Cambridge Assessment International Education

Cambridge Lower Secondary Checkpoint

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

0521467898

SCIENCE **1113/02**

Paper 2 **October 2022**

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. Any blank pages are indicated.

IB22 10_1113_02/7RP

1 Wood is an example of a renewable energy source.

(a) State **two more** examples of **renewable** energy sources.

..... and ..... [1]

(b) Many countries are stopping using **non-renewable** energy sources.

Write down **two** reasons why.

1 .....

.....

2 .....

.....

[2]

2 This question is about elements, compounds and mixtures.

Draw **one** line from each **type of substance** to a **statement** about the substance.

type of substance	statement
compound	two or more substances that can be separated by a physical method
	an impure substance that contains only one type of molecule
element	a pure substance that contains two or more different types of atoms chemically joined together
	contains only one type of atom
mixture	the smallest particle that can exist

[3]

3 Lily wants to make zinc sulfate.

She uses zinc and dilute sulfuric acid.

Look at the steps she takes.

They are **not** in the correct order.

A – Add zinc powder to the warm dilute sulfuric acid until no more zinc reacts.

B – Evaporate the solution until some crystals start to appear.

C – Place 25 cm^3 of dilute sulfuric acid into a beaker.

D – Leave the solution to completely crystallise.

E – Place the filtrate of zinc sulfate solution into an evaporating basin.

F – Filter the contents of the beaker to remove unreacted zinc.

G – Warm the dilute sulfuric acid.

(a) Write the letters to show the steps in the correct order.

Two have been done for you.

C	.....	.....	**F**	.....	.....	.....

[2]

(b) When zinc reacts with dilute sulfuric acid a gas is made.

Write down the name of this gas.

..... [1]

(c) When Lily uses **hotter** dilute sulfuric acid the reaction is faster.

Explain why.

Use ideas about particles and collisions.

.....

.....

..... [2]

(d) What equipment does Lily use to accurately measure 25 cm^3 of dilute sulfuric acid?

..... [1]

(e) Identify **one** safety hazard in this experiment.

hazard .....

Describe how this safety hazard is reduced.

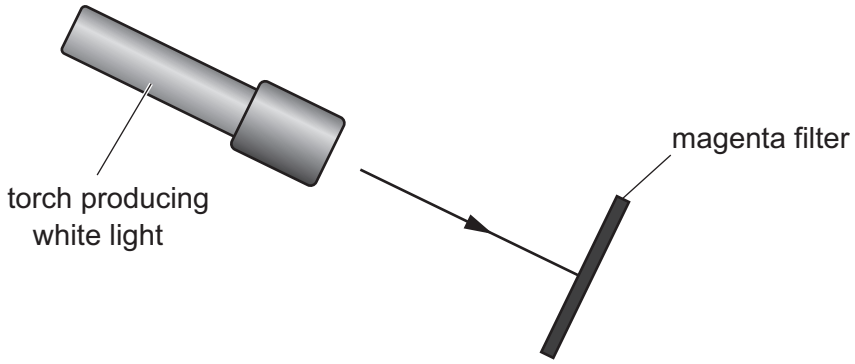
reduced by .....

.....

[2]

4 Gabriella investigates light.

(a) Gabriella shines white light through a magenta filter.



(i) Circle the correct statement about the magenta filter.

transmits blue and green light

transmits blue and red light

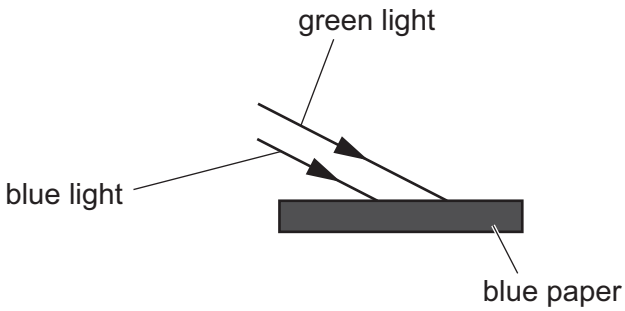
transmits green and red light

transmits no light

transmits white light

[1]

(ii) Gabriella shines blue light and green light onto blue paper.



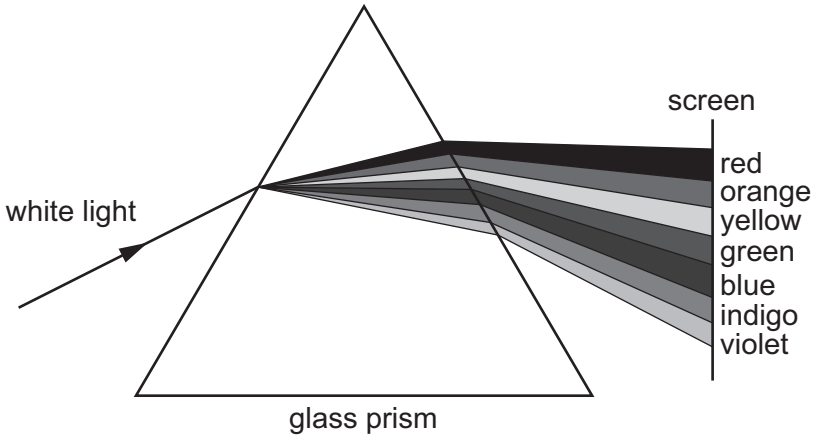
Describe what happens to the blue light and the green light.

blue light .....

green light .....

[2]

(b) Gabriella shines white light onto a glass prism.



Write down the name of this process.

..... [1]

5 Vertebrates are classified into different groups.

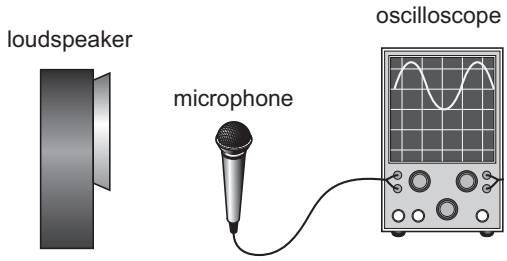
Draw a straight line from each **group** of vertebrates to match the best **description** of that group.

Draw only **two** lines.

group	description
	scaly skin lay eggs on land
amphibians	moist skin lay eggs on land
reptiles	scaly skin lay eggs in water
	moist skin lay eggs in water

[2]

6 Chen investigates sound.



He makes a sound using a loudspeaker.

The microphone detects the sound.

Chen writes down the amplitude of the sound wave shown on the oscilloscope.

(a) What does the amplitude of a sound wave measure?

.....

[1]

(b) Chen changes the distance from the microphone to the loudspeaker.

He writes his results in a table.

distance from microphone to loudspeaker in cm	amplitude in cm
0	8.0
10	2.0
20	1.0
30	0.5
40	0.3

(i) Describe the pattern in his results.

.....

.....

.....

[1]

(ii) Chen increases the distance from the microphone to the loudspeaker to 50 cm.

Predict the amplitude.

amplitude ..... cm [1]

(iii) Chen repeats the investigation.

He uses distances of 5 cm, 15 cm, 25 cm, 35 cm and 45 cm.

Suggest why this is a good idea.

.....

.....

[1]

7 Rajiv collects seeds from apples and grows them until they become trees.

Some of the trees produce large, tasty apples.

Other trees produce small apples that **cannot** be eaten.

(a) Write down the word used to describe differences within a species.

..... [1]

(b) Rajiv wants to produce a new variety of apple tree that has large, tasty apples.

Write down the word that describes the type of breeding he uses.

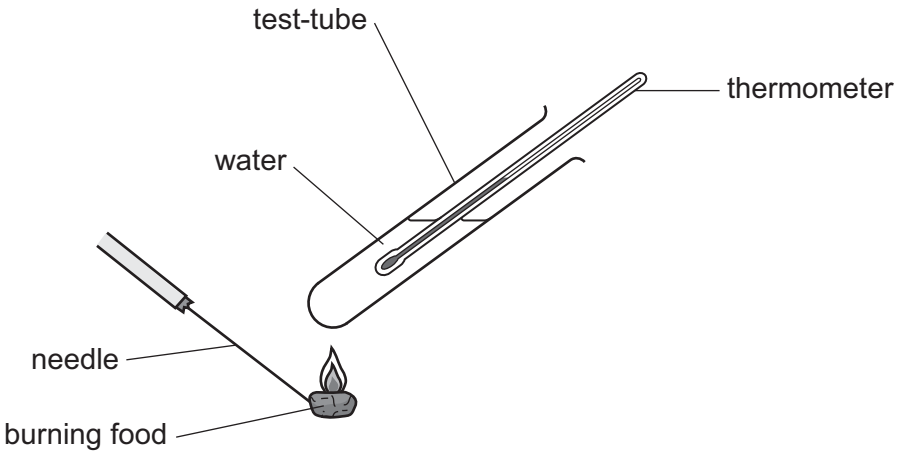
..... [1]

(c) Name the part of a cell that contains the genetic material.

..... [1]

8 Oliver compares the energy in different types of food.

He burns the food and uses the energy released to heat water.



(a) Complete the sentence about the energy transferred when the food burns.

The ..... energy in the food is transferred into light, sound and

..... energy. [2]

(b) Oliver uses the same volume of water in the test-tube for each food he burns.

This makes it a fair test.

Tick (✓) **three more** things Oliver does to make it a fair test.

always starts with cold water at 10 °C	☐
mixes and burns all the food together	☐
burns the same mass of food	☐
keeps the burning food the same distance from the test-tube	☐
uses the same type of food	☐
writes down the colour of the food	☐

[2]

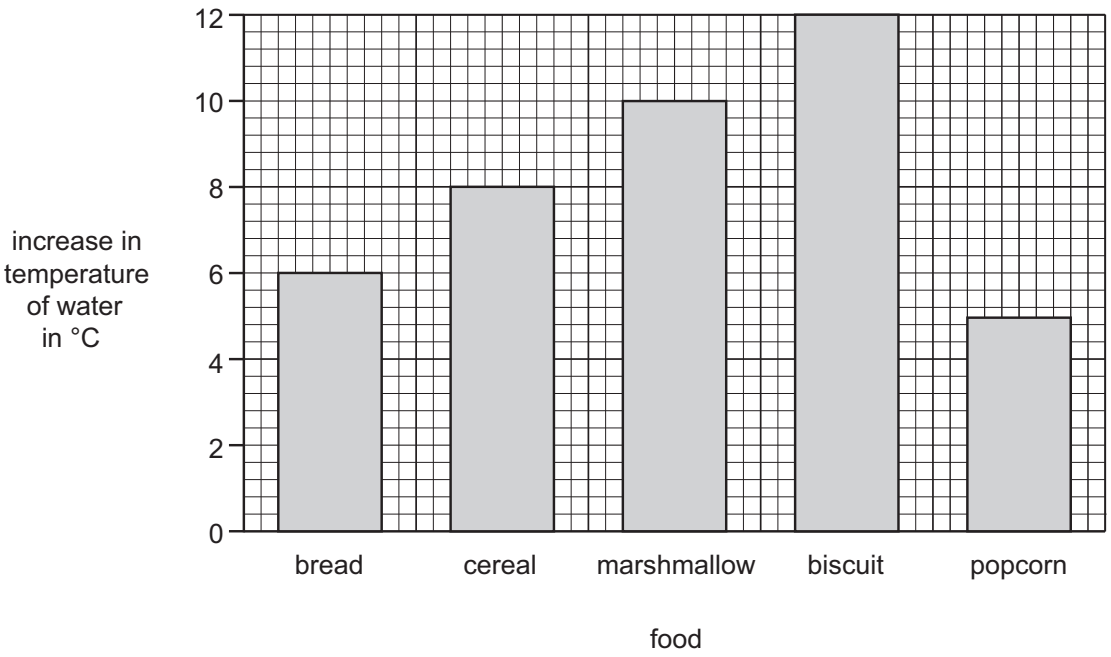
(c) Oliver burns each food.

He measures the increase in temperature of the water.

Here are his results.

food	increase in temperature of water in °C
bread	6
cereal	8
marshmallow	10
biscuit	12
popcorn	3

Oliver draws a bar chart.



One of the bars is wrong.

Write down which bar is **wrong**. ..... [1]

(d) Which food contains the **most** energy?

Give a reason for your answer.

food .....

reason .....

.....

[1]

9 Scientists are concerned because the seas contain lots of plastic waste.

Most plastic **cannot** be digested by living organisms.

The plastic will remain in the seas for hundreds of years.

(a) Suggest how plastic waste gets into the sea.

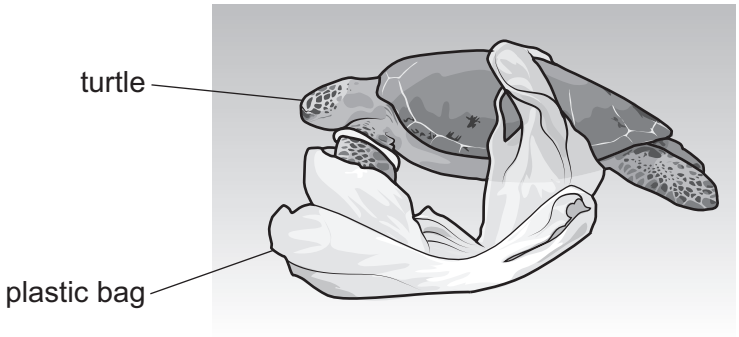
.....

[1]

(b) Turtles are reptiles that live in the sea.

Turtles eat jellyfish that live in the sea.

The diagram shows a turtle trapped in a plastic bag.



(i) Suggest how turtles get trapped in plastic bags.

.....

[1]

(ii) The turtle population decreases because they get trapped in plastic bags.

Suggest why the turtle population decreases.

.....

.....

[2]

(iii) Sea birds eat baby turtles.

Suggest the effect of plastic waste on the population of sea birds.

Give a reason for your answer.

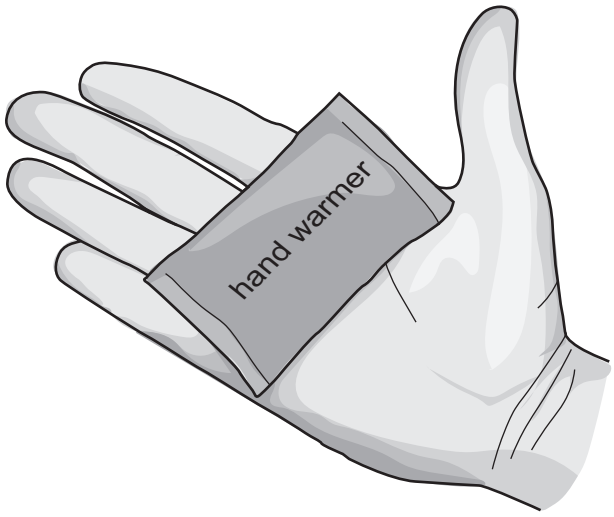
effect .....

reason .....

.....

[2]

10 The picture shows a chemical hand warmer.

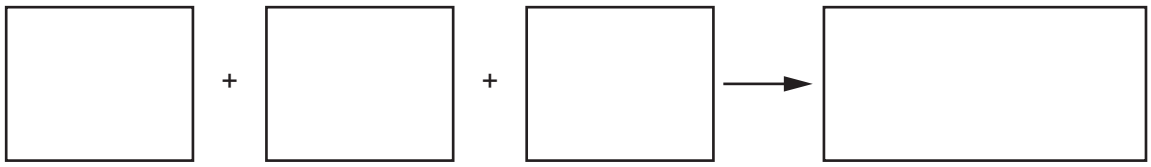


(a) The hand warmer contains iron and water.

Oxygen reacts with iron and water inside the hand warmer.

Hydrated iron oxide is made.

Complete the word equation for the reaction.



[2]

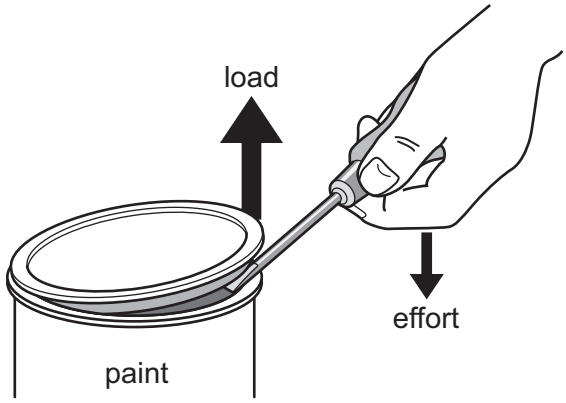
(b) Write down the name of the reaction between iron, water and oxygen that is **not** useful.

..... [1]

11 Forces cause objects to turn on a pivot.

(a) Look at the diagram.

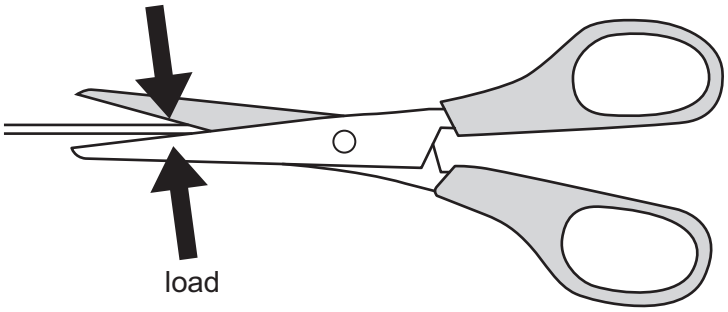
It shows the load force and the effort force needed to open a tin of paint.



Look at the diagram of the scissors.

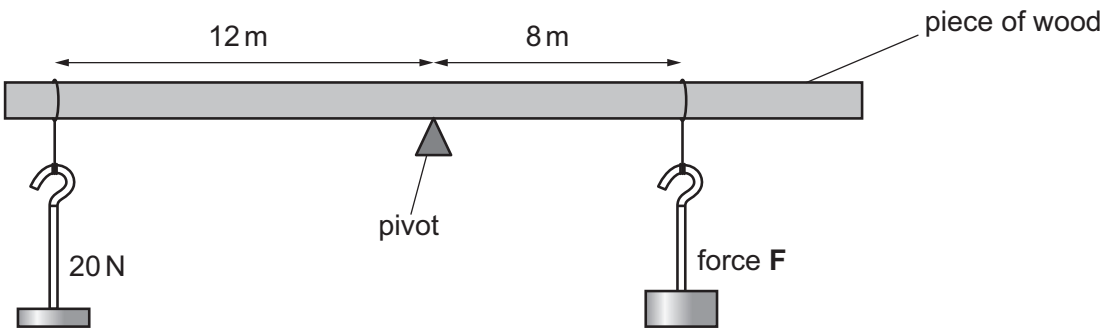
The load forces are shown.

Complete the diagram by drawing arrows to show the direction of the **effort forces**.



[1]

(b) A piece of wood balances on a pivot.



(i) Aiko starts to calculate the force **F**.

She uses this equation.

$$20 \times 12 = 8 \times F$$

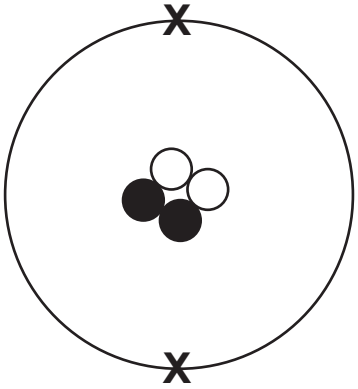
Complete her calculation.

force **F** ..... N [1]

(ii) Write down the name of the principle Aiko uses to calculate the force **F**.

..... [1]

12 Look at the diagram of an atom.



Write down the number of **particles** in the nucleus of this atom.

..... [1]

13 Priya finds some information about the energy transferred by four machines.

machine	energy put into machine in J	useful energy out of the machine in J	other energy out of the machine in J
A	100	64	36
B	240	60	180
C	24	12	12
D	782	382	400

Priya says,

'Energy is always conserved.'

Tick (✓) to show if Priya is correct.

Yes ☐ No ☐

Explain your answer.

Use the numbers in the table.

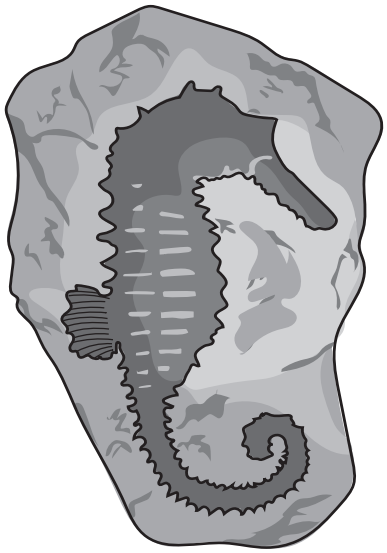
.....

.....

.....

[2]

14 Look at the diagram of a fossil in a rock.



Describe how fossils are formed.

.....

.....

..... [2]