Location Entry Codes

As part of CIE's continual commitment to maintaining best practice in assessment, CIE uses different variants of some question papers for our most popular assessments with large and widespread candidature. The question papers are closely related and the relationships between them have been thoroughly established using our assessment expertise. All versions of the paper give assessment of equal standard.

The content assessed by the examination papers and the type of questions is unchanged.

This change means that for this component there are now two variant Question Papers, Mark Schemes and Principal Examiner's Reports where previously there was only one. For any individual country, it is intended that only one variant is used. This document contains both variants which will give all Centres access to even more past examination material than is usually the case.

The diagram shows the relationship between the Question Papers, Mark Schemes and Principal Examiners' Reports that are available.

Question Paper	**Mark Scheme**	**Principal Examiner's Report**
Introduction	Introduction	Introduction
First variant Question Paper	First variant Mark Scheme	First variant Principal Examiner's Report
Second variant Question Paper	Second variant Mark Scheme	Second variant Principal Examiner's Report

Who can I contact for further information on these changes?
Please direct any questions about this to CIE's Customer Services team at:
international@cie.org.uk

The titles for the variant items should correspond with the table above, so that at the top of the first page of the relevant part of the document and on the header, it has the words:

- First variant Question Paper / Mark Scheme / Principal Examiner's Report

or

- Second variant Question Paper / Mark Scheme / Principal Examiner's Report

as appropriate.

First Variant Question Paper

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

PHYSICS **0625/11**

Paper 1 Multiple Choice **May/June 2009**

45 minutes

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

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.

This document consists of **19** printed pages and **1** blank page.

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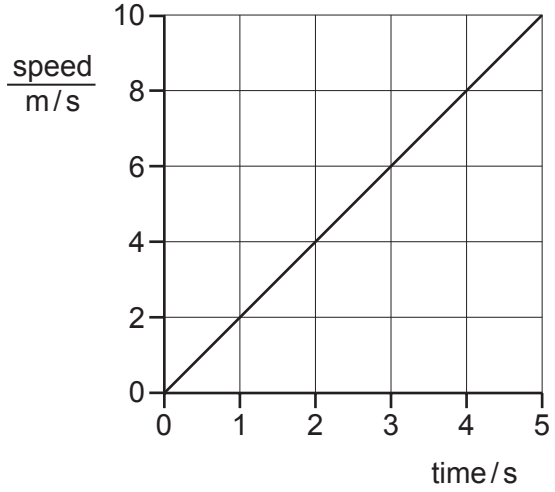
1 A metre rule is used to measure a length.

Which reading is shown to the nearest millimetre?

A 0.7 m **B** 0.76 m **C** 0.761 m **D** 0.7614 m

2 The graph represents the movement of a body.



How far has the body moved after 5 s?

A 2 m **B** 10 m **C** 25 m **D** 50 m

3 A car travels 100 km. The highest speed of the car is 90 km/h, and the lowest speed is 30 km/h. The journey takes two hours.

What is the average speed for the journey?

A 30 km / h **B** 50 km / h **C** 60 km / h **D** 90 km / h

4 Which statement about the masses and weights of objects on the Earth is correct?

A A balance can only be used to compare weights, not masses.

B Heavy objects always have more mass than light ones.

C Large objects always have more mass than small ones.

D Mass is a force but weight is not.

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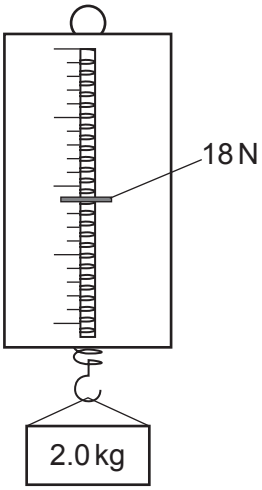
5 The table shows the weight in newtons of a10 kg mass on each of four planets.

planet	weight of a 10 kg mass / N
Earth	100
Jupiter	250
Mercury	40
Venus	90

The diagram shows a force meter (spring balance) being used.



On which planet is the force meter (spring balance) being used?

A Earth

B Jupiter

C Mercury

D Venus

6 Which items of apparatus are required to determine the density of a liquid?

A balance and measuring cylinder

B balance and thermometer

C metre rule and measuring cylinder

D metre rule and thermometer

7 Which property of an object **cannot** be changed by a force?

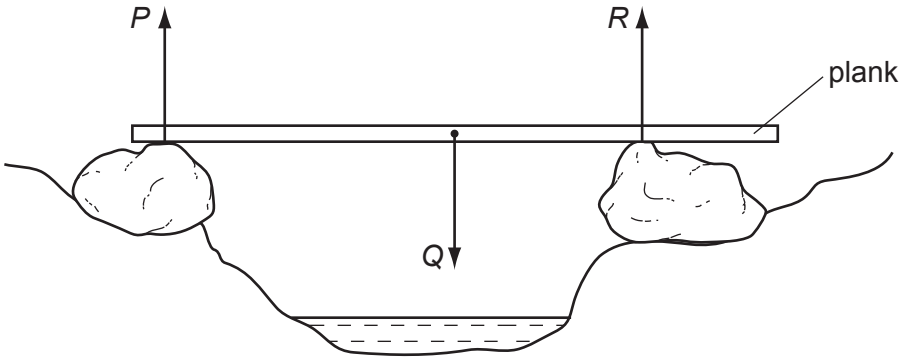
A its mass

B its motion

C its shape

D its size

8 A wooden plank rests in equilibrium on two boulders on opposite sides of a narrow stream. Three forces of size *P*, *Q* and *R* act on the plank.



How are the sizes of the forces related?

A $P + Q = R$

B $P + R = Q$

C $P = Q = R$

D $P = Q + R$

9 Electricity can be obtained from different energy resources.

Which energy resource is used to obtain electricity without producing heat to boil water?

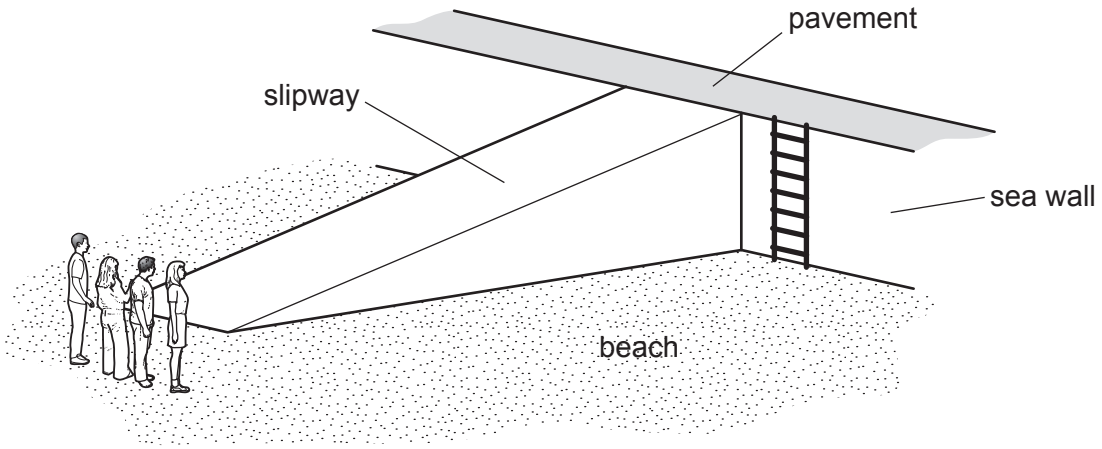
A coal

B geothermal

C hydroelectric

D nuclear

10 Four people of equal weight on a beach use different routes to get to the top of a sea wall.

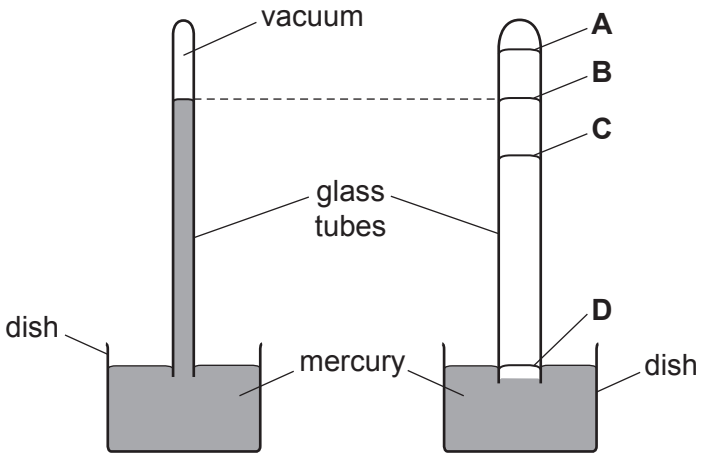


Which person produces the **greatest** average power?

person	route	time taken
A	runs across the beach, then climbs the ladder	8 s
B	walks across the beach, then climbs the ladder	16 s
C	runs up the slipway	5 s
D	walks up the slipway	10 s

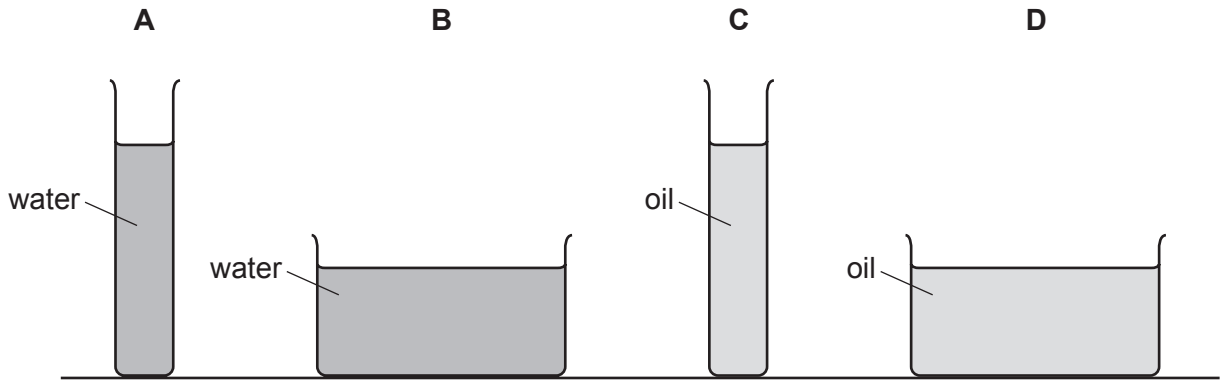
11 The diagrams show two mercury barometers standing side by side. The right-hand diagram shows a tube of bigger diameter, but the diagram is incomplete. There is a vacuum above the mercury in both tubes.

Which labelled position on the right-hand tube could show the mercury level in that tube?



12 A student fills two containers with water (density $1.0\,g/cm^3$) and two with oil (density $0.8\,g/cm^3$), as shown in the diagrams.

In which container is the pressure on the base the greatest?



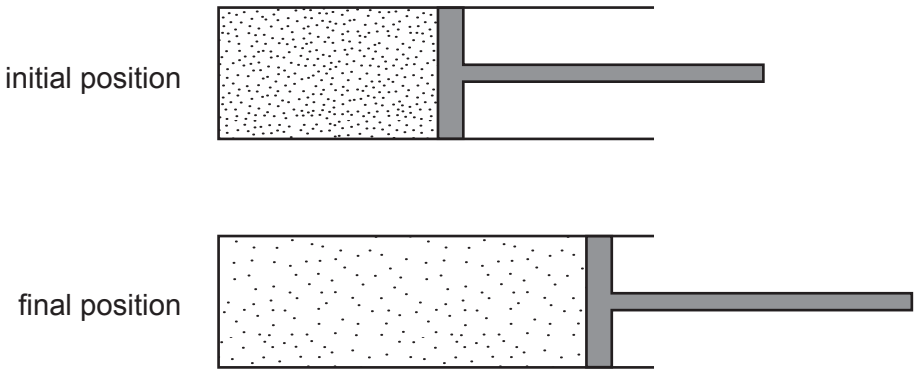
13 In an experiment, some of a substance changes from a liquid to a gas. The temperature of the remaining liquid changes because of this.

What is the name for this change of state and how does the temperature change?

	change of state	how temperature changes
A	condensation	decreases
B	condensation	increases
C	evaporation	decreases
D	evaporation	increases

14 A piston traps a certain mass of gas inside a cylinder. Initially the piston is halfway along the length of the cylinder.

The piston is now moved towards the open end of the cylinder. The temperature of the gas remains constant.

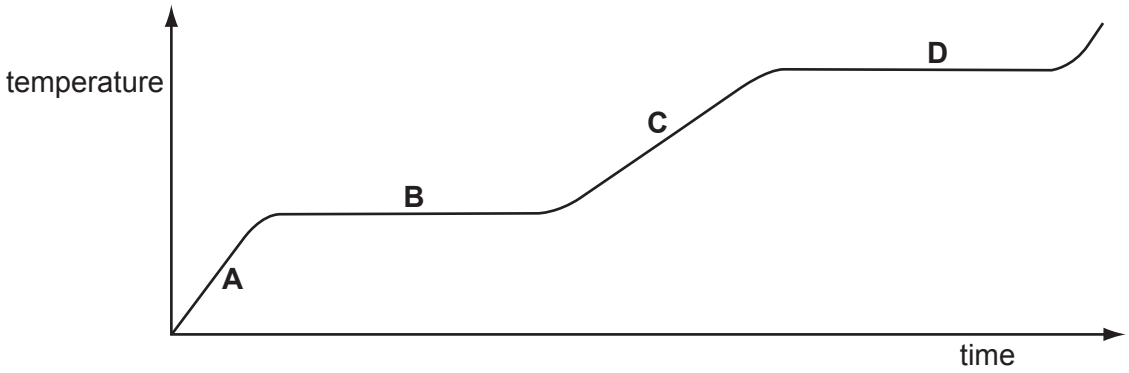


How are the density and the pressure of the gas affected by moving the piston?

	density	pressure
A	decreases	decreases
B	decreases	unchanged
C	increases	decreases
D	increases	unchanged

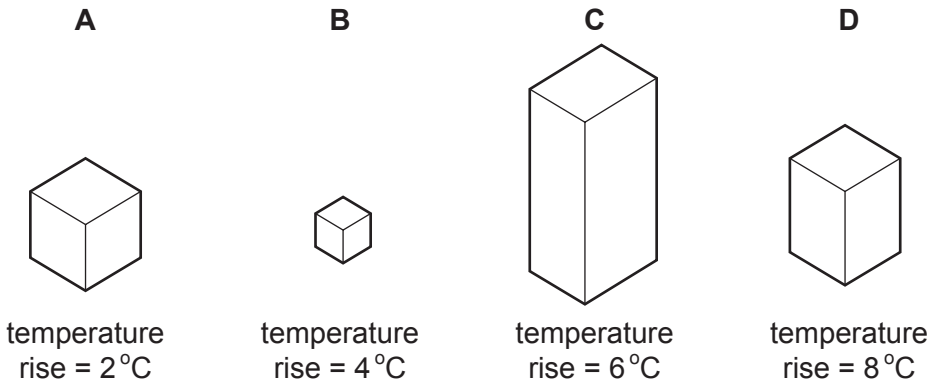
15 The graph shows the change in temperature of a substance as it is heated steadily.

Which part of the graph shows when the substance is boiling?



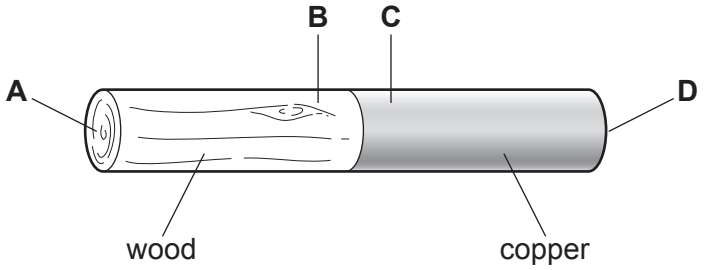
16 Four blocks, made of different materials, are each given the same quantity of internal energy (heat).

Which block has the greatest thermal capacity?

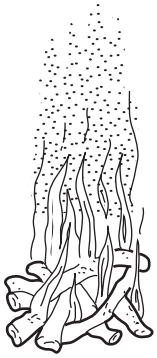


17 A rod is made up of copper and wood joined together.

After the rod is heated at the join in the centre for about a minute, where would the lowest temperature be?



18 The diagram shows a fire.



Why does the smoke rise above the fire?

A Smoke evaporates more quickly at higher temperatures.

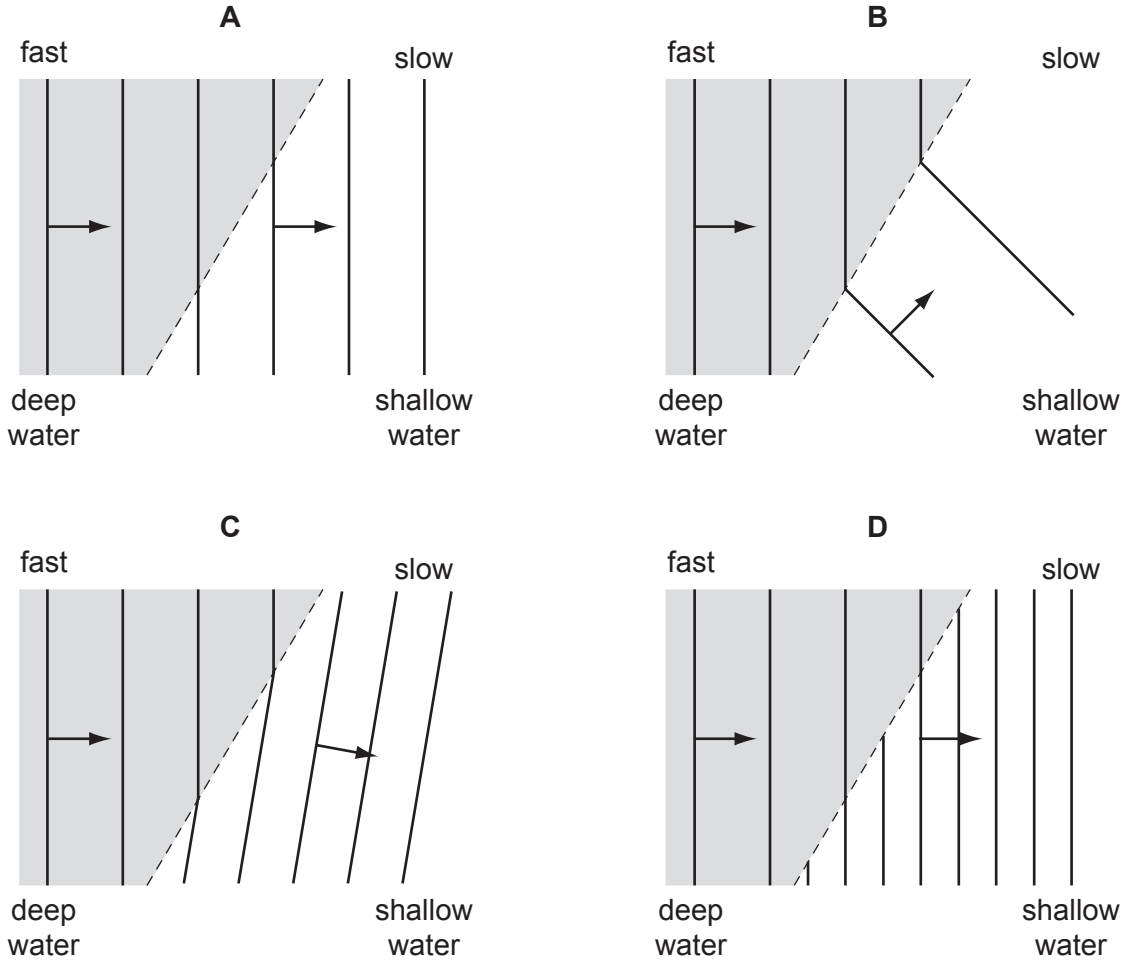
B Smoke molecules diffuse more quickly at higher temperatures.

C The density of the air is lower at higher temperatures.

D The pressure of the air is greater at higher temperatures.

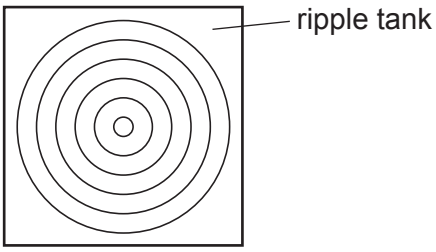
19 The diagrams show water waves that move more slowly after passing into shallow water at the broken line.

Which diagram shows what happens to the waves?



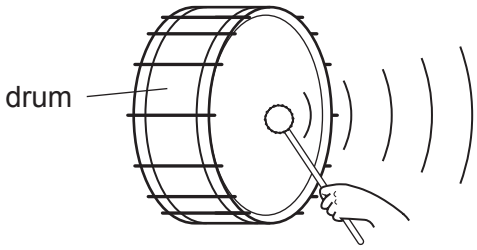
20 The diagrams show examples of wave motion.

1



waves on water

2



waves in air

3

waves on a rope

4

waves in a spring
(as shown)

Which are longitudinal waves?

A 1 only

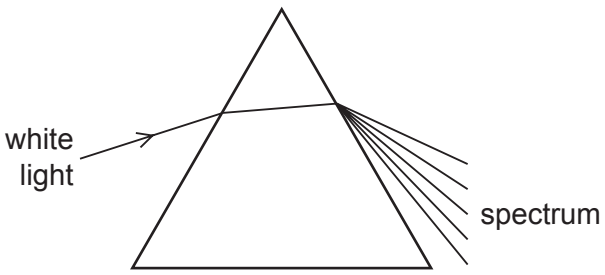
B 1, 2 and 4

C 2 and 3 only

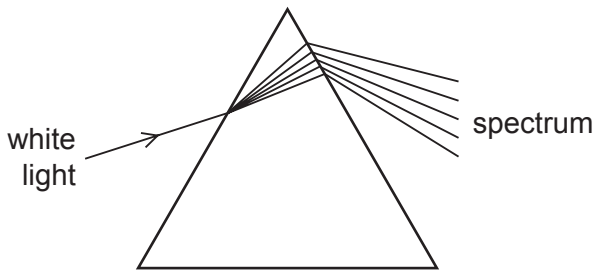
D 2 and 4 only

21 Which diagram shows what happens when a ray of white light passes through a prism?

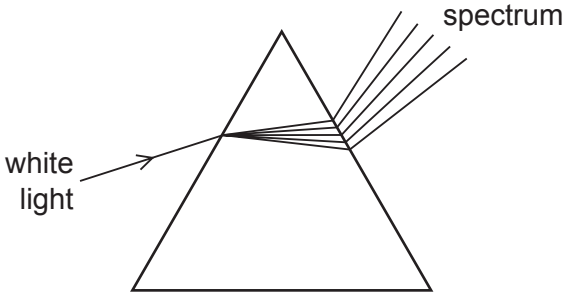
A



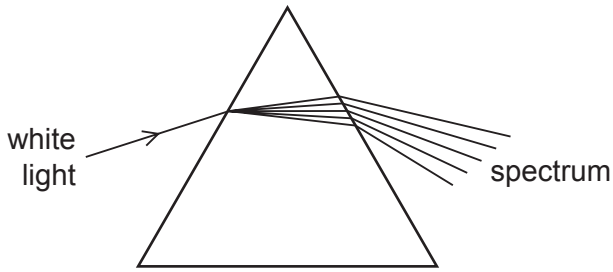
B



C

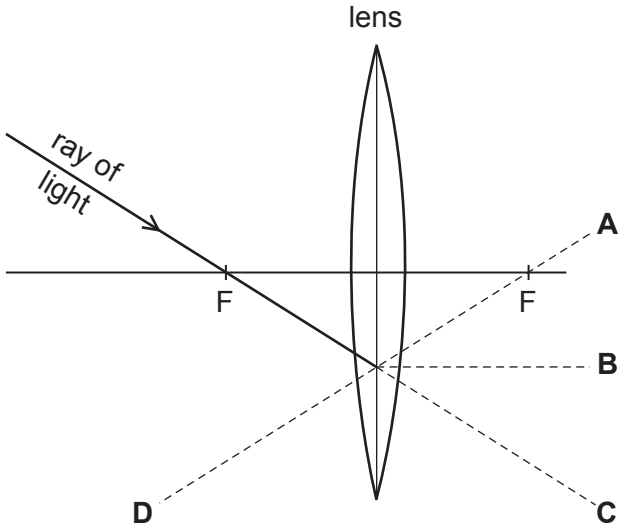


D

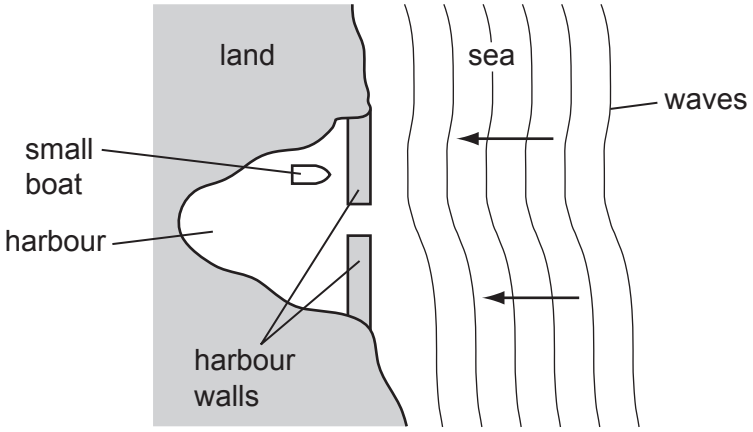


22 The diagram shows the path of a ray of light passing through a principal focus F of a lens.

Which broken line shows the direction of the ray after it leaves the lens?



23 A small boat in a harbour is protected from waves on the sea by harbour walls.



Some waves can curve round the harbour walls and reach the boat.

What is the name for this effect?

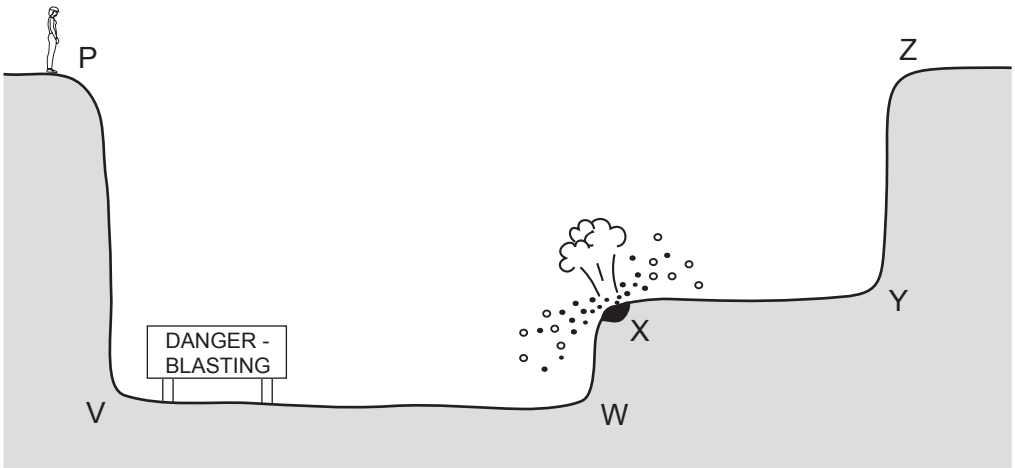
A diffraction

B dispersion

C reflection

D refraction

24 An engineer standing at P sees an explosion at X.

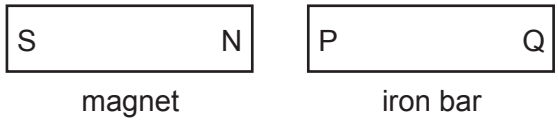


After the explosion, she hears two bangs. One bang is heard a fraction of a second after the other. The second bang is an echo.

From which surface has the sound reflected to cause this echo?

A XY **B** PV **C** ZY **D** WX

25 The north pole of a bar magnet is placed next to end P of an iron bar PQ, as shown. As a result, magnetic poles are induced in the iron bar.



What are the magnetic poles induced at P and at Q?

	magnetic pole at P	magnetic pole at Q
A	north	north
B	north	south
C	south	north
D	south	south

26 An electromagnet is used to separate magnetic metals from non-magnetic metals.

Why is steel unsuitable as the core of the electromagnet?

A It forms a permanent magnet.

B It has a high density.

C It has a high thermal capacity.

D It is a good conductor of electricity.

27 Which particle does **not** experience a force due to an electric field?

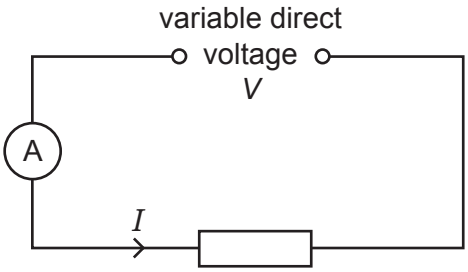
A α-particle

B electron

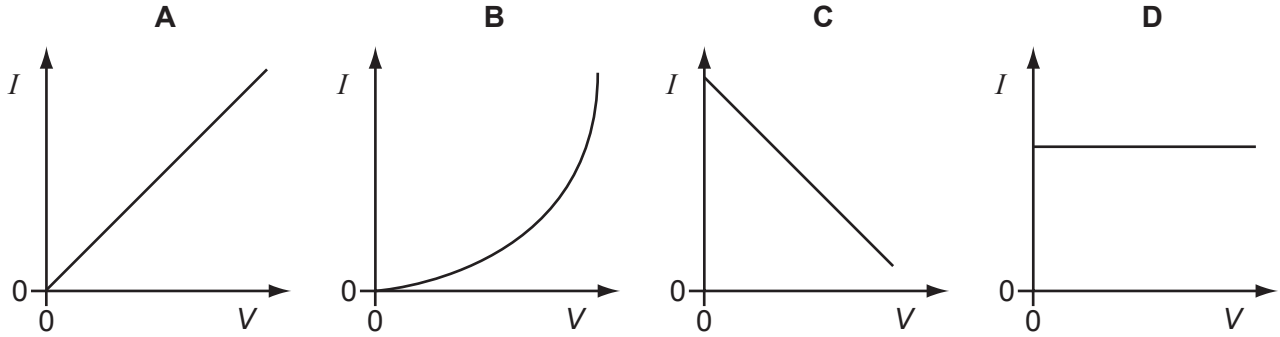
C neutron

D proton

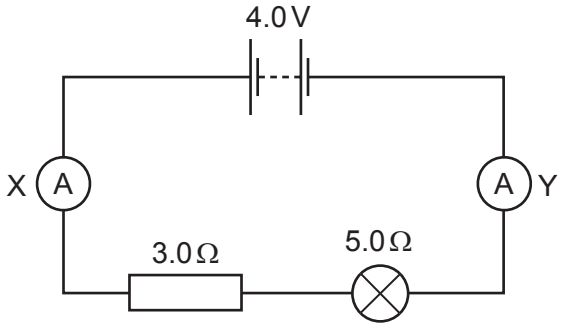
28 Using the circuit shown, the current I is found for various voltages V. The temperature of the resistor does not change.



Which graph shows the results obtained?



29 In the circuit shown, ammeter X reads 0.5 A.

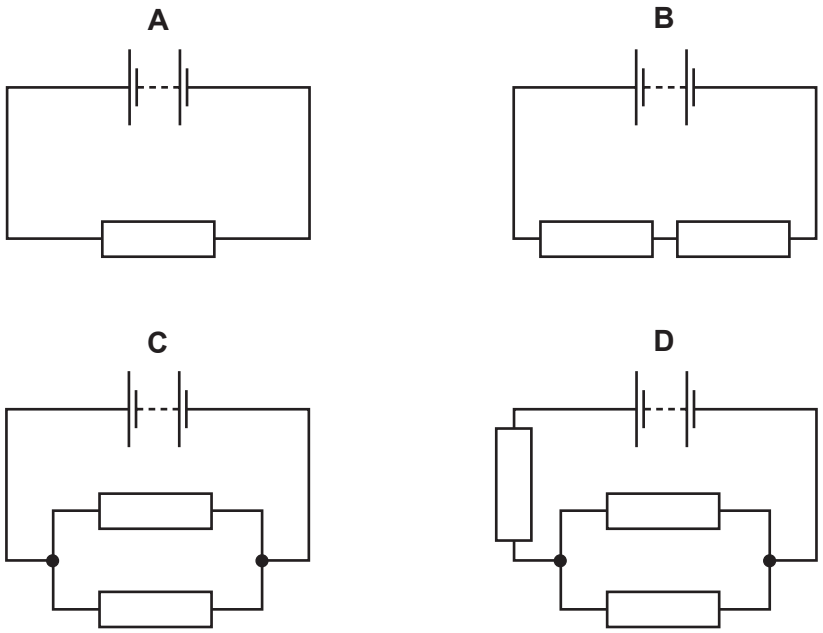


What does ammeter Y read?

A 0 **B** 0.5 A **C** 3.5 A **D** 4.0 A

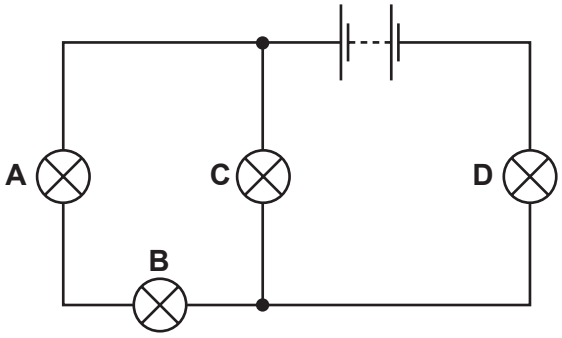
30 In the circuits shown, all the resistors are identical.

Which circuit has the **least** resistance?

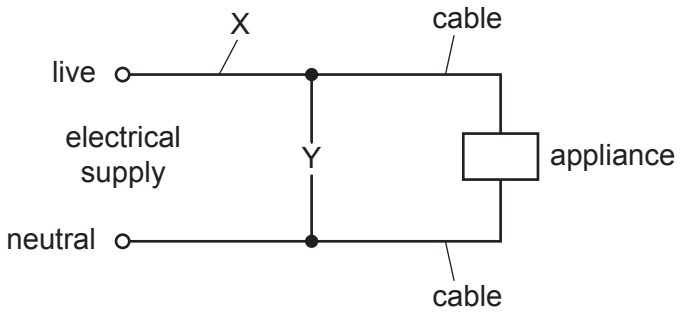


31 In the circuit below, one of the lamps breaks, causing all the other lamps to go out.

Which lamp breaks?



32 Either a fuse or a circuit-breaker can be used to protect electrical cables from large currents that could cause overheating.



If a fuse is used, in which position in the circuit should it be connected, and if a circuit-breaker is used, in which position should it be connected?

	position of fuse	position of circuit-breaker
A	X	X
B	X	Y
C	Y	X
D	Y	Y

33 The current in a lamp at full brightness is 0.25 A. The flexible cable to the lamp is designed for currents up to 5.0 A, so it can safely carry the 0.25 A taken by the lamp.

Which fuse should be inserted in the plug at the other end of the flexible cable?

A 0.2 A **B** 1.0 A **C** 5.0 A **D** 10.0 A

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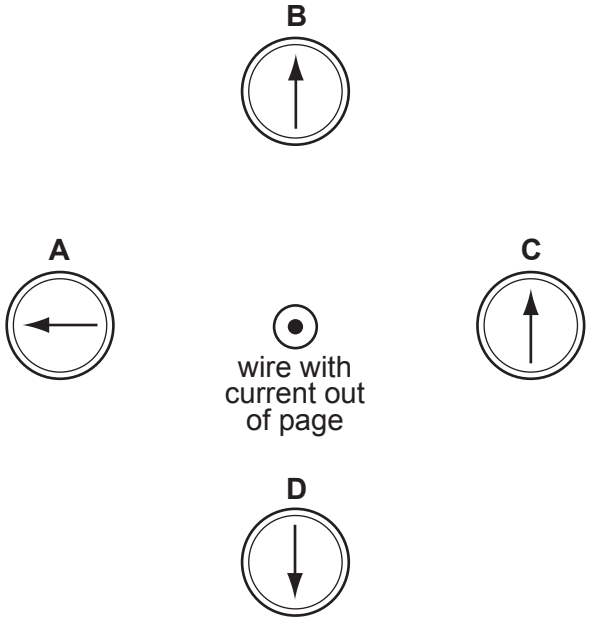
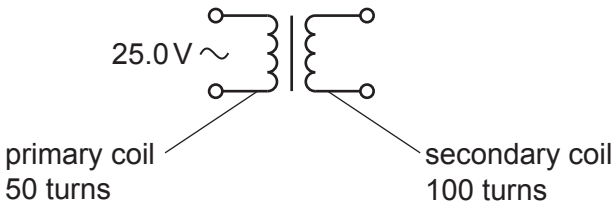
34 A wire perpendicular to the page carries an electric current in a direction out of the page. There are four compasses near the wire.

Which compass shows the direction of the magnetic field caused by the current?



35 A transformer has 50 turns on its primary coil and 100 turns on its secondary coil. An alternating voltage of 25.0 V is connected across the primary coil.



What is the voltage across the secondary coil?

A 12.5 V **B** 50.0 V **C** 175 V **D** 200 V

36 In a cathode-ray tube, a hot tungsten cathode releases particles by thermionic emission.

What are these particles?

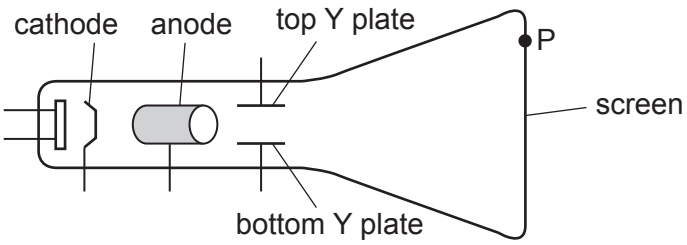
A α-particles

B electrons

C protons

D tungsten atoms

37 The diagram shows a cathode-ray tube.



A student wants the cathode rays to make a spot at P on the screen.

Which parts of the cathode-ray tube should be positive?

A anode and top Y plate

B anode and bottom Y plate

C cathode and top Y plate

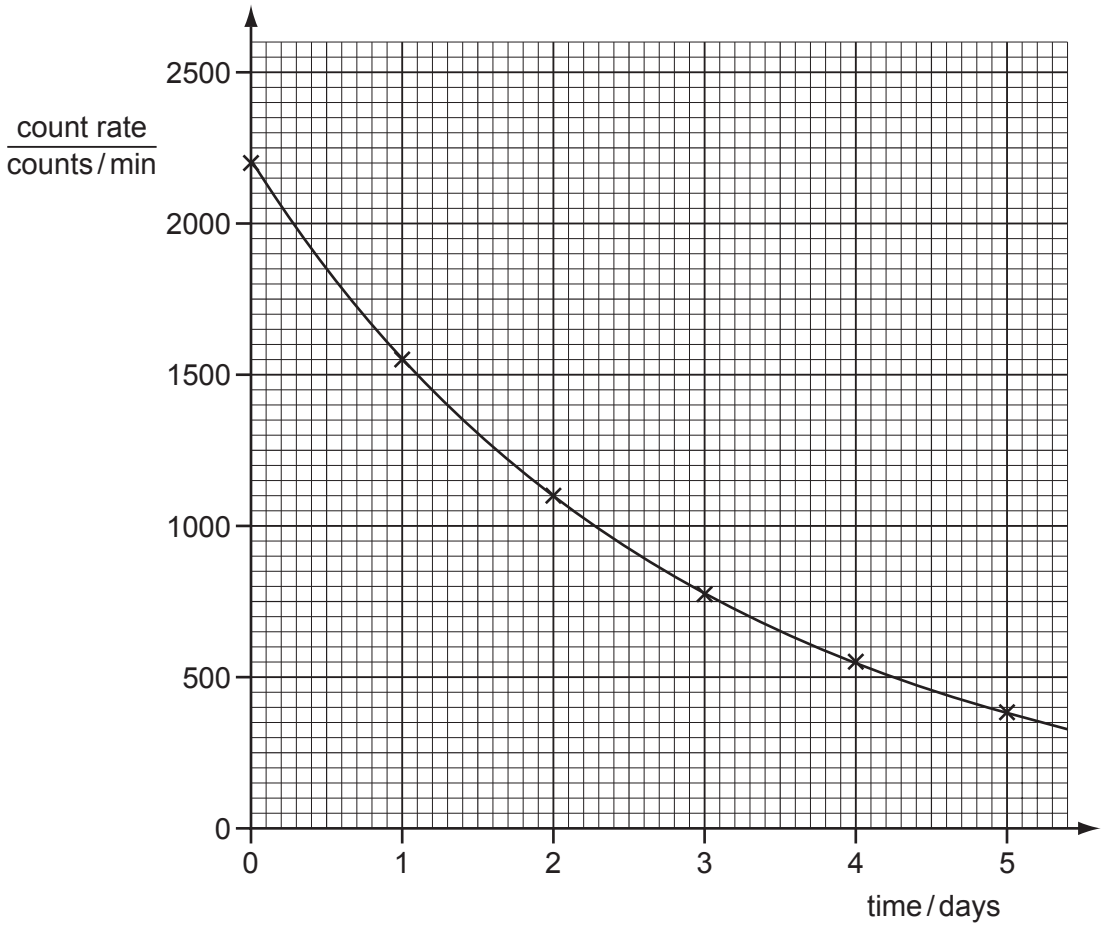
D cathode and bottom Y plate

38 A radioactive nucleus contains 138 neutrons. The nucleus emits an α-particle.

How many neutrons are in the nucleus after it has emitted the α-particle?

A 134 **B** 136 **C** 138 **D** 139

39 The graph shows the decay curve for one particular radioactive nuclide.



What is the half-life of this nuclide?

A 1.0 day **B** 1.5 days **C** 2.0 days **D** 2.5 days

40 $^{16}_{7}N$ is the symbol for a particular nuclide of nitrogen.

How many nucleons does this nuclide contain?

A 7 **B** 9 **C** 16 **D** 23

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Second Variant Question Paper

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

PHYSICS **0625/12**

Paper 1 Multiple Choice **May/June 2009**

45 minutes

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

READ THESE INSTRUCTIONS FIRST

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

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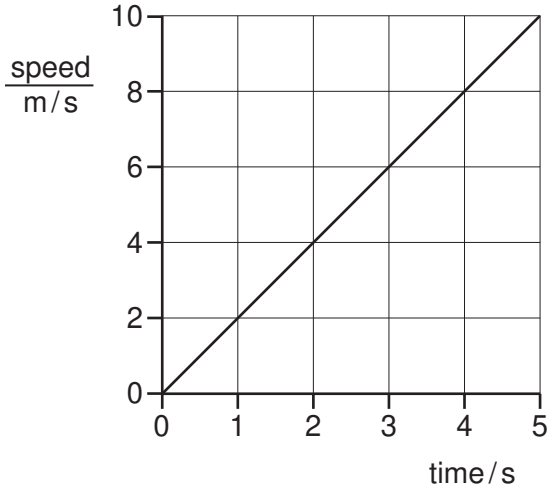
1 A car travels 100 km. The highest speed of the car is 90 km/h, and the lowest speed is 30 km/h. The journey takes two hours.

What is the average speed for the journey?

A 30 km / h **B** 50 km / h **C** 60 km / h **D** 90 km / h

2 The graph represents the movement of a body.



How far has the body moved after 5 s?

A 2 m **B** 10 m **C** 25 m **D** 50 m

3 A metre rule is used to measure a length.

Which reading is shown to the nearest millimetre?

A 0.7 m **B** 0.76 m **C** 0.761 m **D** 0.7614 m

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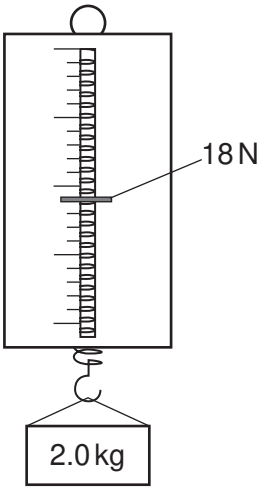
4 The table shows the weight in newtons of a10 kg mass on each of four planets.

planet	weight of a 10 kg mass / N
Earth	100
Jupiter	250
Mercury	40
Venus	90

The diagram shows a force meter (spring balance) being used.



On which planet is the force meter (spring balance) being used?

A Earth

B Jupiter

C Mercury

D Venus

5 Which statement about the masses and weights of objects on the Earth is correct?

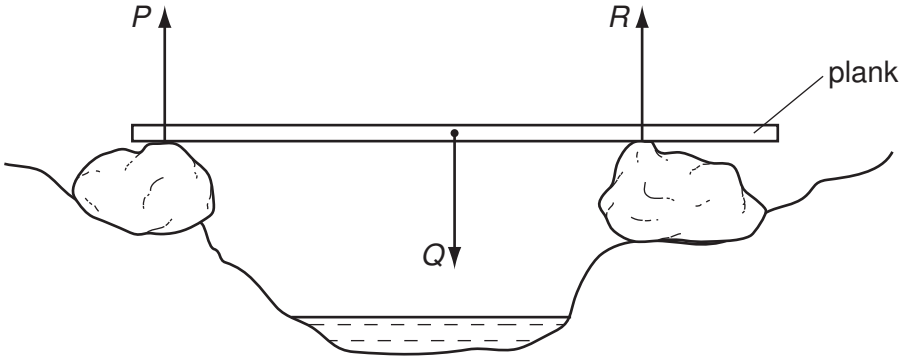
A A balance can only be used to compare weights, not masses.

B Heavy objects always have more mass than light ones.

C Large objects always have more mass than small ones.

D Mass is a force but weight is not.

6 A wooden plank rests in equilibrium on two boulders on opposite sides of a narrow stream. Three forces of size *P*, *Q* and *R* act on the plank.



How are the sizes of the forces related?

A $P + Q = R$

B $P + R = Q$

C $P = Q = R$

D $P = Q + R$

7 Which items of apparatus are required to determine the density of a liquid?

A balance and measuring cylinder

B balance and thermometer

C metre rule and measuring cylinder

D metre rule and thermometer

8 Which property of an object **cannot** be changed by a force?

A its mass

B its motion

C its shape

D its size

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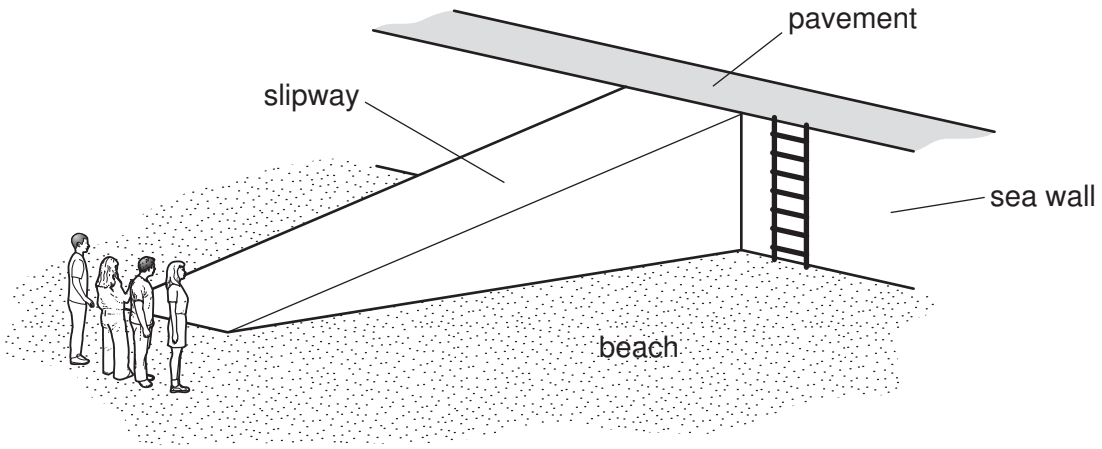
9 Four people of equal weight on a beach use different routes to get to the top of a sea wall.



Which person produces the **greatest** average power?

person	route	time taken
A	runs across the beach, then climbs the ladder	8 s
B	walks across the beach, then climbs the ladder	16 s
C	runs up the slipway	5 s
D	walks up the slipway	10 s

10 Electricity can be obtained from different energy resources.

Which energy resource is used to obtain electricity without producing heat to boil water?

A coal

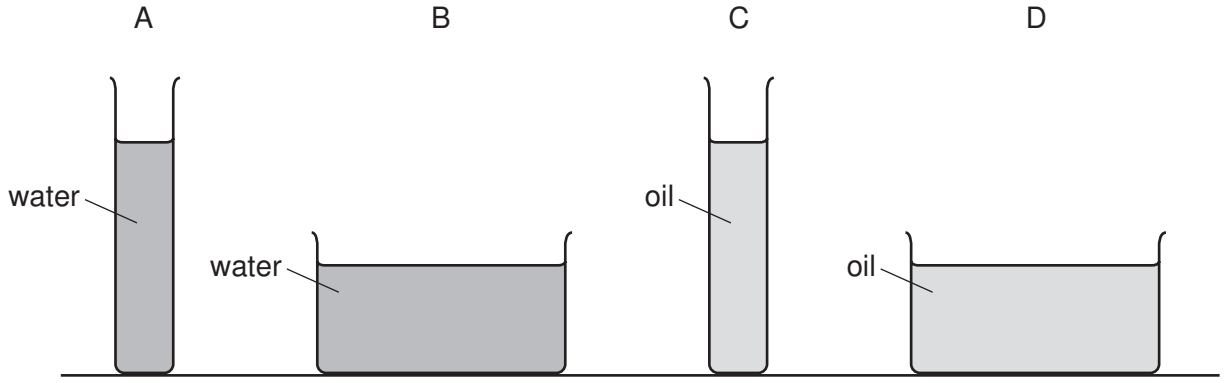
B geothermal

C hydroelectric

D nuclear

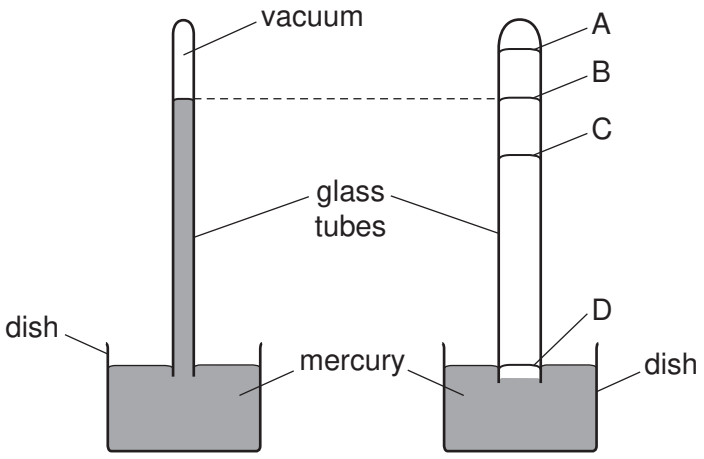
11 A student fills two containers with water (density 1.0 g / cm^3) and two with oil (density 0.8 g / cm^3), as shown in the diagrams.

In which container is the pressure on the base the greatest?



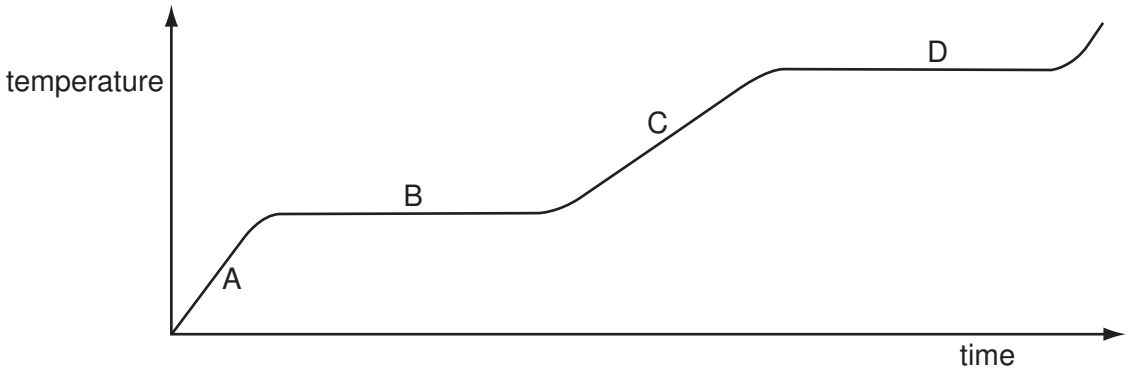
12 The diagrams show two mercury barometers standing side by side. The right-hand diagram shows a tube of bigger diameter, but the diagram is incomplete. There is a vacuum above the mercury in both tubes.

Which labelled position on the right-hand tube could show the mercury level in that tube?



13 The graph shows the change in temperature of a substance as it is heated steadily.

Which part of the graph shows when the substance is boiling?



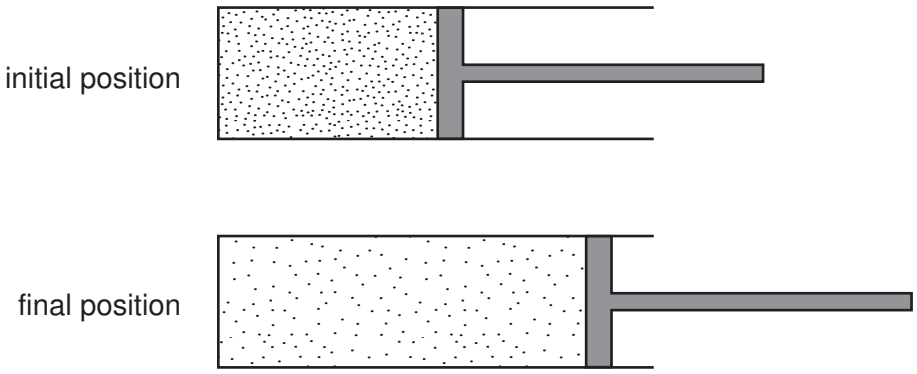
14 In an experiment, some of a substance changes from a liquid to a gas. The temperature of the remaining liquid changes because of this.

What is the name for this change of state and how does the temperature change?

	change of state	how temperature changes
A	condensation	decreases
B	condensation	increases
C	evaporation	decreases
D	evaporation	increases

15 A piston traps a certain mass of gas inside a cylinder. Initially the piston is halfway along the length of the cylinder.

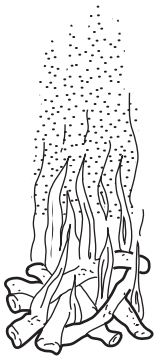
The piston is now moved towards the open end of the cylinder. The temperature of the gas remains constant.



How are the density and the pressure of the gas affected by moving the piston?

	density	pressure
A	decreases	decreases
B	decreases	unchanged
C	increases	decreases
D	increases	unchanged

16 The diagram shows a fire.



Why does the smoke rise above the fire?

A Smoke evaporates more quickly at higher temperatures.

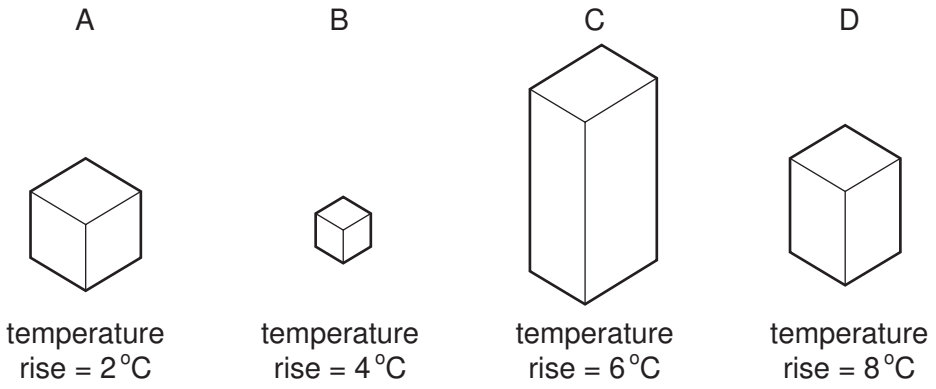
B Smoke molecules diffuse more quickly at higher temperatures.

C The density of the air is lower at higher temperatures.

D The pressure of the air is greater at higher temperatures.

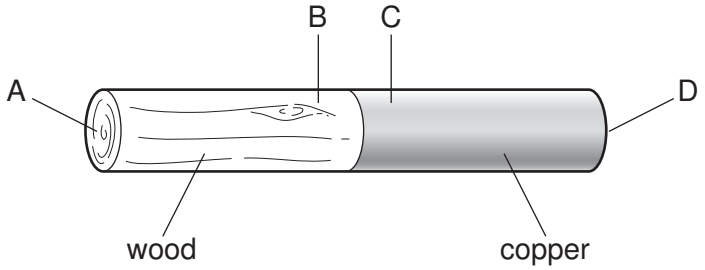
17 Four blocks, made of different materials, are each given the same quantity of internal energy (heat).

Which block has the greatest thermal capacity?

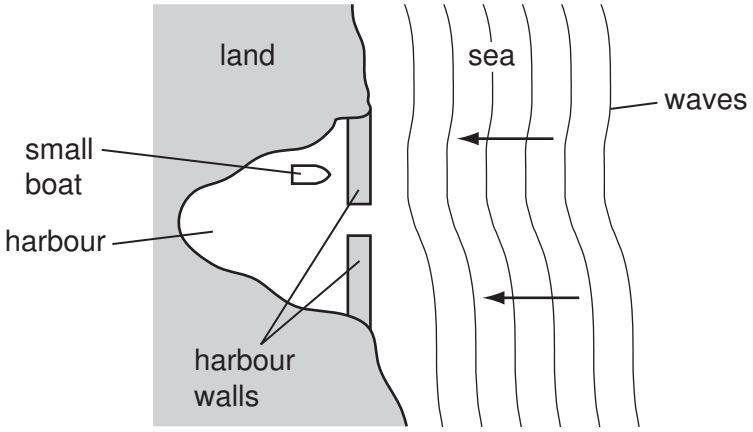


18 A rod is made up of copper and wood joined together.

After the rod is heated at the join in the centre for about a minute, where would the lowest temperature be?



19 A small boat in a harbour is protected from waves on the sea by harbour walls.



Some waves can curve round the harbour walls and reach the boat.

What is the name for this effect?

A diffraction

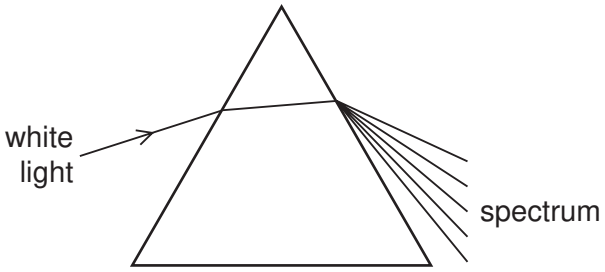
B dispersion

C reflection

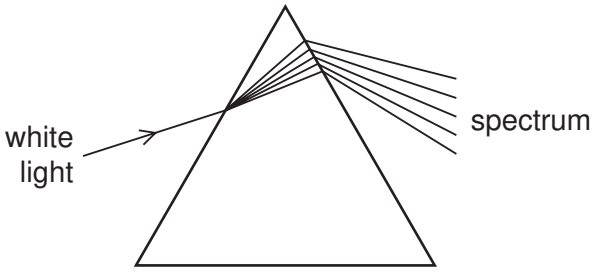
D refraction

20 Which diagram shows what happens when a ray of white light passes through a prism?

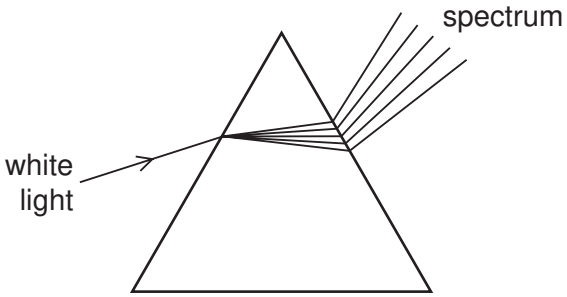
A



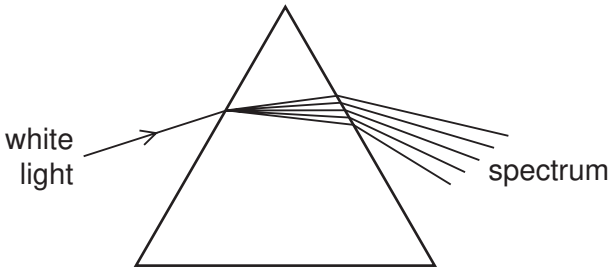
B



C

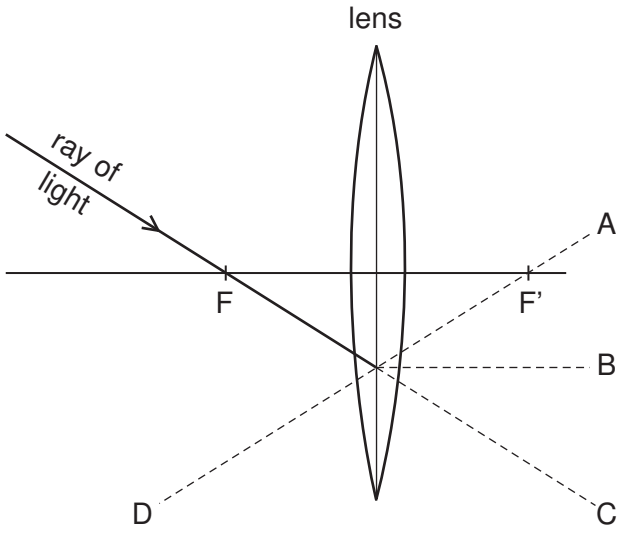


D



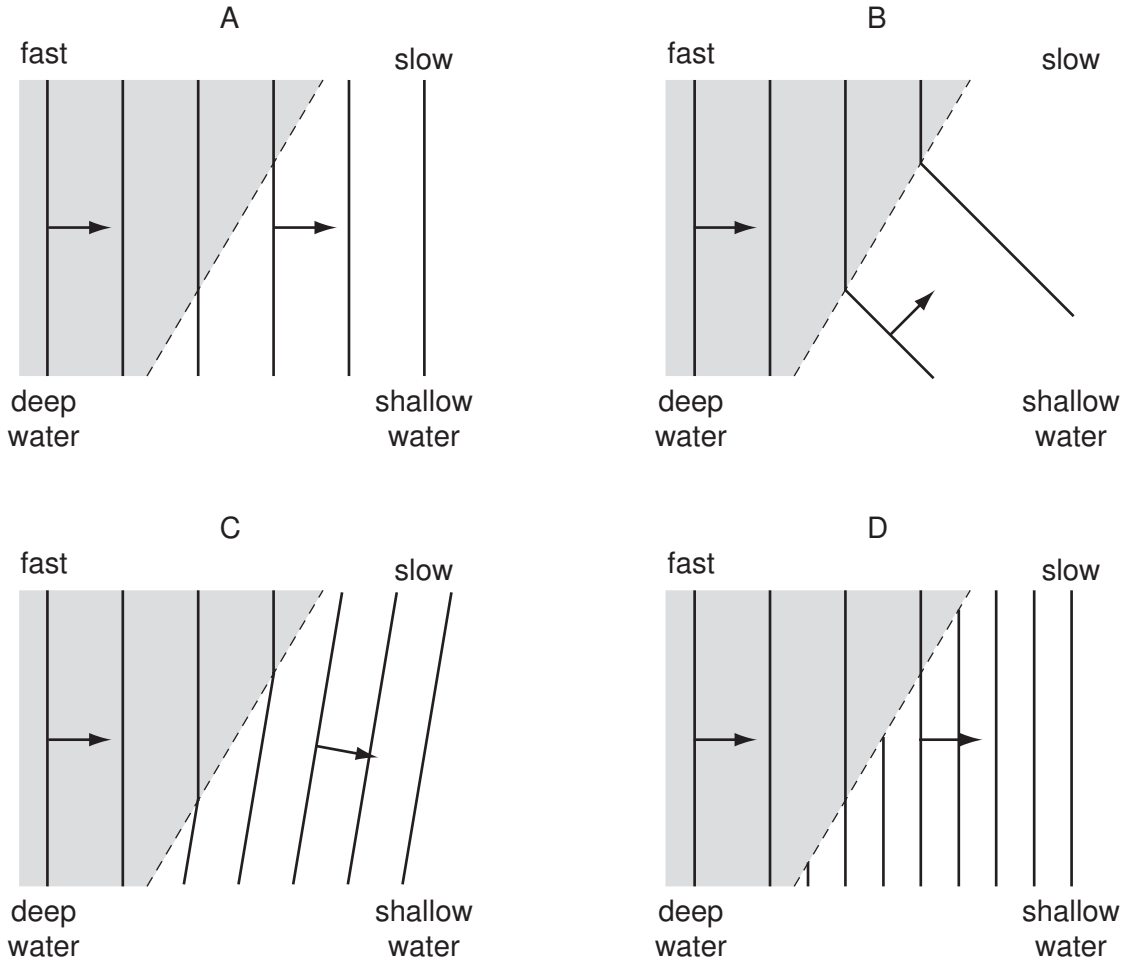
21 The diagram shows the path of a ray of light passing through the principal focus F of a lens.

Which broken line shows the direction of the ray after it leaves the lens?



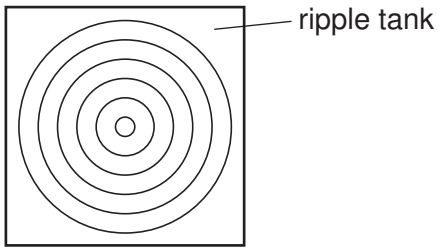
22 The diagrams show water waves which move more slowly after passing into shallow water at the broken line.

Which diagram shows what happens to the waves?



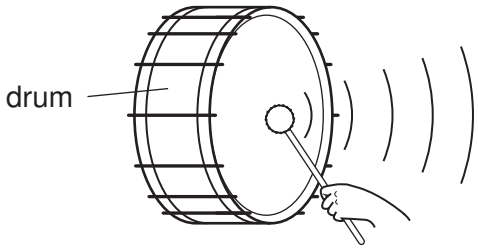
23 The diagrams show examples of wave motion.

1



waves on water

2



waves in air

3

waves on a rope

4

waves in a spring
(as shown)

Which are longitudinal waves?

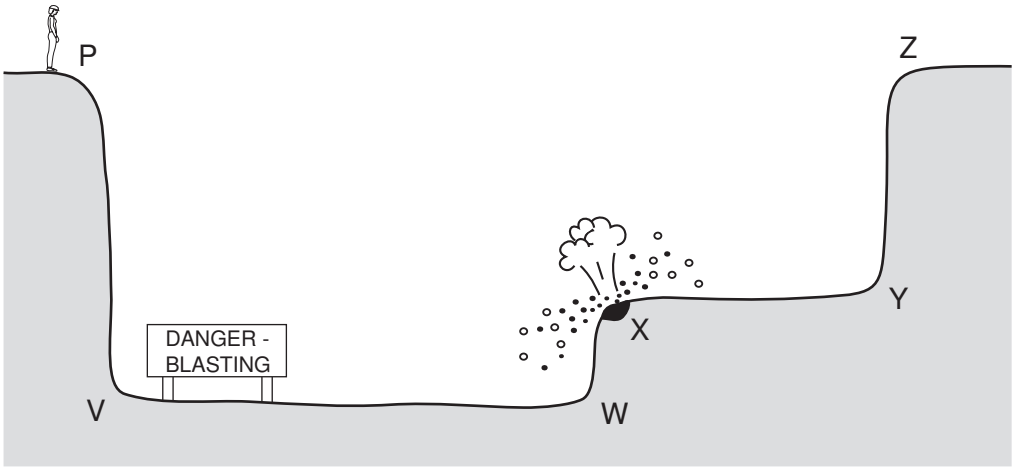
A 1 only

B 1, 2 and 4

C 2 and 3 only

D 2 and 4 only

24 An engineer standing at P sees an explosion at X.



After the explosion, she hears two bangs. One bang is heard a fraction of a second after the other. The second bang is an echo.

From which surface has the sound reflected to cause this echo?

A XY **B** PV **C** ZY **D** WX

25 An electromagnet is used to separate magnetic metals from non-magnetic metals.

Why is steel unsuitable as the core of the electromagnet?

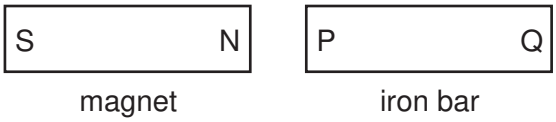
A It forms a permanent magnet.

B It has a high density.

C It has a high thermal capacity.

D It is a good conductor of electricity.

26 The north pole of a bar magnet is placed next to end P of an iron bar PQ, as shown. As a result, magnetic poles are induced in the iron bar.

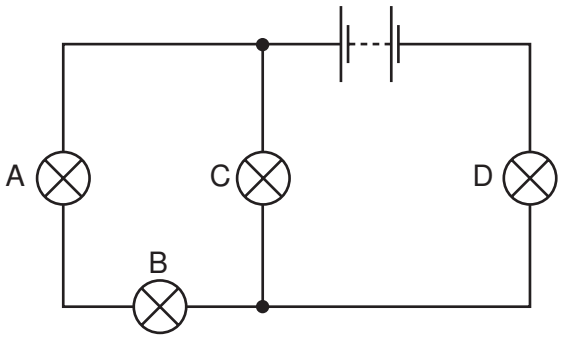


What are the magnetic poles induced at P and at Q?

	magnetic pole at P	magnetic pole at Q
A	north	north
B	north	south
C	south	north
D	south	south

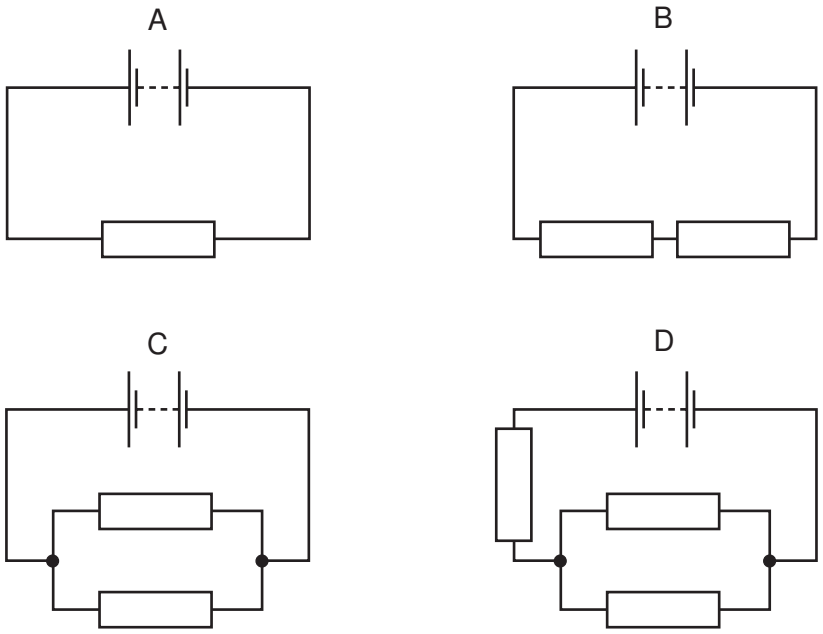
27 In the circuit below, one of the lamps breaks, causing all the other lamps to go out.

Which lamp breaks?

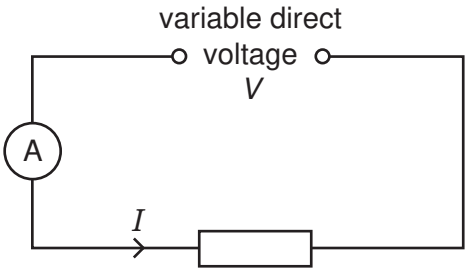


28 In the circuits shown, all the resistors are identical.

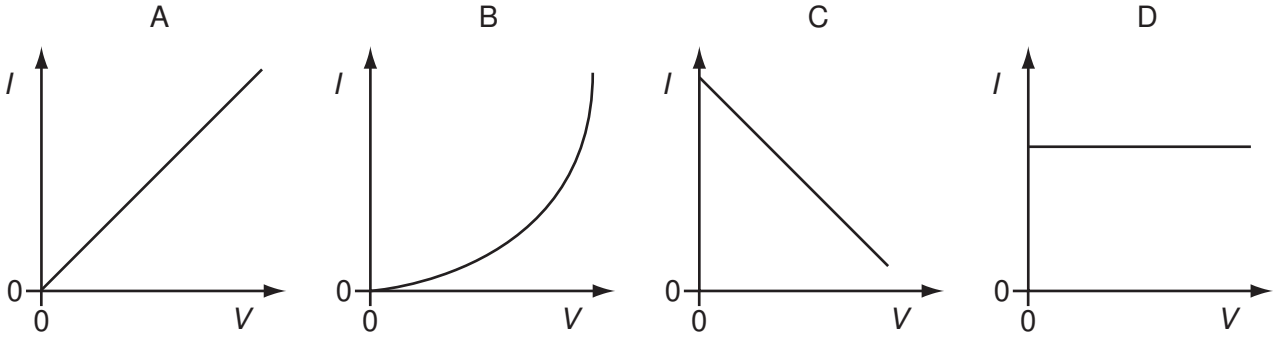
Which circuit has the **least** resistance?



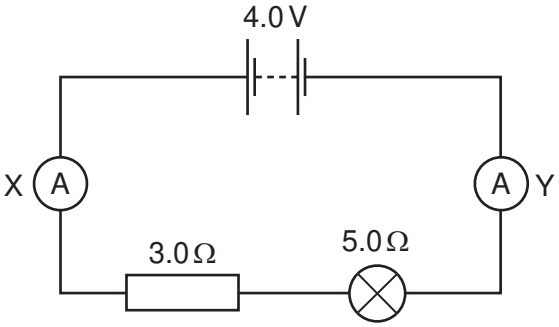
29 Using the circuit shown, the current I is found for various voltages V. The temperature of the resistor does not change.



Which graph shows the results obtained?



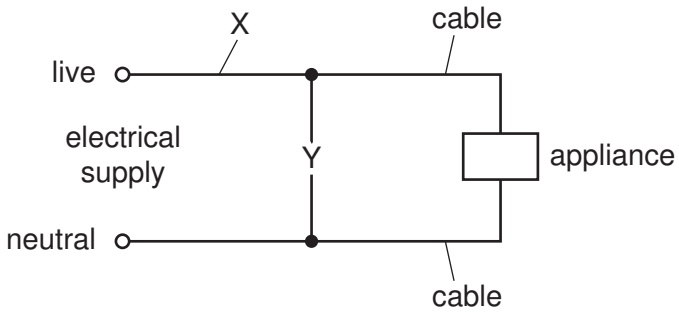
30 In the circuit shown, ammeter X reads 0.5 A.



What does ammeter Y read?

A 0 **B** 0.5 A **C** 3.5 A **D** 4.0 A

31 Either a fuse or a circuit-breaker can be used to protect electrical cables from large currents that could cause overheating.



If a fuse is used, in which position in the circuit should it be connected, and if a circuit-breaker is used, in which position should it be connected?

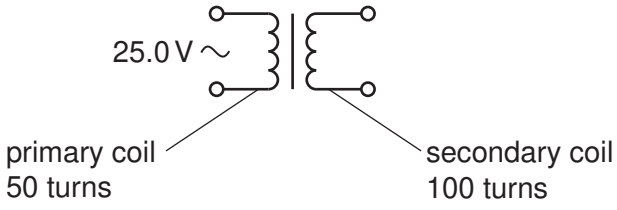
	position of fuse	position of circuit-breaker
A	X	X
B	X	Y
C	Y	X
D	Y	Y

32 The current in a lamp at full brightness is 0.25 A. The flexible cable to the lamp is designed for currents up to 5.0 A, so it can safely carry the 0.25 A taken by the lamp.

Which fuse should be inserted in the plug at the other end of the flexible cable?

A 0.2 A **B** 1.0 A **C** 5.0 A **D** 10.0 A

33 A transformer has 50 turns on its primary coil and 100 turns on its secondary coil. An alternating voltage of 25.0 V is connected across the primary coil.



What is the voltage across the secondary coil?

A 12.5 V **B** 50.0 V **C** 175 V **D** 200 V

34 Which particle does **not** experience a force due to an electric field?

A α-particle

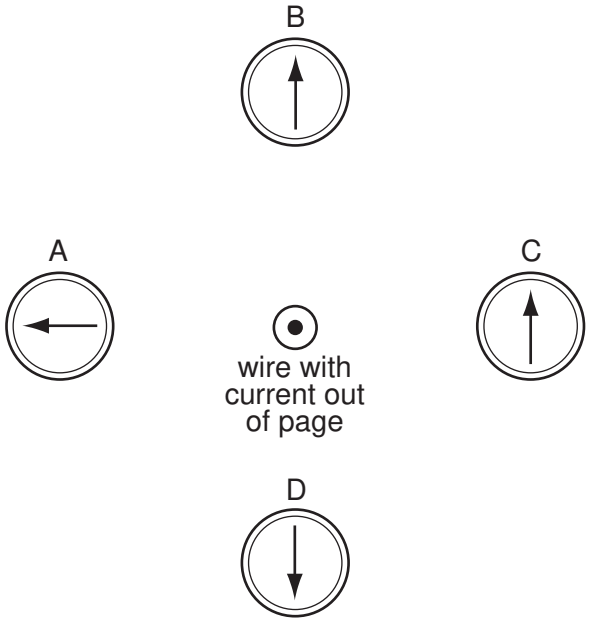
B electron

C neutron

D proton

35 A wire perpendicular to the page carries an electric current in a direction out of the page. There are four compasses near the wire.

Which compass shows the direction of the magnetic field caused by the current?



36 In a cathode-ray tube, a hot tungsten cathode releases particles by thermionic emission.

What are these particles?

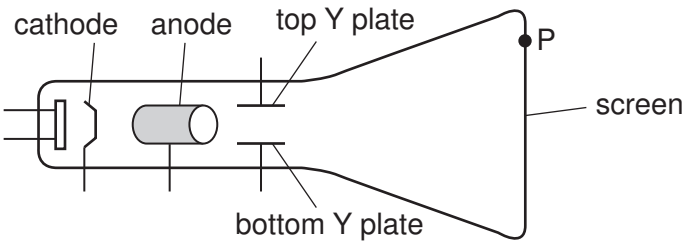
A α-particles

B electrons

C protons

D tungsten atoms

37 The diagram shows a cathode-ray tube.



A student wants the cathode rays to make a spot at P on the screen.

Which parts of the cathode-ray tube should be positive?

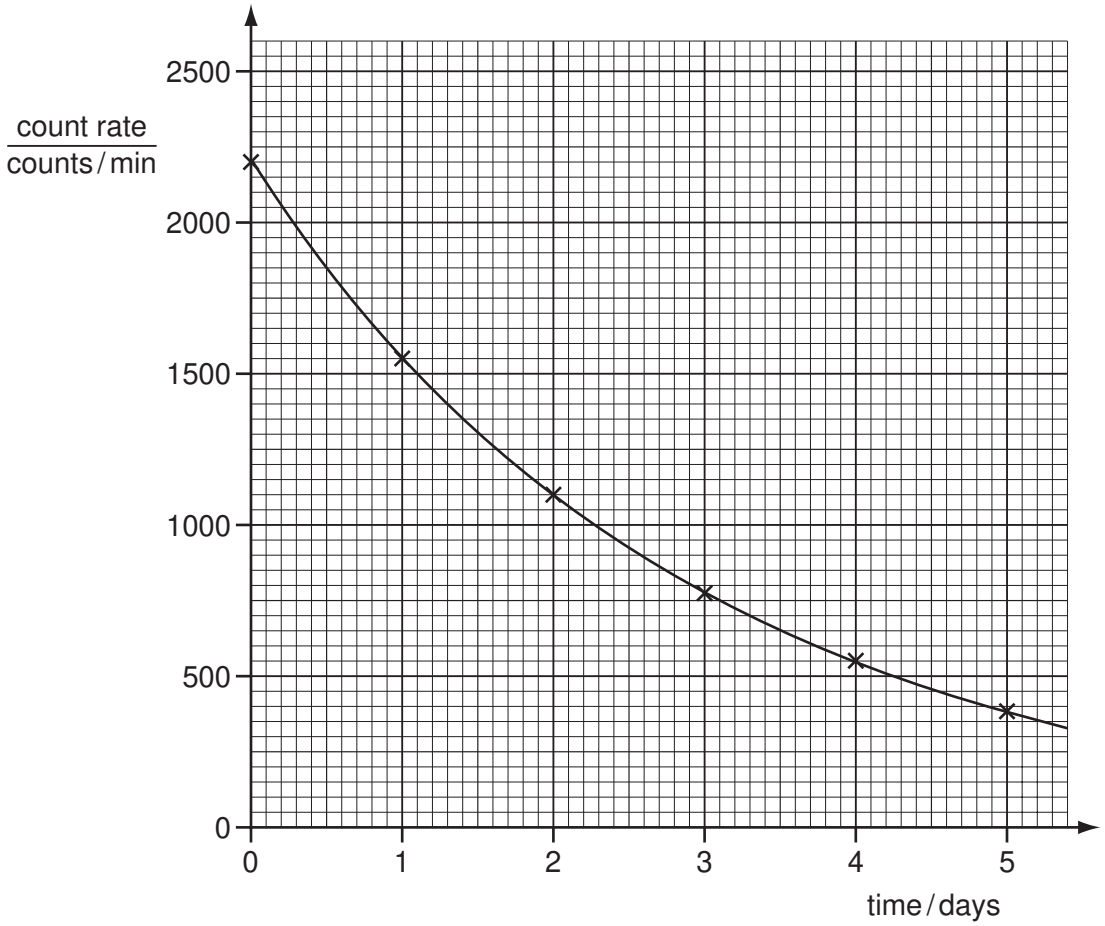
A anode and top Y plate

B anode and bottom Y plate

C cathode and top Y plate

D cathode and bottom Y plate

38 The graph shows the decay curve for one particular radioactive nuclide.



What is the half-life of this nuclide?

A 1.0 day **B** 1.5 days **C** 2.0 days **D** 2.5 days

39 A radioactive nucleus contains 138 neutrons. The nucleus emits an α-particle.

How many neutrons are in the nucleus after it has emitted the α-particle?

A 134 **B** 136 **C** 138 **D** 139

40 $^{16}_{7}N$ is the symbol for a particular nuclide of nitrogen.

How many nucleons does this nuclide contain?

A 7 **B** 9 **C** 16 **D** 23

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