

Cambridge Lower Secondary Checkpoint

CANDIDATE
NAME

--

CENTRE
NUMBER

--	--	--	--	--

CANDIDATE
NUMBER

--	--	--	--

SCIENCE

0893/01

Paper 1

October 2024

45 minutes

You must answer on the question paper.

No additional materials are needed.

INSTRUCTIONS

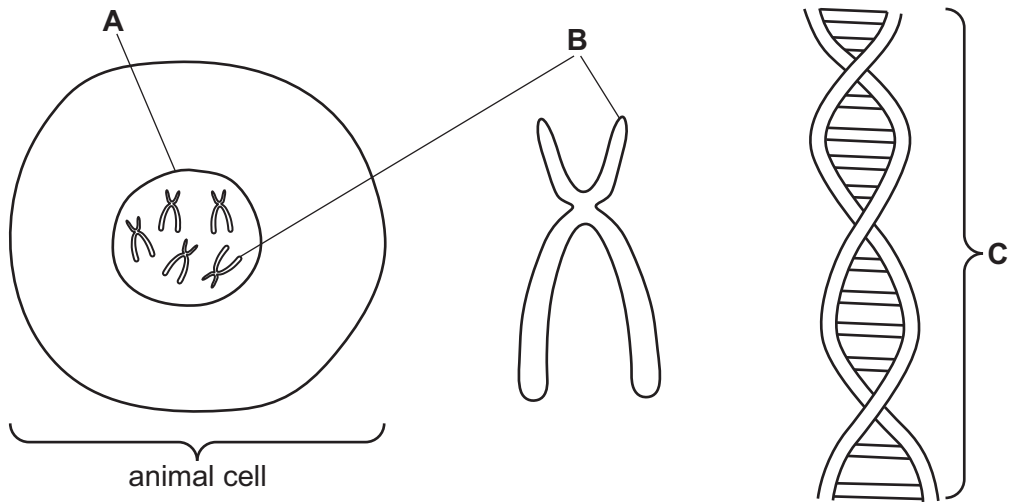
- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You should show all your working in the booklet.
- You may use a calculator.

INFORMATION

- The total mark for this paper is 50.
- The number of marks for each question or part question is shown in brackets [].

This document has **16** pages.

1 Look at the diagram of some structures in an animal cell.



NOT TO SCALE

(a) Write down the name of structure **A**.

..... [1]

(b) Write down the name of structure **B**.

..... [1]

(c) Structure **C** is an enlarged part of structure **B**.

Write down the name of structure **C**.

..... [1]

2 Look at the data about some elements.



element	mass in g	volume in cm ³	density in g/cm ³
A	10	2.22	4.5
B	10	7143	0.0014
C	10	3.70	2.7
D	10	0.88	

(a) Calculate the density of element **D**.

Include the equation you use.

Density = Mass / Volume

density = g/cm³
[2]

(b) Which element, **A**, **B**, **C** or **D**, is a gas?

.....

Explain your answer using information from the table.

.....

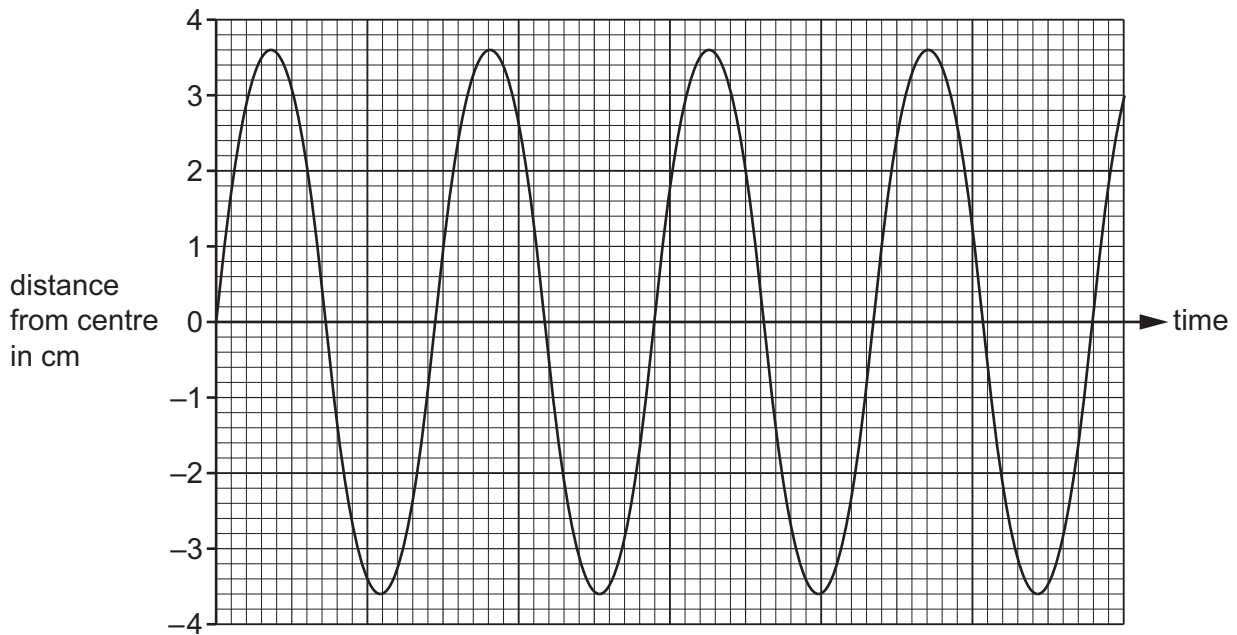
.....

[1]

3 This question is about sound waves.



Look at the graph that shows the waveform of a sound wave.



(a) What is the amplitude of the sound wave?

amplitude = cm [1]

(b) (i) Describe the effect of **increasing the amplitude** of the sound wave.

..... [1]

(ii) Describe the effect of **decreasing the frequency** of the sound wave.

..... [1]

4 Nebulae are found in space.



(a) What are nebulae made from?

..... and [2]

(b) Nebulae act as stellar nurseries.

Write down what happens in stellar nurseries.

.....
 [1]

5 Water is essential for plant growth.



Complete these sentences about the pathway of water in flowering plants.

Water from the soil enters plants through cells called

This process is called

Water moves up a plant stem inside the

Water vapour is lost from the surface of leaves by the process of

[4]

6 Look at the table showing some properties of Group 1 elements.



element	melting point in °C	boiling point in °C	density in g/cm ³	radius of an atom in pm
lithium	181	1342	0.53	152
sodium	98	883	0.97	186
potassium	64	759	0.89	231
rubidium	39	688	1.53	244

There are trends in the properties of Group 1 elements from lithium to rubidium.

Write about **three** trends in the properties of the Group 1 elements shown in the table.

1

.....

2

.....

3

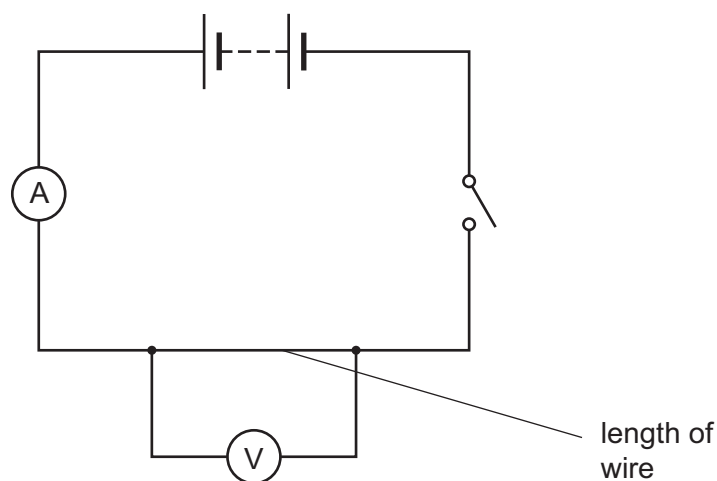
.....

[3]

- 7 Yuri investigates the resistance of six different lengths of wire.



Look at the electrical circuit Yuri makes.



- (a) Write down the name of the equipment Yuri uses to measure the voltage across the length of wire.

..... [1]

- (b) Look at Yuri's results.

length of wire in cm	voltage in V	current in A	resistance of wire in Ω
10	0.45	0.64	0.7
20	0.63	0.47
30	0.76	0.38	2.0
40	0.82	0.23	3.6
50	0.89	0.27	3.3
60	0.99	0.24	4.1

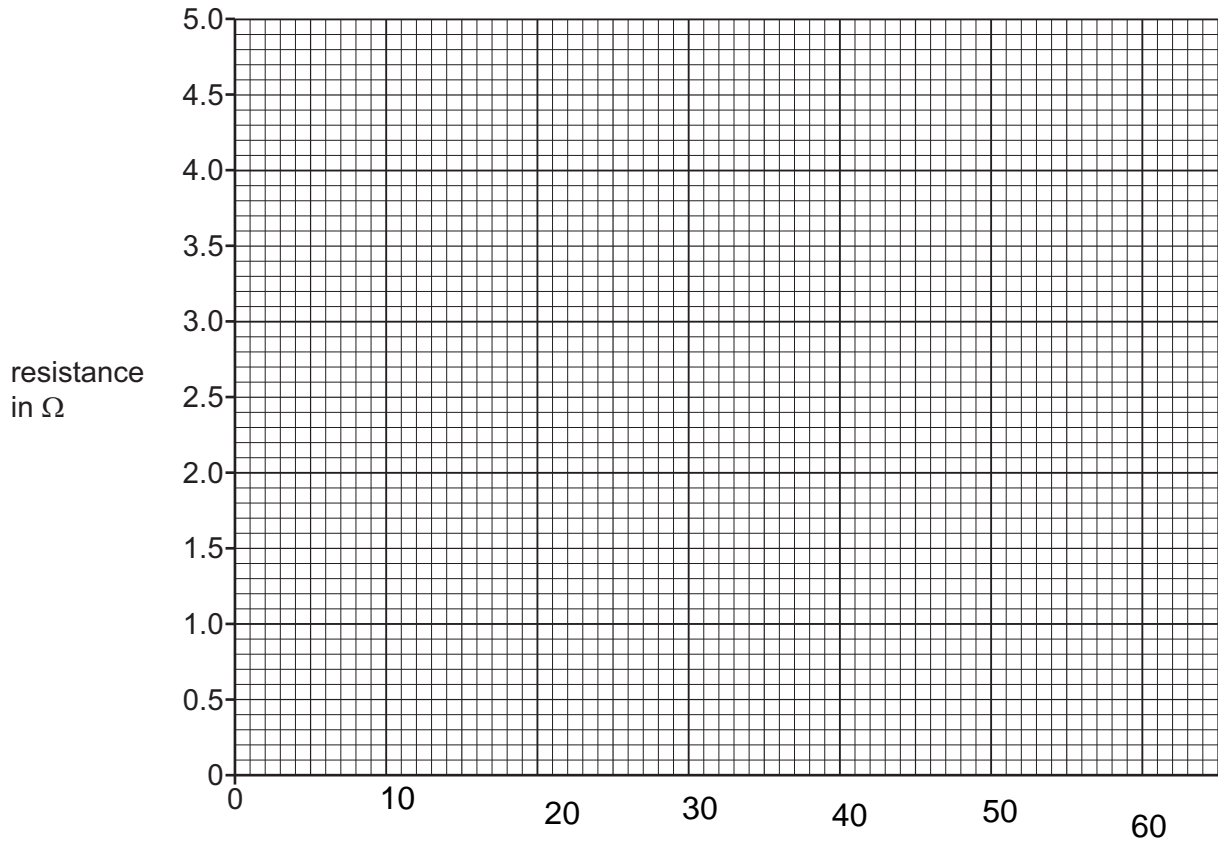
Calculate the resistance of the 20 cm length of wire.

Write your answer in the table.

[2]

(c) Draw the graph of resistance in Ω against length of wire in cm by:

- labelling the x-axis
- writing the scale for the x-axis
- plotting the points.



[2]

(d) Yuri reads the ruler, ammeter and voltmeter correctly.

The result for the 40 cm length of wire is anomalous.

Suggest **one** reason for this anomalous result.

.....
 [1]

8 Complete the sentences about the formation of the Moon.



The theory for how the Moon formed is called

One piece of evidence for this theory is that the composition of rocks on the Earth and on

the Moon is

[2]

9 Look at the picture of a panda.



Pandas live in forests in the mountains of southwest China.

Pandas eat bamboo plants.

Bamboo is found in forests in some parts of southwest China.

Climate change is decreasing the amount of bamboo.

Pandas need to eat 11 kg to 38 kg of bamboo each day to survive.

(a) Suggest the impact of climate change on the panda population.

..... [1]

(b) Write down **three** reasons for your answer in (a).

1

.....

2

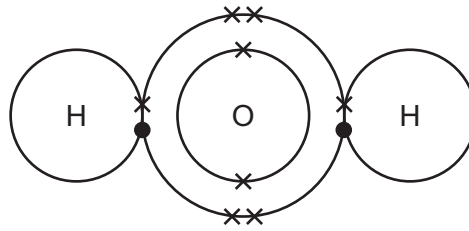
.....

3

.....

[3]

10 Look at the model of a particle of water, H_2O .



(a) The chemical bonding in water is **covalent**.

Describe what is meant by a covalent bond.

.....
 [1]

(b) Complete the sentence.

When two or more atoms are joined together by covalent bonding,

a is made. [1]

(c) How many covalent bonds are shown in the model of a particle of water?

..... [1]

11 Priya investigates inheritance of sex in humans.



She analyses two human blood samples.

(a) Suggest **one** way Priya reduces the chance of getting a disease from the blood samples she analyses.

..... [1]

(b) Explain why it is a good idea that Priya analyses more than two samples.

.....

 [2]

12 This question is about energy.



(a) Tick (✓) the law which states that energy **cannot** be created or destroyed.

conduction of energy

☐

conservation of energy

☐

dissipation of energy

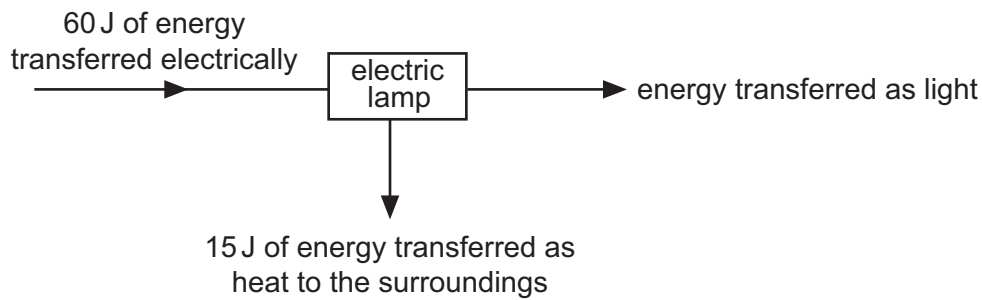
☐

transfer of energy

☐

[1]

(b) The diagram shows the energy transfers in an electric lamp.



Calculate the percentage of the energy transferred electrically to the lamp which is transferred as light.

percentage of energy transferred as light = %

[2]

13 Mia makes two salts.



She mixes 20 cm³ of an acid with 1 g of a solid in a beaker.

She repeats this with a different solid and a different acid.

She notices that one reaction mixture warms up and the other cools down.

reaction mixture	salt made	what happens
zinc and sulfuric acid	zinc sulfate	warms up
sodium carbonate and ethanoic acid	sodium ethanoate	cools down

(a) Zinc reacts with sulfuric acid.

Zinc sulfate and hydrogen are made.

Write the **word** equation for this reaction.

..... [1]

(b) Mia wants to know which reaction has the largest energy change.

Suggest what Mia does to find out which reaction has the largest energy change.

.....
 [1]

14 Pierre investigates the amount of rainfall for 6 months near his school.



He does two experiments to measure the total rainfall for each month.

He uses the same method and the same location for both experiments.

Look at Pierre's results.

		January	February	March	April	May	June
rainfall in mm	experiment 1	310	235	205	260	330	300
	experiment 2	410	52	150	410	150	25

(a) Pierre concludes that his results are precise.

Tick (✓) to show if his conclusion is correct.

yes ☐ no ☐

Give a reason for your answer.

.....

.....

[1]

(b) A scientist does the same investigation as Pierre at the same location.

The results of the scientist are correct.

Look at the scientist's results.

	January	February	March	April	May	June
rainfall in mm	310	235	205	260	330	300

Pierre says,

'My results for experiment 1 are accurate.'

Tick (✓) to show if his conclusion is correct.

yes ☐ no ☐

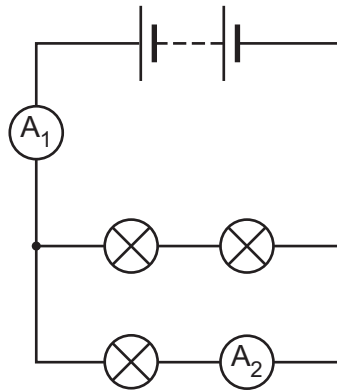
Give a reason for your answer.

.....

.....

[1]

15 Carlos makes an electrical circuit using three identical lamps.



(a) Name this **type** of electrical circuit.

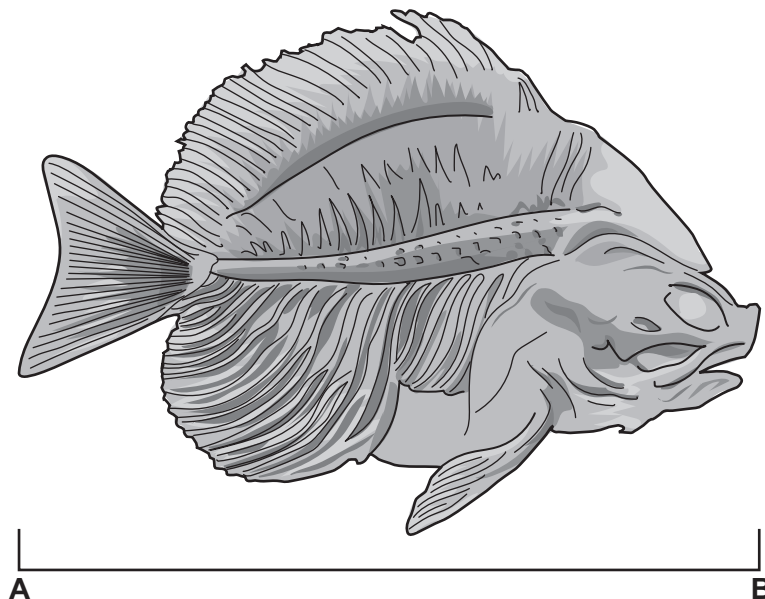
..... [1]

(b) The reading on ammeter A_1 is 1.2 A.

Calculate the reading on ammeter A_2 .

..... A [1]

16 Aiko investigates the fossil of a fish.



(a) Measure the length **AB** in mm of the fossil fish in the diagram.

length of fossil = mm [1]

(b) Aiko measures the mass of the fossil.

Look at the reading on the balance.

420.4 g

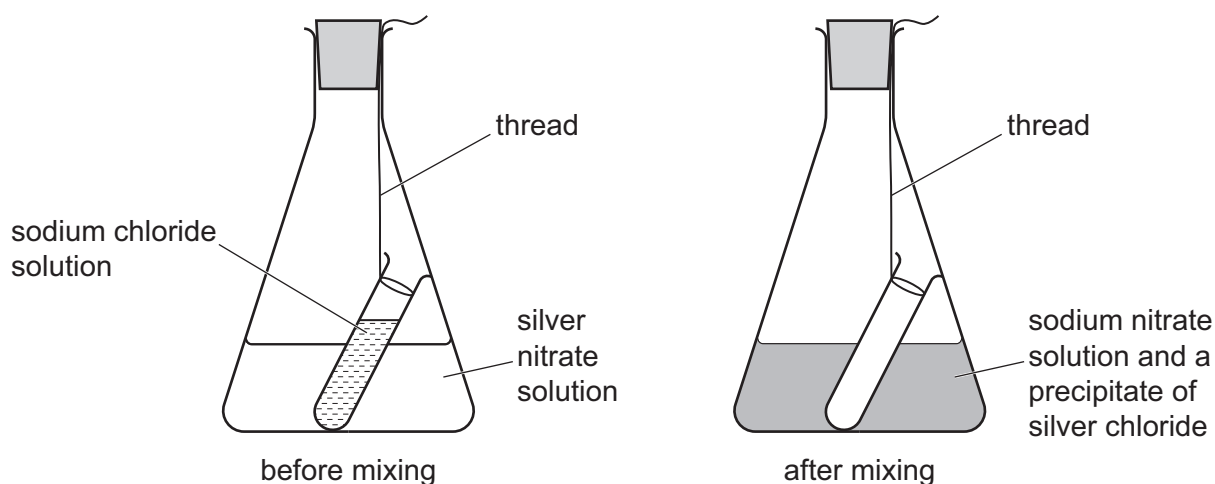
Write down the mass of the fossil to the nearest whole number.

mass = g [1]

17 Mike investigates the reaction between silver nitrate solution and sodium chloride solution.



Look at the diagram of the equipment he uses.



Mike:

- assembles the equipment as shown in the diagram before mixing
- records the total mass of the flask and its contents
- turns the flask and its contents upside down to let the solutions mix
- is careful not to let any liquid leak out of the flask
- records the mass of the flask and its contents again.

What happens to the mass of the flask and its contents during the reaction?

.....

Explain your answer.

.....

.....

.....

[2]