 2.8 cm      B 3.1 cm      C 3.4 cm      D 7.4 cm

- 2 The graph shows the progress of an athlete in a 100 m race.



What time was taken to travel 10 m from the start?

- A 2.4 s      B 2.8 s      C 65 s      D 70 s

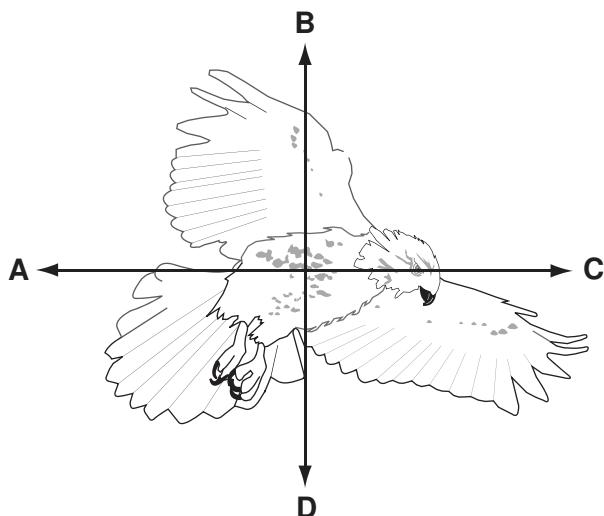
- 3 Two stones of different weight fall at the same time from a table. Air resistance may be ignored.

What will happen and why?

	what will happen	why
A	both stones hit the floor at the same time	the acceleration of free fall is constant
B	both stones hit the floor at the same time	they fall at constant speed
C	the heavier stone hits the floor first	acceleration increases with weight
D	the heavier stone hits the floor first	speed increases with weight

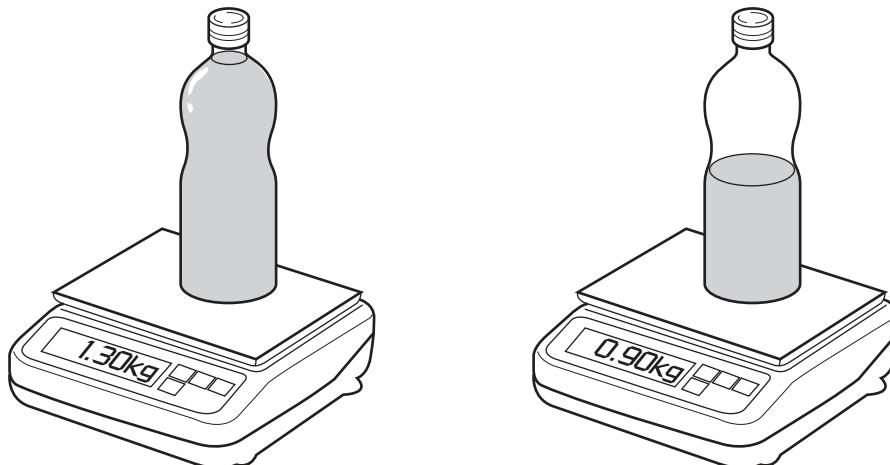
- 4 The diagram shows a bird in flight.

In which direction does the weight of the bird act?



- 5 The mass of a full bottle of cooking oil is 1.30 kg.

When exactly half of the oil has been used, the mass of the bottle plus the remaining oil is 0.90 kg.



What is the mass of the empty bottle?

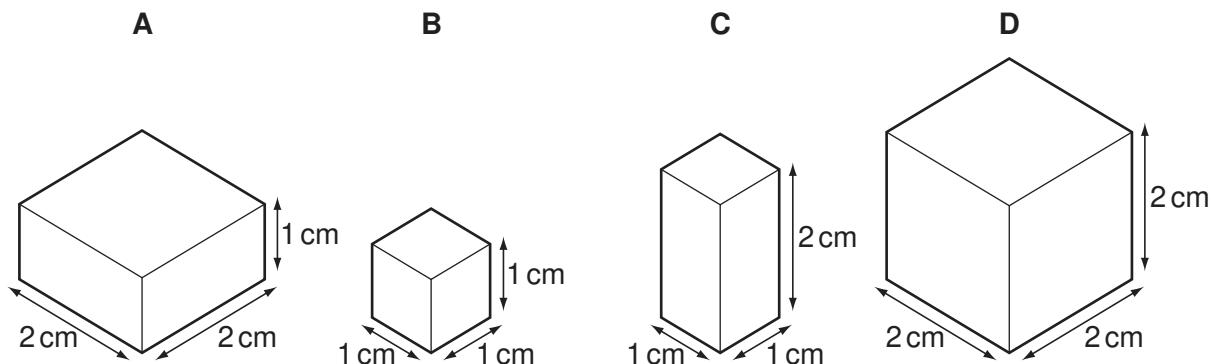
- A 0.40 kg      B 0.50 kg      C 0.65 kg      D 0.80 kg

- 6 Which of the following is a unit of density?

- A  $\text{cm}^3/\text{g}$       B  $\text{g}/\text{cm}^2$       C  $\text{g}/\text{cm}^3$       D  $\text{kg}/\text{m}^2$

- 7 Each of the solids shown in the diagram has the same mass.

Which solid has the greatest density?



- 8 A force acts on a moving rubber ball.

How many of the following changes could happen to the ball because of the force?

- a change in direction
- a change in shape
- a change in mass
- a change in speed

A 1

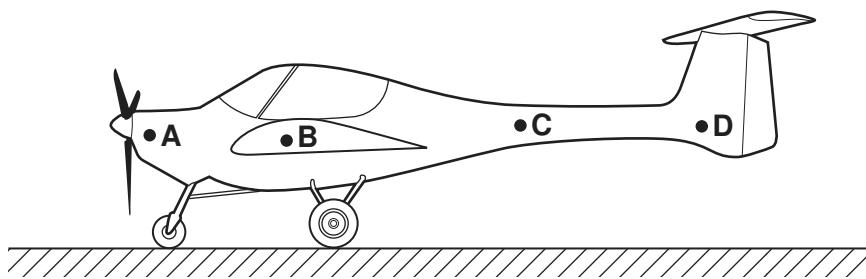
B 2

C 3

D 4

- 9 A light aircraft stands at rest on the ground. It stands on three wheels, one at the front and two further back.

Which point could be its centre of mass?



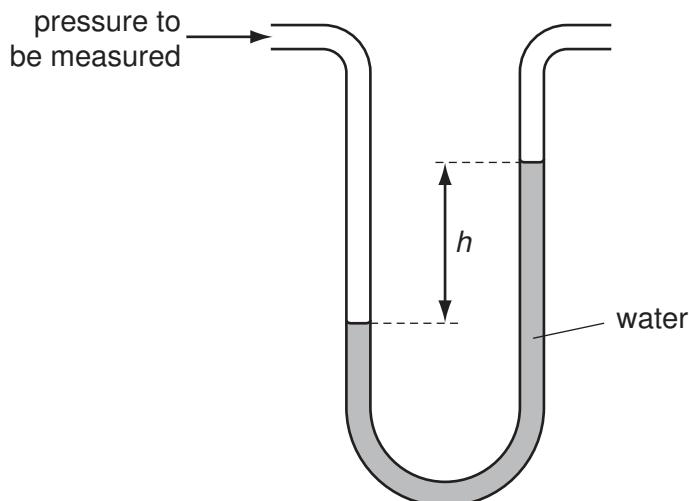
- 10 Which form of energy is used to generate electrical energy in a tidal power station?

- A chemical energy
- B gravitational energy
- C internal energy (thermal energy)
- D nuclear energy

- 11 Which line in the table gives an example of the stated form of energy?

	form of energy	example
A	gravitational	the energy due to the movement of a train
B	internal	the energy due to the flow of cathode rays in a cathode ray tube
C	kinetic	the energy due to the position of a swimmer standing on a high diving board
D	strain	the energy due to the compression of springs in a car seat

- 12 A pressure is measured using a manometer as shown in the diagram.



The water in the manometer is replaced with a liquid which is more dense.

How does the value of  $h$  change?

- A It becomes zero.
- B It decreases, but not to zero.
- C It stays the same.
- D It increases.

- 13 A cylinder is filled with a gas and then sealed, so that the gas has a fixed volume.

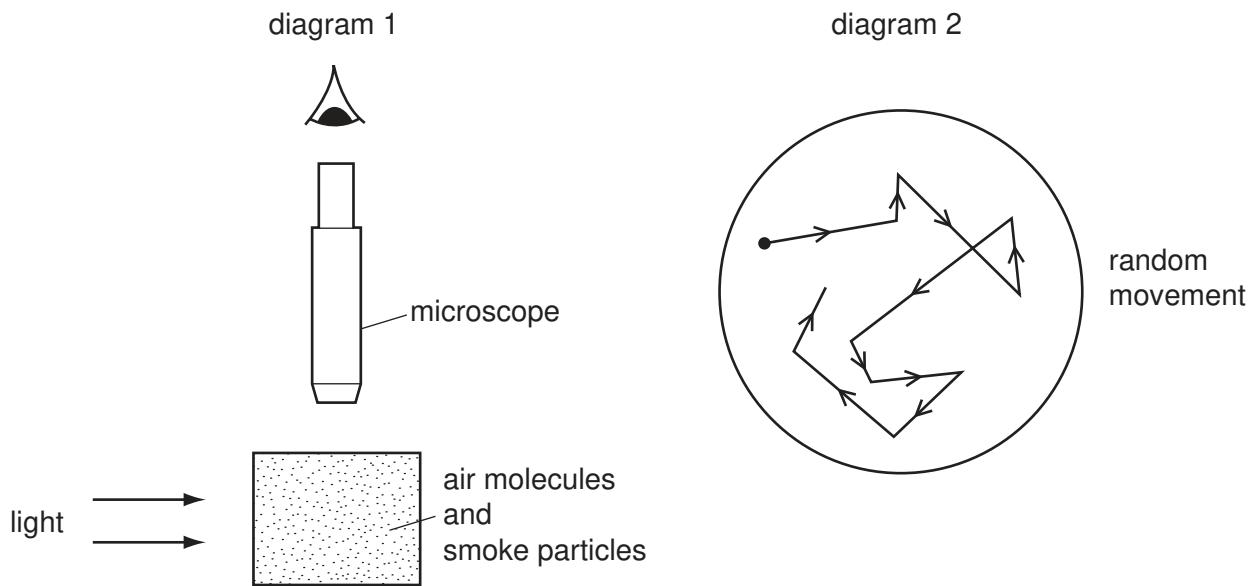
The gas molecules are given energy so that their average speed increases.

What happens to the pressure and to the temperature of the gas in the cylinder?

	pressure	temperature
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

- 14 Diagram 1 shows apparatus being used to observe smoke particles.

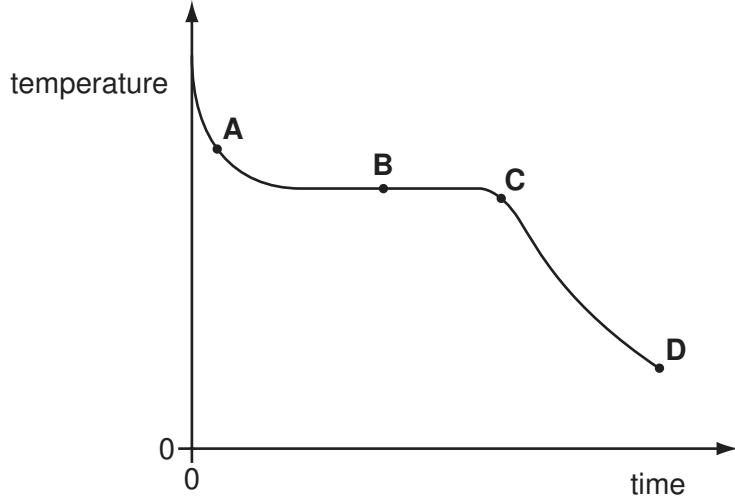
Diagram 2 shows how a smoke particle moves randomly.



Why do the smoke particles move randomly?

- A They are hit by air molecules.
  - B They are less dense than air.
  - C They are moved by convection currents.
  - D They gain energy from the light.
- 15 The graph shows how the temperature of hot liquid wax changes with time as the wax is allowed to cool.

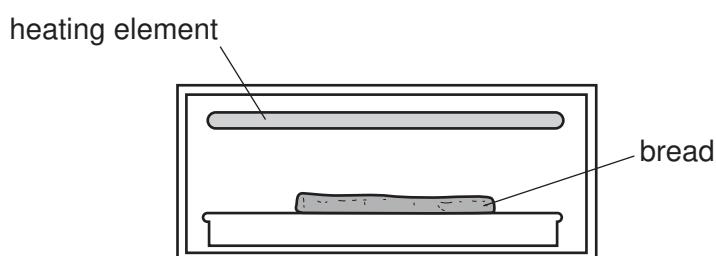
At which labelled point on the graph are both liquid wax and solid wax present?



- 16 1 kg of water and 1 kg of aluminium are heated to the same temperature and then allowed to cool in a room.

Why does the aluminium cool more quickly than the water?

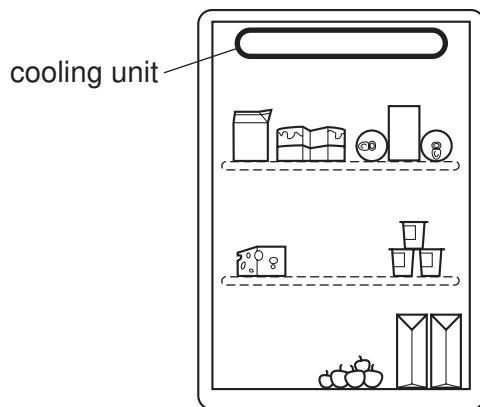
- A Aluminium contracts more than water.
  - B Aluminium does not evaporate but water does.
  - C Aluminium has a higher thermal capacity than water.
  - D Aluminium has a lower thermal capacity than water.
- 17 Bread can be cooked by placing it below, but not touching, a heating element.



Which process transfers thermal energy from the heating element to the bread?

- A conduction
- B convection
- C insulation
- D radiation

- 18 The diagram shows a refrigerator. The cooling unit is placed at the top. The cooling unit cools the air near it.



What happens to the density of this air as it cools and how does it move?

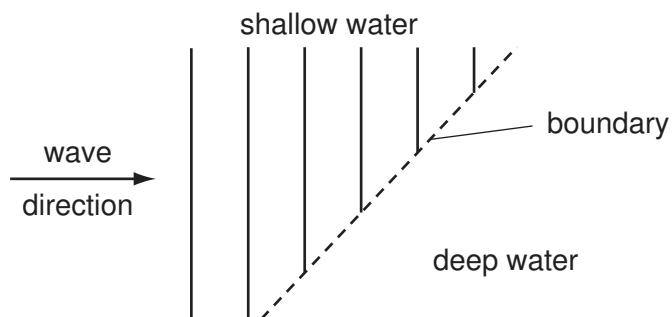
	density of the air	movement of the air
A	decreases	moves down
B	decreases	stays where it is
C	increases	moves down
D	increases	stays where it is

- 19 Water waves are reflected at a plane surface.

Which property of the waves is changed by the reflection?

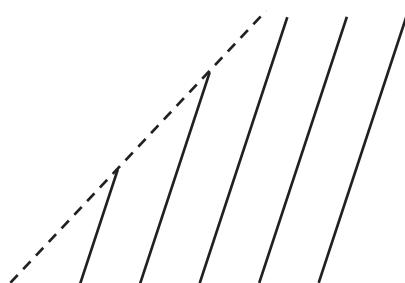
- A direction
- B frequency
- C speed
- D wavelength

- 20 Plane water waves travel from a shallow region into a deeper region. They travel more quickly in the deeper water.

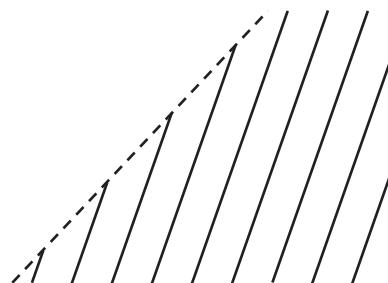


Which diagram shows the wave pattern in the deeper water?

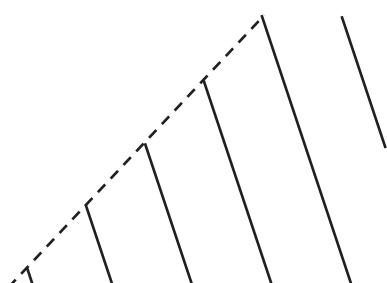
A



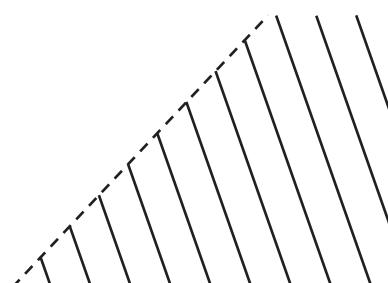
B



C

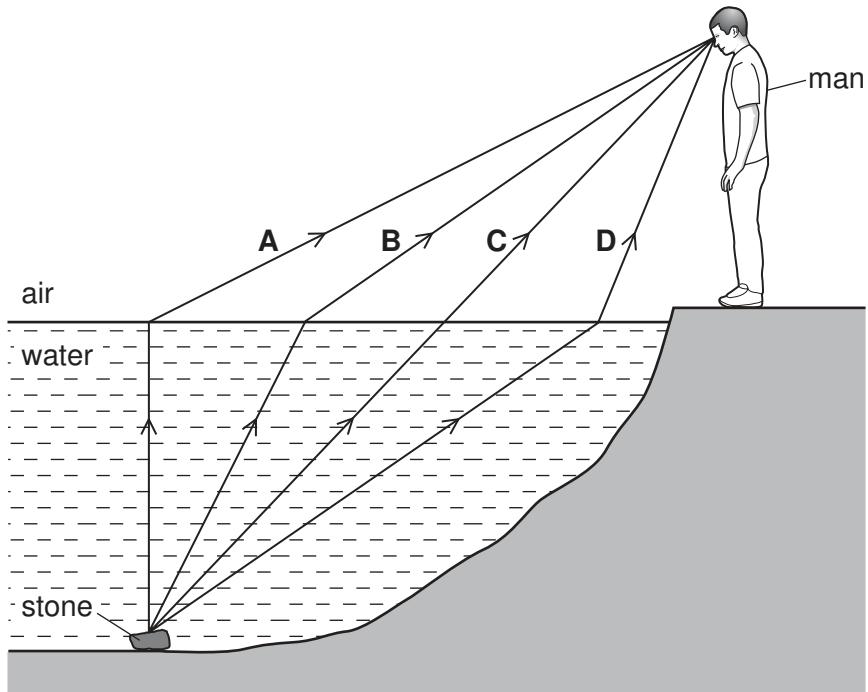


D

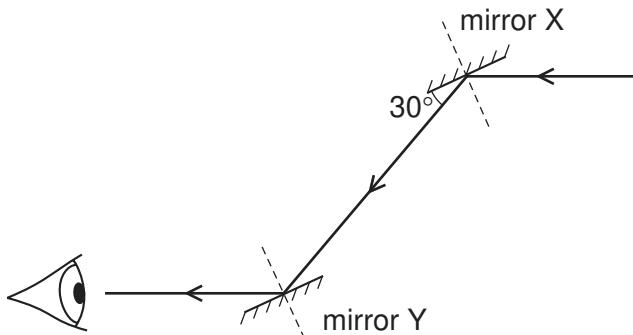


- 21 A man sees a stone at the bottom of a pool of water.

Which path could be taken by light from the stone to the man?



- 22 A ray of light is reflected by two parallel plane mirrors X and Y.



Which statement is correct?

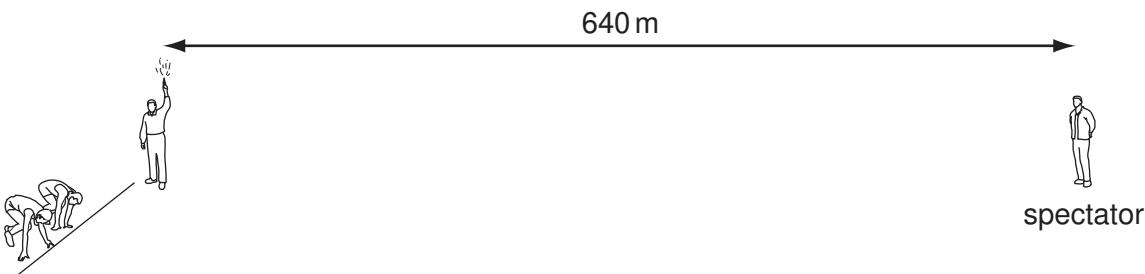
- A The angle of incidence at mirror X is  $30^\circ$ .
- B The angle of incidence at mirror Y is  $60^\circ$ .
- C The angle of reflection at mirror X is  $120^\circ$ .
- D The angle of reflection at mirror Y is  $0^\circ$ .

23 Music is produced by the loudspeaker of a radio.

Which property of the sound wave increases when the music is made louder?

- A amplitude
- B frequency
- C speed
- D wavelength

24 A starting pistol is fired 640 m away from a spectator.



The spectator hears the sound of the starting pistol two seconds after seeing the flash from the gun.

What is the speed of sound in air?

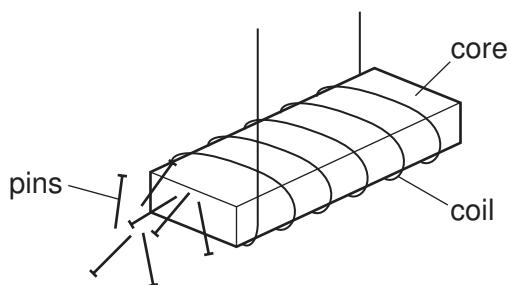
- A 160 m/s
- B 320 m/s
- C 640 m/s
- D 1280 m/s

25 Small particles of metal are scattered near a bar magnet to show the pattern of the magnetic field.

Which metal is suitable?

- A aluminium
- B brass
- C copper
- D iron

**26** A strong electromagnet is used to attract pins.

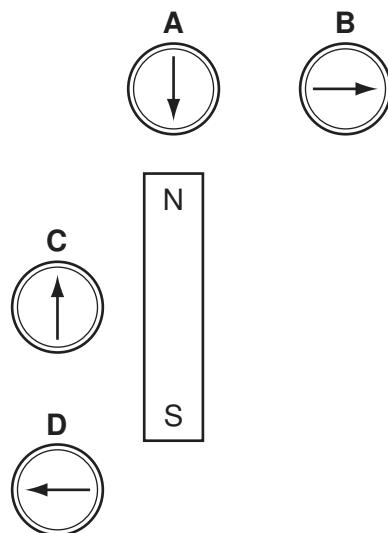


What happens when the current in the coil is halved?

- A** No pins are attracted.
- B** Fewer pins are attracted.
- C** The same number of pins is attracted.
- D** Many more pins are attracted.

**27** Four plotting compasses are placed near a bar magnet.

Which plotting compass is shown pointing in the correct direction?



**28** Four wires are made from the same material.

Which wire has the greatest resistance?

	length of wire / cm	diameter of wire / mm
<b>A</b>	50	0.1
<b>B</b>	50	0.2
<b>C</b>	100	0.1
<b>D</b>	100	0.2

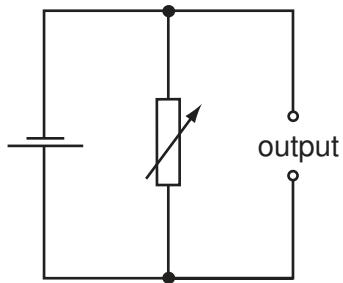
- 29 A plastic rod is rubbed with a dry cloth and becomes positively charged.

Why has the rod become positively charged?

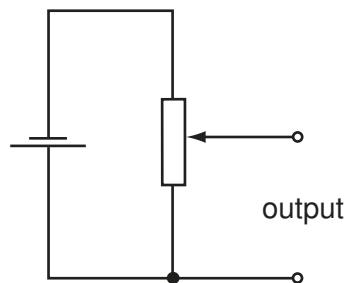
- A It has gained electrons.
- B It has gained neutrons.
- C It has lost electrons.
- D It has lost neutrons.

- 30 Which circuit is a variable potential divider (potentiometer)?

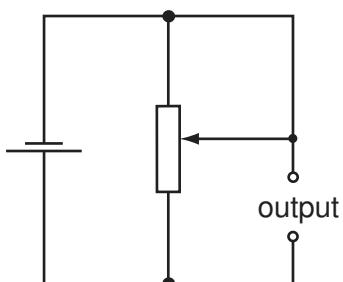
A



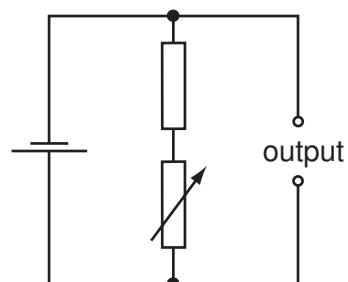
B



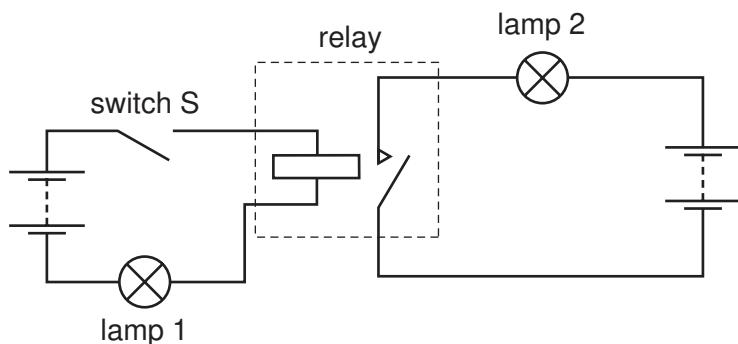
C



D



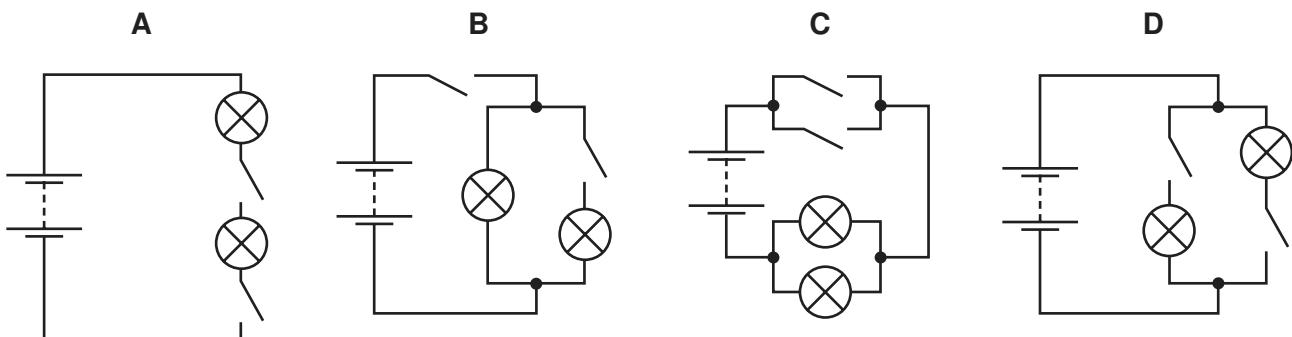
- 31 The circuit contains a relay.



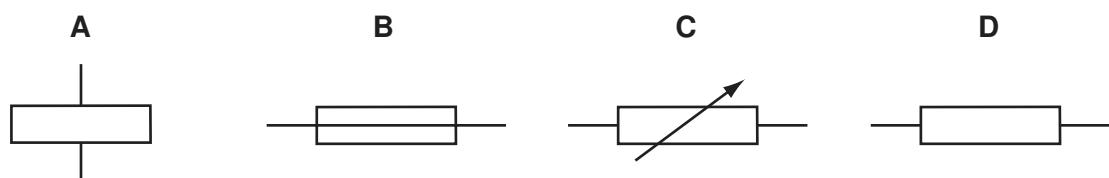
When switch S is closed, what is the state of the lamps?

	lamp 1	lamp 2
A	on	on
B	on	off
C	off	on
D	off	off

- 32 Which diagram shows a circuit that will allow the lamps to be switched on and off independently?



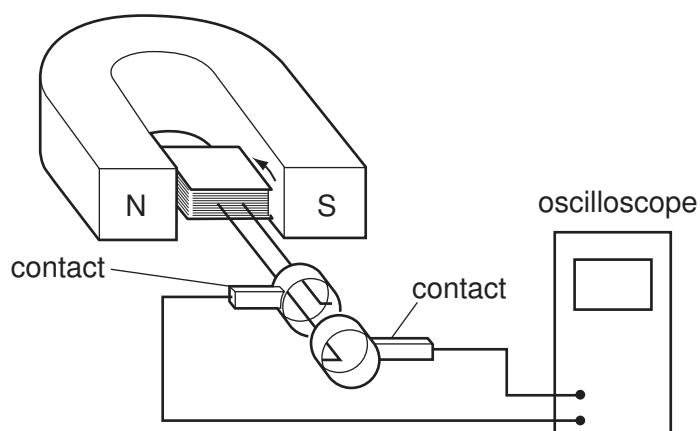
- 33 What is the symbol for a fuse?



- 34 A cable in a house is carrying too much current.

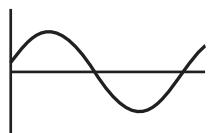
What is the greatest danger?

- A appliances not working
  - B electric shock
  - C fire
  - D low power
- 35 A coil is rotated steadily between the poles of a magnet. The coil is connected to an oscilloscope, which shows a graph of voltage output against time.

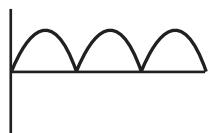


Which graph shows the voltage output against time?

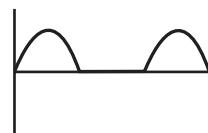
A



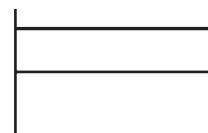
B



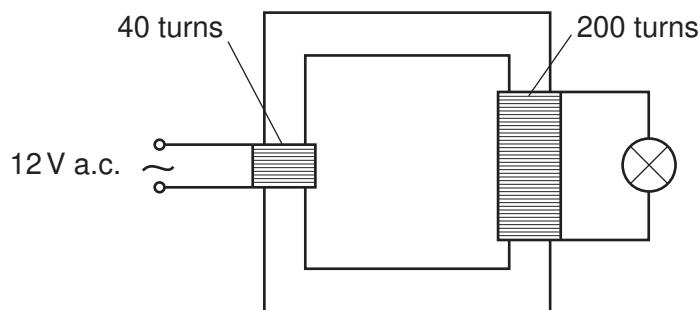
C



D



- 36 The diagram shows a lamp connected to a transformer.



What is the potential difference across the lamp?

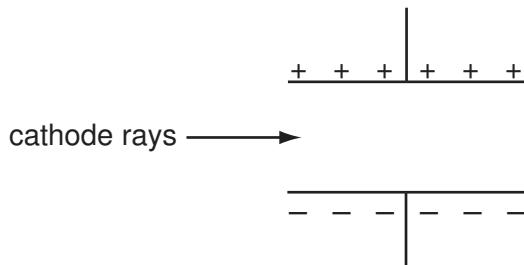
A 2.4V

B 12V

C 60V

D 240V

- 37 A beam of cathode rays passes through an electric field between two parallel plates.



In which direction is the beam deflected?

- A into the page
  - B out of the page
  - C towards the bottom of the page
  - D towards the top of the page
- 38 What are the most penetrating and the least penetrating types of radiation?

	most penetrating	least penetrating
A	$\alpha$ -particles	$\beta$ -particles
B	$\beta$ -particles	$\alpha$ -particles
C	$\gamma$ -rays	$\alpha$ -particles
D	$\gamma$ -rays	$\beta$ -particles

- 39 The half-life of a radioactive substance is 5 hours. A sample is tested and found to contain 0.48 g of the substance.

How much of the substance was present in the sample 20 hours before the sample was tested?

- A 0.03 g
- B 0.12 g
- C 1.92 g
- D 7.68 g

- 40 The data below relates to the nucleus of a particular neutral atom of nitrogen.

proton number       $Z = 7$   
nucleon number       $A = 17$

Which row represents the correct number of neutrons and electrons in this atom?

	number of neutrons	number of electrons
<b>A</b>	10	7
<b>B</b>	10	10
<b>C</b>	17	7
<b>D</b>	17	10



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