Cambridge Assessment International Education

Cambridge IGCSE™

PHYSICS **0625/11**

Paper 1 Multiple Choice (Core) **May/June 2020**

45 minutes

You must answer on the multiple choice answer sheet.

* 4 7 5 6 6 5 6 7 3 7 *

You will need: Multiple choice answer sheet
Soft clean eraser
Soft pencil (type B or HB is recommended)

INSTRUCTIONS

- 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 multiple choice answer sheet.
- Follow the instructions on the multiple choice answer sheet.
- Write in soft pencil.
- Write your name, centre number and candidate number on the multiple choice answer sheet in the spaces provided unless this has been done for you.
- Do **not** use correction fluid.
- Do **not** write on any bar codes.
- You may use a calculator.
- Take the weight of 1.0 kg to be 10 N (acceleration of free fall = 10 m / s^2).

INFORMATION

- The total mark for this paper is 40.
- Each correct answer will score one mark. A mark will not be deducted for a wrong answer.
- Any rough working should be done on this question paper.

This document has **20** pages. Blank pages are indicated.

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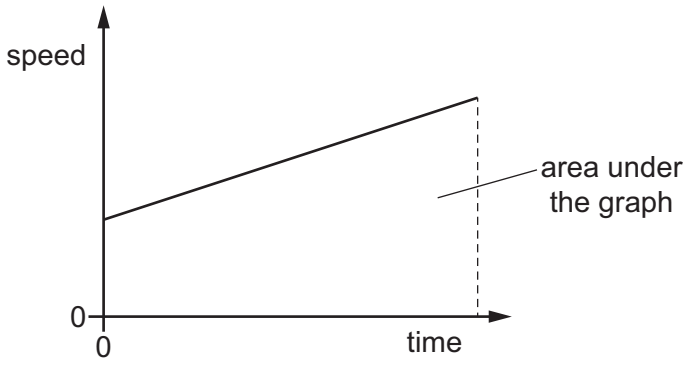
[Turn over

1 A pendulum makes 50 complete swings in 2 min 40 s.

What is the time period for 1 complete swing?

A 1.6 s **B** 3.2 s **C** 4.8 s **D** 6.4 s

2 The motion of an object is represented by the speed–time graph shown.



Which quantity is equal to the area under the graph?

A acceleration

B average speed

C distance travelled

D kinetic energy

3 Which statement about acceleration is correct?

A It is related to the changing speed of an object.

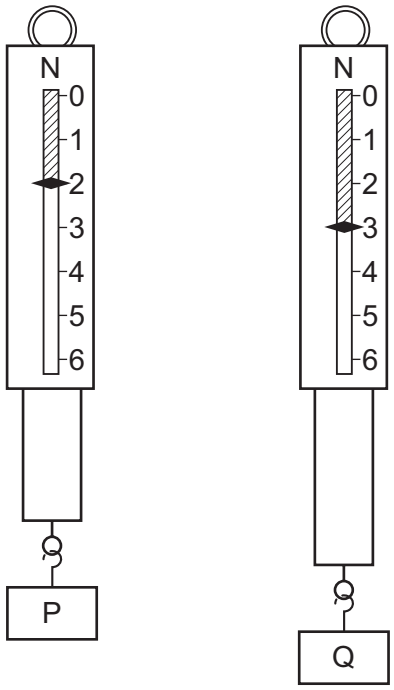
B It is the distance an object travels in one second.

C It is the force acting on an object divided by the distance it travels in one second.

D It is the force acting on an object when it is near to the Earth.

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4 Two metal blocks P and Q have identical dimensions. They hang on identical spring balances.



Which statement about P and Q is correct?

A They have different volumes and different weights.

B They have different volumes and equal weights.

C They have equal volumes and equal weights.

D They have equal volumes and different weights.

5 A mass of 6.0 kg rests on the surface of a planet.

On this planet, g = 20 N / kg.

What is the weight of the object?

A 0.30 N **B** 0.60 N **C** 60 N **D** 120 N

6 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 560 g.

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

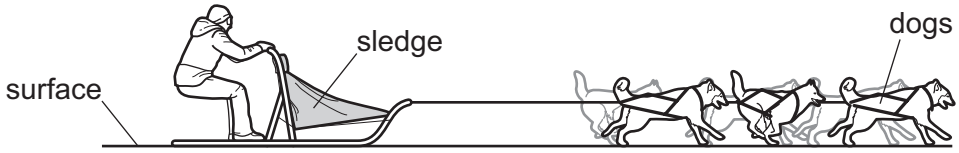
3 1.2 g/cm^3

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 **D** 3 and 4 only

7 A sledge is pulled in a straight line by dogs, as shown.



The dogs produce a total horizontal driving force of 600 N.

The frictional force between the sledge and the surface is 150 N and the air resistance on the sledge is 450 N.

What is the resultant force acting on the sledge?

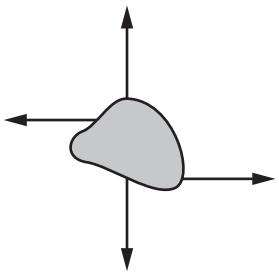
A 0 N **B** 300 N **C** 900 N **D** 1200 N

8 Forces are applied to four identical objects.

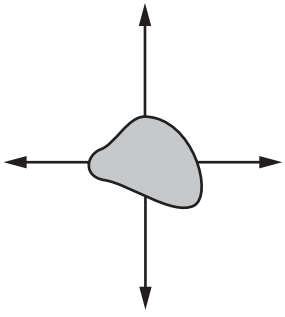
The lengths of the arrows indicate the magnitude of each force.

Which object is in equilibrium?

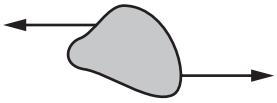
A



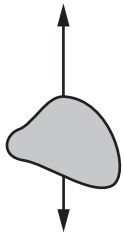
B



C

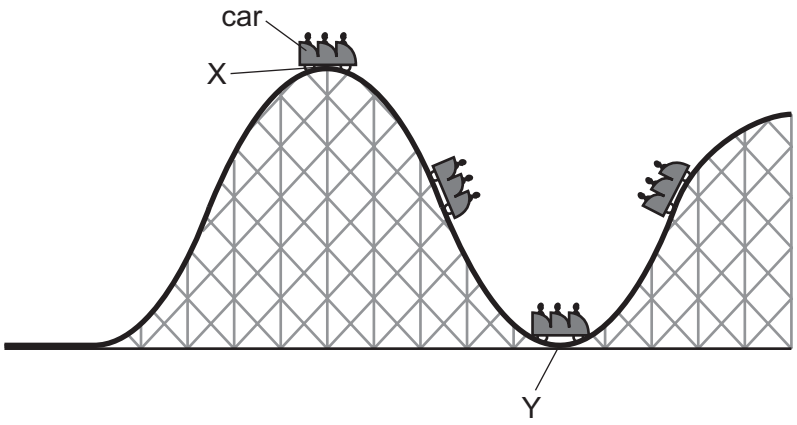


D



9 The diagram shows part of a rollercoaster ride with the car at different positions.

The car runs freely down from position X to position Y and up the hill on the other side.



What happens to the kinetic energy and to the gravitational potential energy of the car as it moves from position X to position Y?

	kinetic energy	gravitational potential energy
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

10 Student P uses a force of 35 N to push a box 3.0 m across the floor.

Student Q uses a force of 22 N to push another box 1.8 m across the floor.

Which statement gives a full explanation why student P uses more energy than student Q?

A Student P pushes his box a greater distance than student Q.

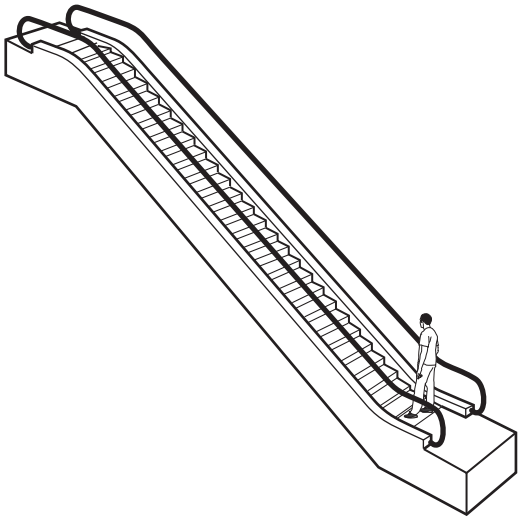
B Student P pushes his box a greater distance and uses a bigger force than student Q.

C Student P uses a bigger force than student Q.

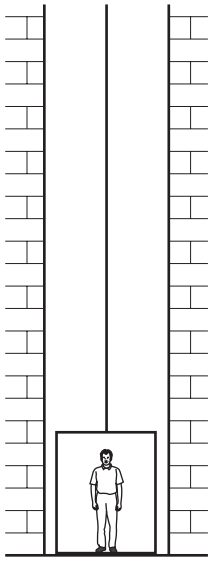
D Student P pushes a heavier box than student Q.

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11 A man can either take an escalator or a lift to travel up between two floors in a hotel.



escalator



lift

The escalator takes 20 seconds to carry the man between the two floors. The useful work done against gravity is *W*. The useful power developed is *P*.

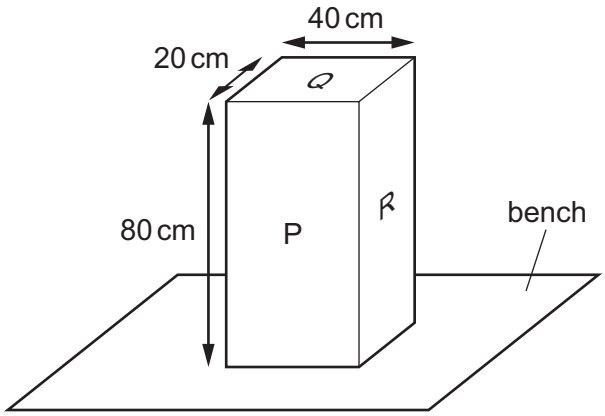
The lift takes 30 seconds to carry the same man between the same two floors.

How much useful work against gravity is done by the lift, and how much useful power is developed by the lift?

	useful work done against gravity by lift	useful power developed by lift
A	more than *W*	less than *P*
B	more than *W*	*P*
C	*W*	less than *P*
D	*W*	*P*

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12 The diagram shows a solid block resting on a bench. The dimensions of the block are shown.



On which labelled surface should the block rest to produce the smallest pressure on the bench?

A P

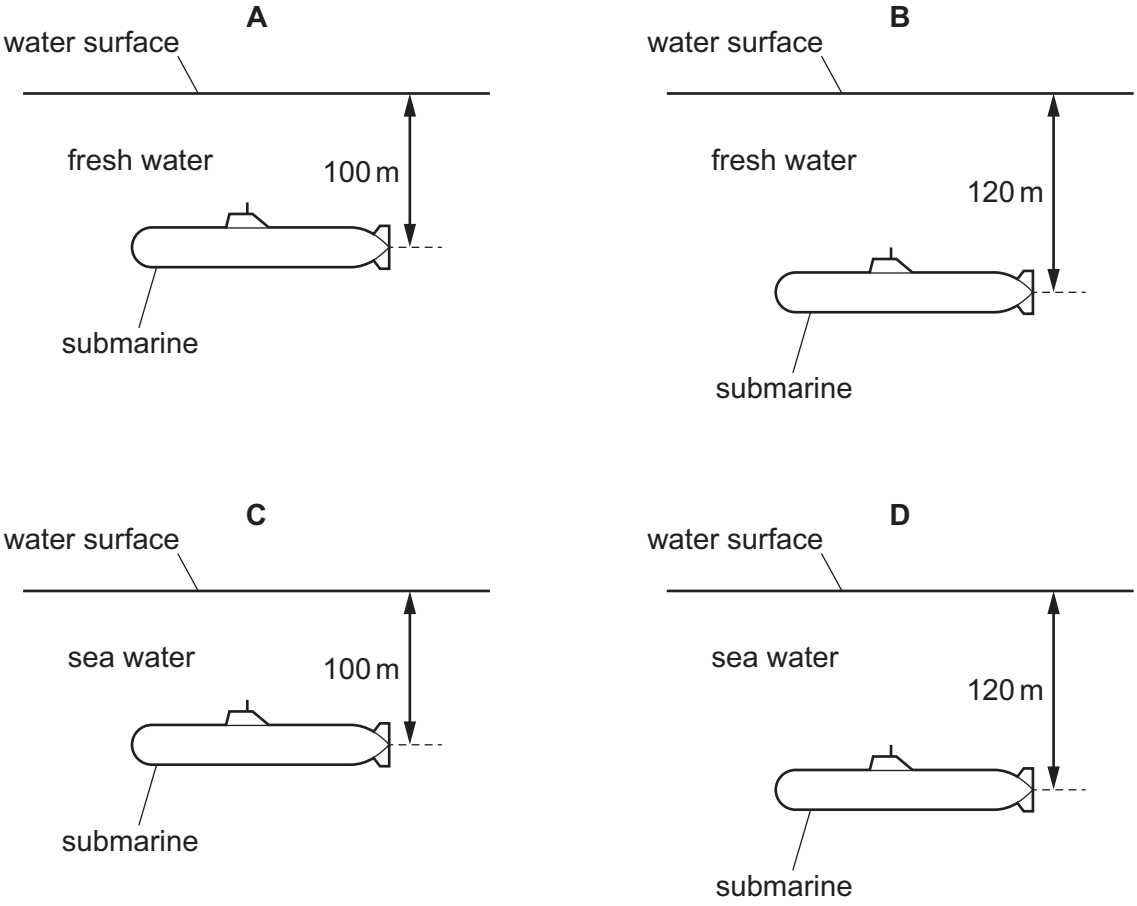
B Q

C R

D P, Q and R produce the same pressure

13 Four submarines are submerged. The density of fresh water is 1000 kg / m^3 and the density of sea water is 1020 kg / m^3.

Which submarine experiences the greatest pressure due to the water?



14 A gas is heated in a sealed container.

The volume of the container does not change.

What happens to the molecules of the gas?

A The average distance between molecules increases.

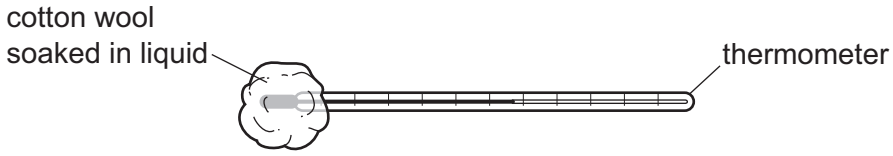
B The average kinetic energy of the molecules increases.

C The mass of each molecule increases.

D The volume of each molecule increases.

15 A student is investigating evaporation. She soaks a piece of cotton wool in a liquid and attaches this to the bulb of a thermometer.

As the liquid evaporates the temperature reading on the thermometer changes.



Which statement is correct?

A The more energetic molecules leave the liquid and the temperature reading decreases.

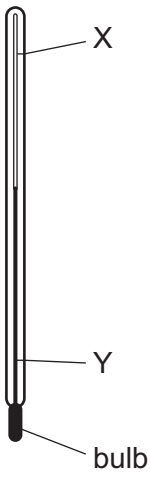
B The more energetic molecules leave the liquid and the temperature reading increases.

C The less energetic molecules leave the liquid and the temperature reading decreases.

D The less energetic molecules leave the liquid and the temperature reading increases.

16 The thermometer in the diagram has no scale.

Before this thermometer can be used to measure temperature, two standard temperatures known as fixed points are needed. These are labelled X and Y.



Which row describes these fixed points on the Celsius scale?

	X	Y
A	temperature of pure boiling water	normal body temperature
B	temperature of pure boiling water	temperature of pure melting ice
C	normal body temperature	temperature of pure boiling water
D	temperature of pure melting ice	temperature of pure boiling water

17 When a hot gas is left to cool, its internal energy decreases.

What causes this?

A a decrease in the kinetic energy of the gas particles

B a decrease in the gravitational potential energy of the gas particles

C an increase in the average speed of the gas particles

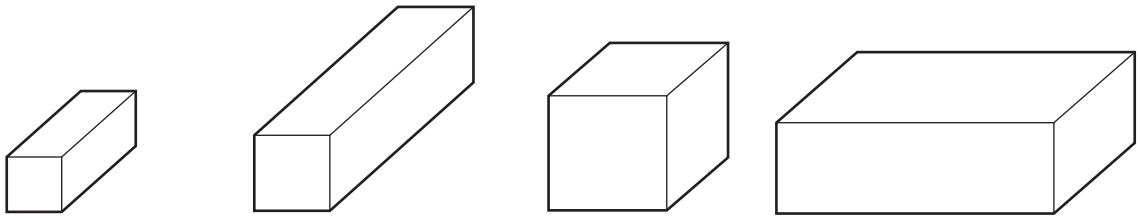
D an increase in the average distance of separation of the gas particles

18 The diagrams show four blocks of steel. The blocks are all drawn to the same scale.

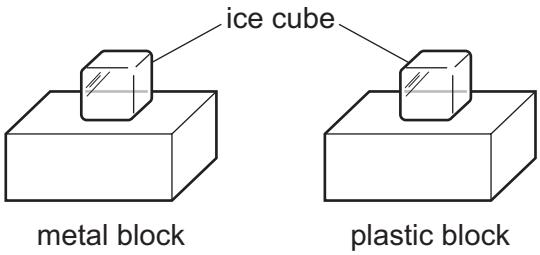
The same quantity of thermal energy is given to each block.

Which block shows the greatest rise in temperature?

A **B** **C** **D**



19 One ice cube is placed on a metal block. An identical ice cube is placed on a plastic block. The blocks are left next to each other on a table in a laboratory.



Which ice cube melts first and why?

A The ice cube on the plastic block melts first because plastic is a good insulator of thermal energy.

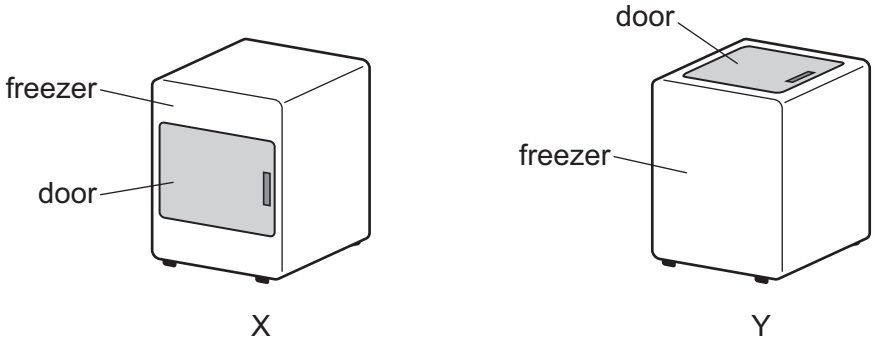
B The ice cube on the plastic block melts first because plastic is a good conductor of thermal energy.

C The ice cube on the metal block melts first because metal is a good conductor of thermal energy.

D The ice cube on the metal block melts first because metal is a good insulator of thermal energy.

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20 Two freezers X and Y are identical except that one has a door opening at the front and the other has a door opening at the top.

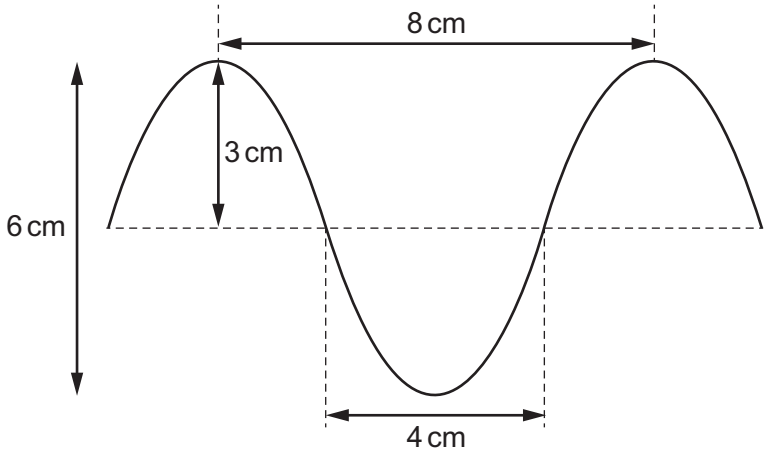


Both doors are the same size and are opened for the same amount of time.

Which freezer gains the least amount of thermal energy in this time and why?

	freezer gaining the least thermal energy	reason
A	X	cold air falls
B	X	warm air falls
C	Y	cold air falls
D	Y	warm air falls

21 The diagram shows a wave.



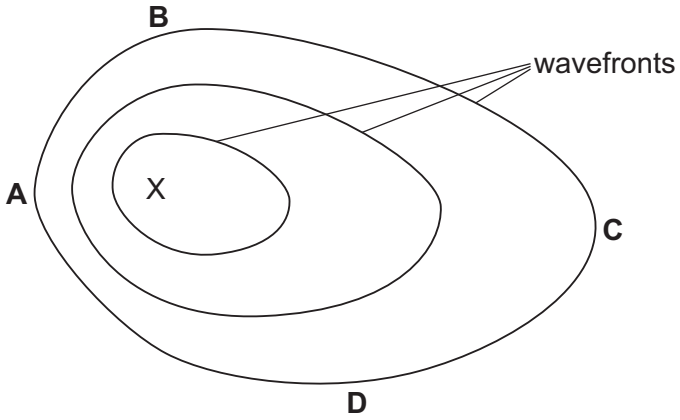
What are the amplitude and the wavelength of this wave?

	amplitude / cm	wavelength / cm
A	3	4
B	3	8
C	6	4
D	6	8

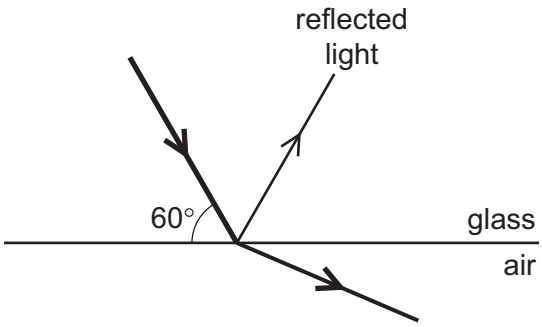
22 Waves travel more quickly on the surface of water when the water is deep.

A stone is dropped at point X into a pool of varying depth. The diagram shows the first three wavefronts on the surface of the pool.

The region between X and which labelled point is likely to be the deepest?



23 The diagram shows a beam of light travelling through glass and meeting a glass-air interface.

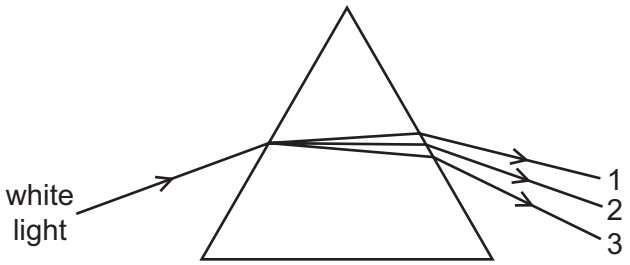


Which row correctly describes what is happening at the glass-air interface?

	angle of incidence at the interface	observation
A	30°	some internal reflection
B	30°	total internal reflection
C	60°	some internal reflection
D	60°	total internal reflection

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24 A narrow beam of white light passes through a prism and is dispersed into a spectrum.



Which row is correct?

	colour 1	colour 2	colour 3
A	blue	yellow	red
B	red	blue	yellow
C	red	yellow	blue
D	yellow	blue	red

25 An intruder alarm sensor detects that a person is warmer than his surroundings.

Which type of electromagnetic wave does the sensor detect?

A infrared

B radio

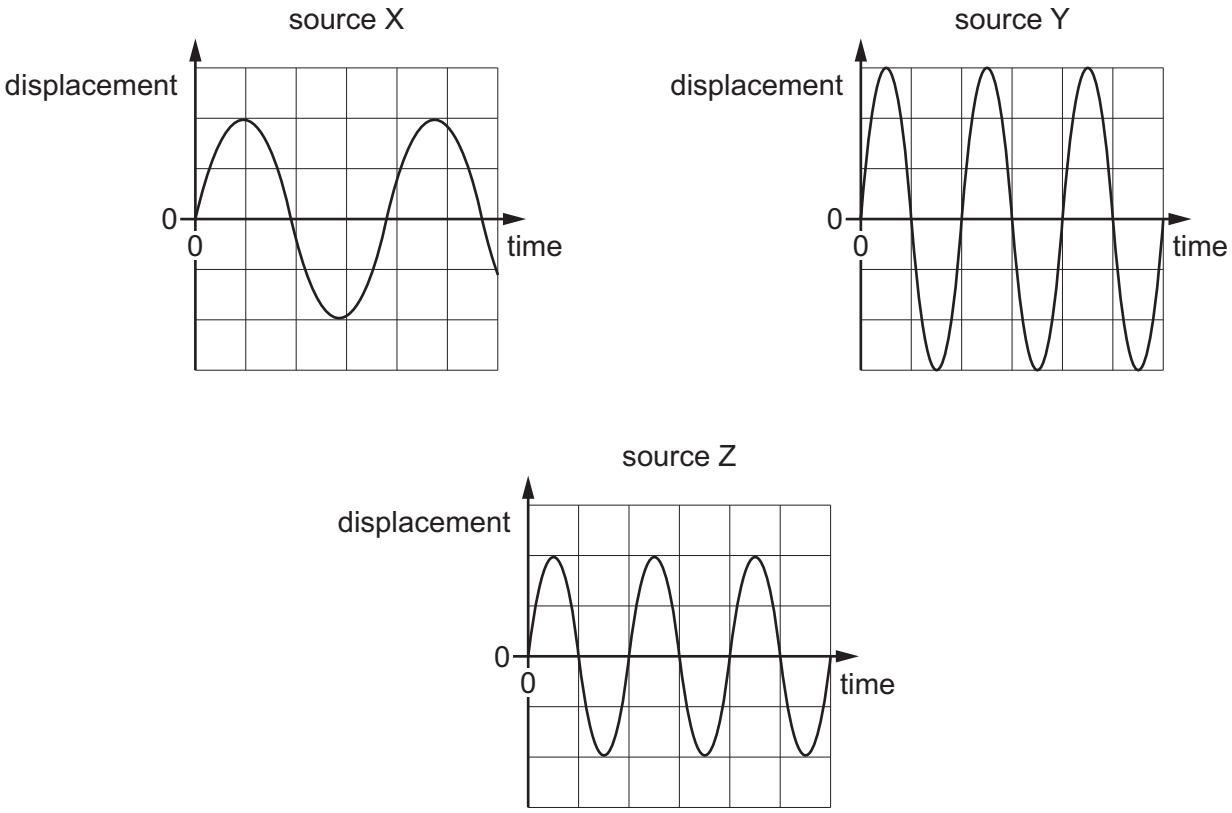
C ultraviolet

D visible light

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[Turn over

26 The graphs show the displacement of particles in sound waves from three sources X, Y and Z. The scales on the graphs are all identical.



Which sources are producing sound waves with the same pitch?

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

27 A permanent magnet is to be made.

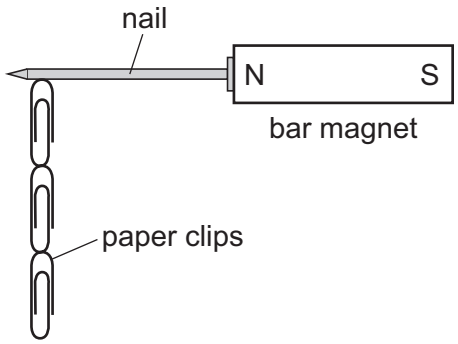
Which row gives the correct material to use and the correct reason for choosing this material?

	material	reason
A	soft iron	easy to demagnetise
B	soft iron	hard to demagnetise
C	steel	easy to demagnetise
D	steel	hard to demagnetise

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28 Four nails **A**, **B**, **C** and **D** are tested to find which makes the strongest permanent magnet.

One of the nails is placed against a bar magnet and the number of paper clips which the nail can support is recorded.



The bar magnet is then removed and the number of paper clips remaining attached to the nail is recorded. Each nail is tested individually.

Which nail becomes the strongest permanent magnet?

	number of paper clips attached to the nail	
	bar magnet present	bar magnet removed
A	2	0
B	2	1
C	4	3
D	5	2

29 Three statements about electric charge are given.

1 An ammeter directly measures how much electric charge is in an object.

2 A moving electric charge can be detected by an ammeter.

3 A flow of electric charge is an electric current.

Which statements are correct?

A 1 and 2 only **B** 1 and 3 only **C** 2 and 3 only **D** 1, 2 and 3

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30 Each of the four diagrams M, N, O and P shows a separate pair of insulating rods. Each rod is charged as shown.

diagram M

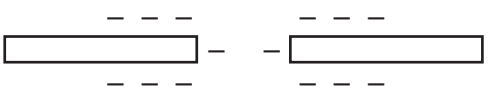


diagram N

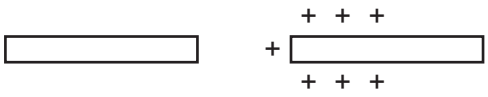


diagram O

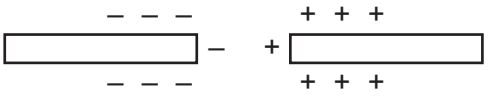
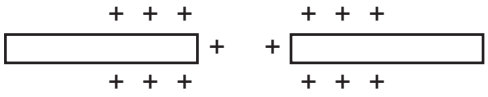


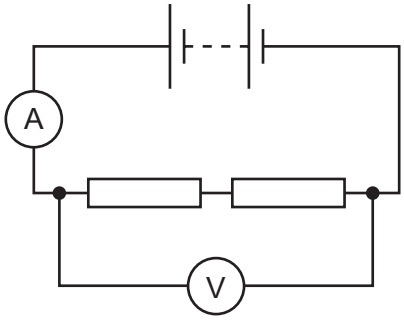
diagram P



In which **two** arrangements do the pairs of rods experience a force of repulsion?

A M and N **B** O and P **C** M and P **D** N and O

31 A student uses the circuit shown to determine the resistance of two identical resistors.



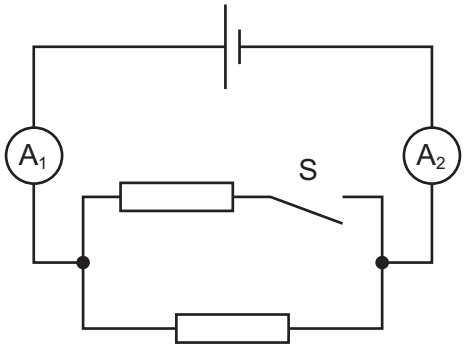
The voltmeter reading is 2.2 V and the ammeter reading is 0.25 A.

What is the resistance of each resistor?

A 0.275 Ω **B** 0.55 Ω **C** 4.4 Ω **D** 8.8 Ω

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32 In the circuit shown, A_1 and A_2 are ammeters.



Switch S is closed.

Which row is correct?

	the resistance of the whole circuit	reading of A_1	reading of A_2
A	decreases	stays the same	increases
B	decreases	increases	increases
C	increases	stays the same	stays the same
D	increases	decreases	decreases

33 What happens to the resistance of an LDR when the brightness of light falling on it increases?

A Its resistance decreases.

B Its resistance increases.

C Its resistance increases then decreases.

D Its resistance stays the same.

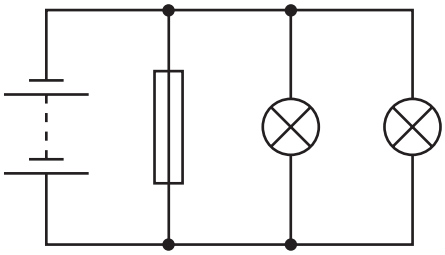
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34 A student constructs four circuits, each containing a fuse.

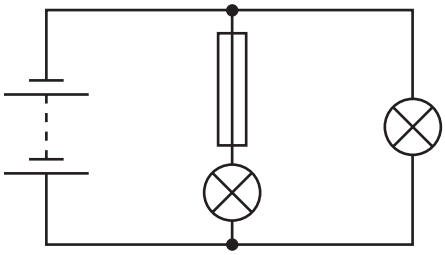
The fuse blows in one circuit and both lamps in the circuit go out.

In which circuit does the fuse blow and both lamps go out?

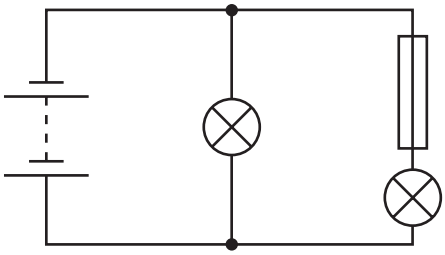
A



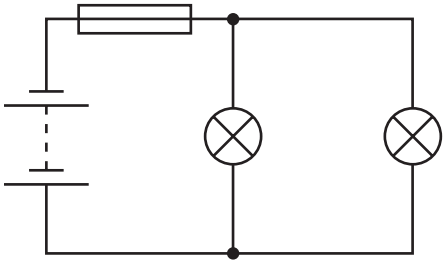
B



C



D



35 A transformer has 200 turns on its primary coil and is connected to a 240 V a.c. supply.

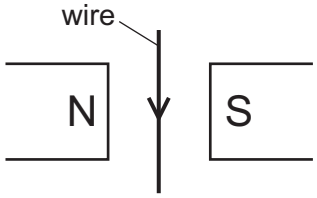
The output voltage of the transformer is 60 V a.c..

How many turns are on the secondary coil of the transformer?

A 20 **B** 50 **C** 72 **D** 800

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36 A conducting wire is placed between the poles of a magnet. When an electric current in the wire is in the direction shown, then the force on the wire acts out of the page.



Three statements of different conditions and how the wire is affected are given.

1 The current is towards the top of the page and the direction of the magnetic field is unchanged then the force produced acts into the page.

2 The current is towards the bottom of the page and the magnetic field is reversed then the force produced acts into the page.

3 The current in the wire is alternating and the wire vibrates into and out of the page.

Which statements are correct?

A 1 and 2 only **B** 1 and 3 only **C** 2 and 3 only **D** 1, 2 and 3

37 A nuclide of the element iron has the symbol shown.

$$^{56}_{26}\mathrm{Fe}$$

What does a neutral atom of this nuclide contain?

	protons	neutrons	electrons
A	26	30	26
B	26	56	30
C	30	26	56
D	56	26	30

38 What is the nucleon number of a nuclide?

A the number of neutrons in the nucleus

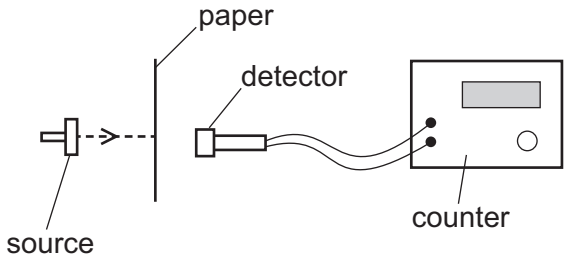
B the number of protons in the nucleus

C the number of protons minus the number of neutrons in the nucleus

D the number of protons plus the number of neutrons in the nucleus

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39 A thin sheet of paper is placed between a radioactive source and a radiation detector. The count rate falls to a very low reading.



From this result, which type of radiation is the source emitting?

A α-particles

B β-particles

C γ-rays

D X-rays

40 In 1986 the Chernobyl nuclear power station in Ukraine suffered a meltdown.

This caused background radiation in many countries, thousands of kilometres from Chernobyl, to increase.

What was transported in the atmosphere to these countries to cause this rise in background radiation?

A α-particles

B β-particles

C γ-rays

D radioactive isotopes

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