

35 minutes

No additional materials are needed.

INSTRUCTIONS

- Answer **all** questions.
- Write your answer to each question in the space provided.
- You should show all your working on the question paper.

INFORMATION

- The total mark for this paper is 40.
- The number of marks for each question or part question is shown in brackets [].

1 Priya investigates pulse rate and exercise.

Pulse rate is the number of times the heart beats in a minute.

Priya:

- step 1 – measures her normal (resting) pulse rate
- step 2 – runs 100 m as fast as possible
- step 3 – immediately measures her pulse rate
- step 4 – rests until her pulse rate goes back to normal
- step 5 – repeats steps 1 to 4
- step 6 – repeats the investigation with some of her friends
- step 7 – looks at her results to make a conclusion.

(a) Priya makes a prediction for her investigation.

Suggest a possible prediction for this investigation.

.....
 [1]

(b) Which step involves fair testing?

..... [1]

(c) Which step involves pattern seeking?

..... [1]

(d) Which step improves the reliability of the data collected by Priya?

..... [1]

(e) Fair testing and pattern seeking are two types of scientific enquiry.

Describe **two other** types of scientific enquiry.

1 _____
 2 _____

[2]

(f) Blood moves around the body through blood vessels.

Capillaries are **one** type of blood vessel.

Write down **one other** type of blood vessel.

_____ [1]

2 Oxygen is a gas found in the atmosphere.

(a) Oxygen has a very low melting point.

What is meant by the words **melting point**?

.....

.....

_____ [2]

(b) One of the properties of oxygen gas is that it is colourless.

Suggest **two other** properties of oxygen gas.

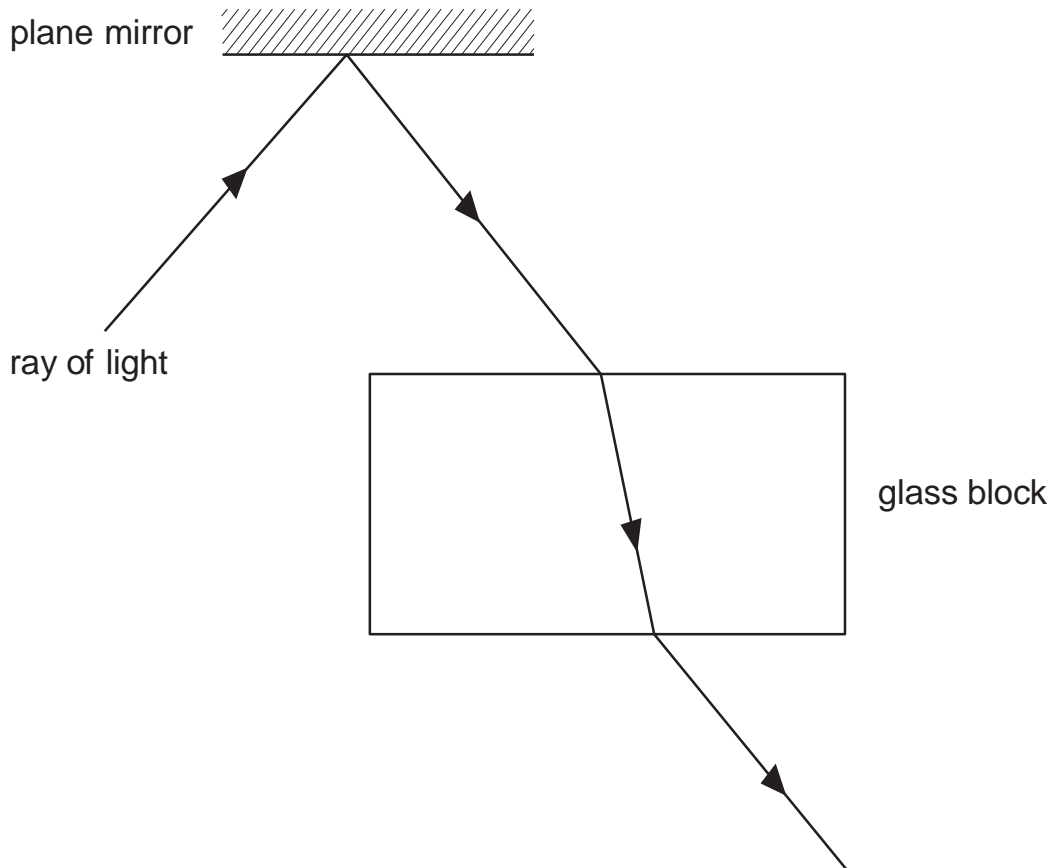
1 _____

2 _____

[2]

3 This question is about a ray of light.

Look at the diagram of a ray of light.



(a) Write down the name of the process that happens to the ray of light at the plane mirror.

..... [1]

(b) Write down the name of the process that happens to the ray of light as it enters and leaves the glass block.

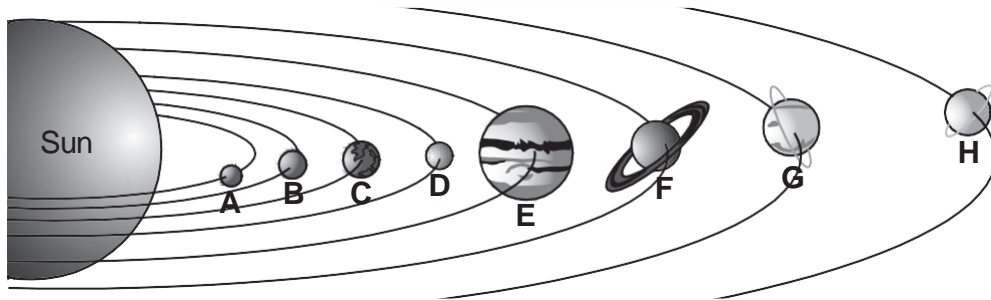
..... [1]

(c) Describe what happens to the ray of light as it enters, passes through **and** leaves the glass block.

.....

 [2]

- 4 Look at the diagram of the Sun and eight planets of the Solar System.



Not drawn to scale

- (a) What is the name of the path of a planet around the Sun?

..... [1]

- (b) What is the name of the planet that is furthest from the Sun?

..... [1]

- (c) Which letter represents Mars?

..... [1]

- (d) The Earth has one moon.

Many of the other planets have moons.

What is a moon of a planet?

.....

..... [1]

- 5 Aiko investigates how many grams of a substance dissolves in 100 cm^3 of water at different temperatures.

In her first experiment she:

- measures 100 cm^3 of water
- measures the temperature of the water
- keeps adding the substance until it **no longer** dissolves
- measures the mass of substance added.

Aiko then repeats the experiment but increases the temperature of the water.

- (a) Describe what happens to the particles of the substance when it dissolves in water.

Use ideas about the particle model.

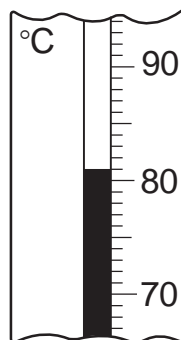
.....

_____ [1]

- (b) Write down the name of the equipment Aiko uses to accurately measure 100 cm^3 of water.

_____ [1]

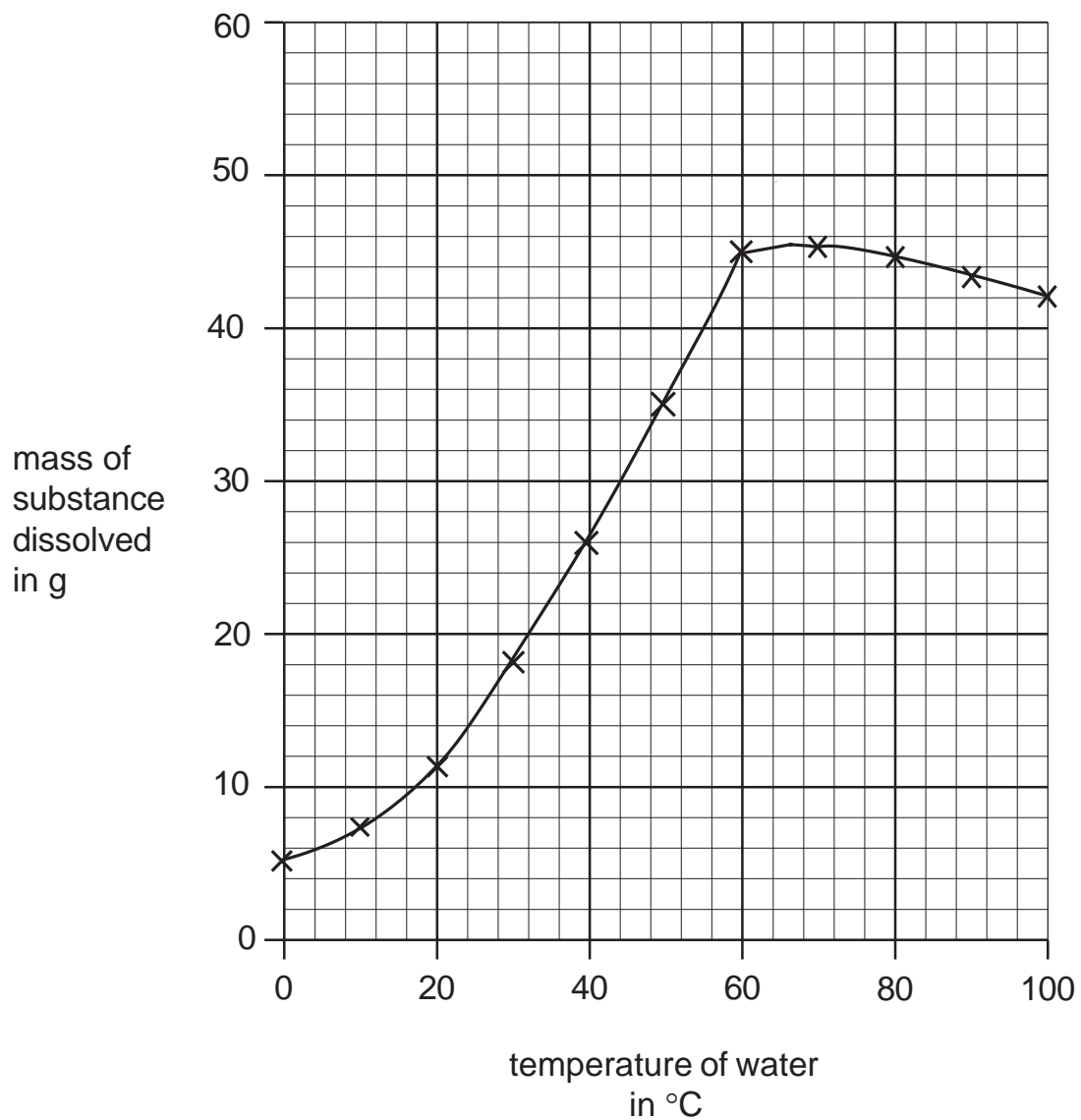
- (c) Look at the thermometer reading for one of the experiments.



Write down the temperature reading shown on the thermometer.

_____ °C [1]

(d) Look at a graph of Aiko's results.



Describe how increasing the temperature affects the mass of substance dissolved.

.....

 [2]

(e) Hot water is dangerous.

Suggest **one** thing Aiko does to stay safe in her experiment.

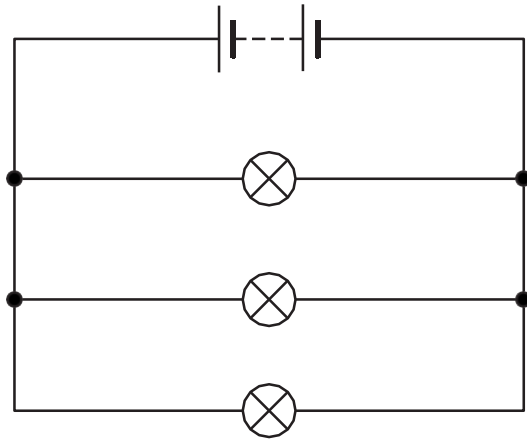
.....
 [1]

[Turn over

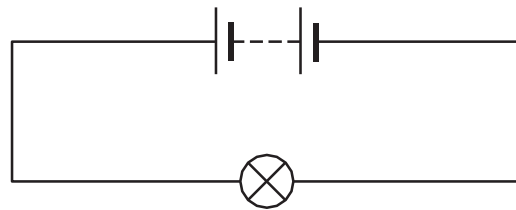
6 Carlos and Yuri make four electrical circuits.

They use different numbers of identical electrical components in each circuit.

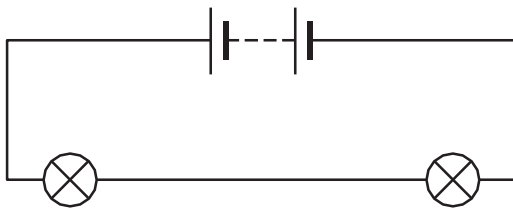
Look at the four circuits.



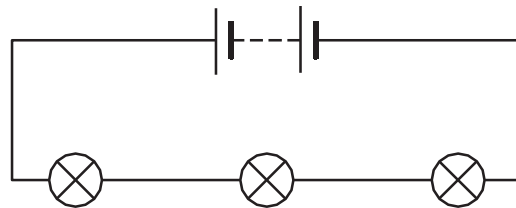
circuit **A**



circuit **B**



circuit **C**



circuit **D**

(a) Which is a parallel electrical circuit?

Choose from **A**, **B**, **C** or **D**.

.....

[1]

(b) Look at circuits **B** and **C**.

Which circuit has brighter lamps?

.....

Explain your answer.

_____ [1]

(c) Look at circuits **A** and **D**.

Which circuit has the brighter lamps?

.....

Explain your answer.

.....

..... [1]

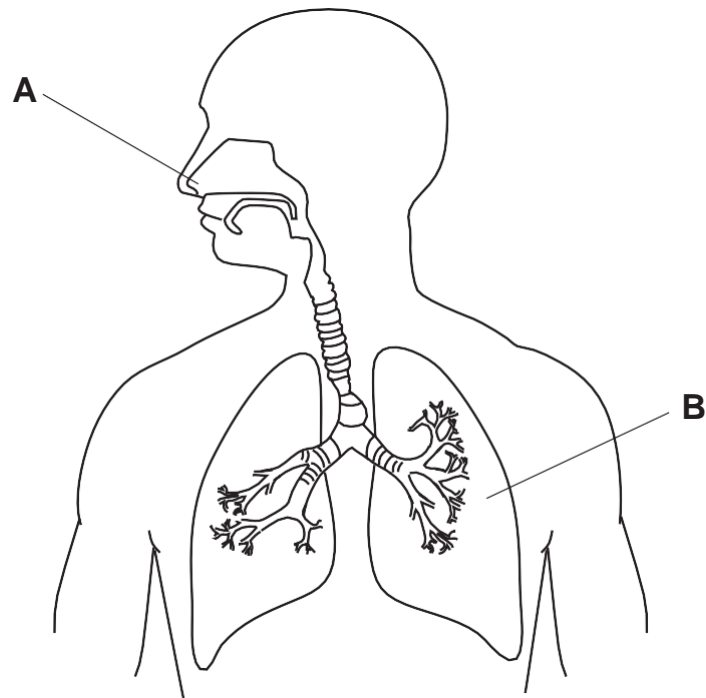
(d) Yuri suggests putting switches in **all** of the circuits.

Explain why this is a good idea.

.....

..... [1]

7 Look at the diagram of the human respiratory system.



(a) Write down the name of part **A** of the human respiratory system.

..... [1]

(b) Write down the name of part **B** of the human respiratory system.

..... [1]

(c) Describe the function of the human respiratory system.

.....
.....
.....
.....
..... [2]

8 There are three types of rock found in the Earth's crust.

These are igneous, metamorphic and sedimentary rock.

Look at the table that shows some information about three rock samples.

sample	description of sample	type of rock
X	soft white rock found in layers
Y	dark grey rock that is very hard and contains crystals
Z	very hard grey rock that contains minerals and distorted crystals

(a) Complete the table by identifying the type of rock for each rock sample. [2]

(b) Complete the sentence.

Wind and rain break rocks into smaller pieces and transport them away.

This process is called _____. [1]

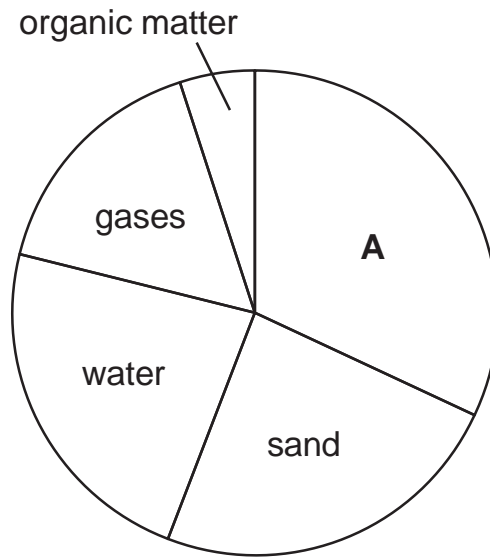
(c) The smaller pieces of rock are changed into sedimentary rock.

Describe how this happens.

.....

 _____ [2]

- 9 Look at the pie chart showing the different components of a soil.



- (a) Which component has the **lowest** percentage in this soil?

_____ [1]

- (b) The name of component **A** is missing from the pie chart.

What is the name of this component?

_____ [1]