



Science

Stage 8

Paper 2

2025

Cambridge Lower Secondary Progression Test

Name

Class

Date

45 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 50.
- The number of marks for each question or part question is shown in brackets [].

1 This question is about human blood.



(a) Human blood consists of many different components.

Draw a straight line to match each **component** to its correct **function**.

component	function
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;">plasma</div> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;">red blood cell</div> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;">white blood cell</div>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;">protects against pathogens</div> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;">transports mitochondria</div> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;">transports nutrients</div> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;">transports oxygen</div>

[2]

(b) Name the process that gases use to travel between blood and the air in the lungs.

..... [1]

(c) Blood is important for breathing and respiration.

Describe **two** differences between breathing and respiration.

1

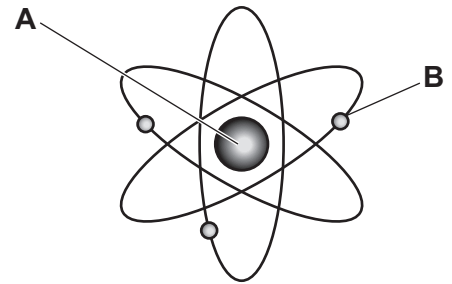
.....

2

.....

[2]

2 Look at the diagram of Rutherford's model of the structure of the atom.



(a) Write down the names of part **A** and particle **B**.

A

B

[2]

(b) Which **two** types of particle are present in part **A**?

..... [1]

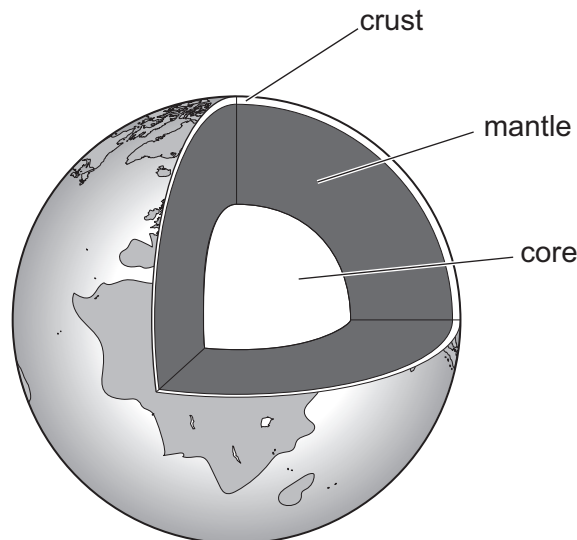
3 Some electrical devices used in the home contain an electromagnet.



Write down the name of **one** of these electrical devices.

..... [1]

4 The diagram shows the structure of the Earth.



Complete the sentences.

The Earth's magnetism is mainly caused by electric currents in a liquid.

These electric currents produce a magnetic around the Earth.

The part of the Earth which acts as a magnet is the

[2]

5 This question is about health in humans.



Look at the list of important constituents of a balanced diet for humans.

- calcium
- carbohydrates
- fats and oils
- iron
- proteins
- vitamin A
- vitamin C
- vitamin D
- water

(a) (i) Write down the constituent that is **most** essential for healthy muscle development.

..... [1]

(ii) Write down the **two** constituents that are **most** essential for healthy bone growth.

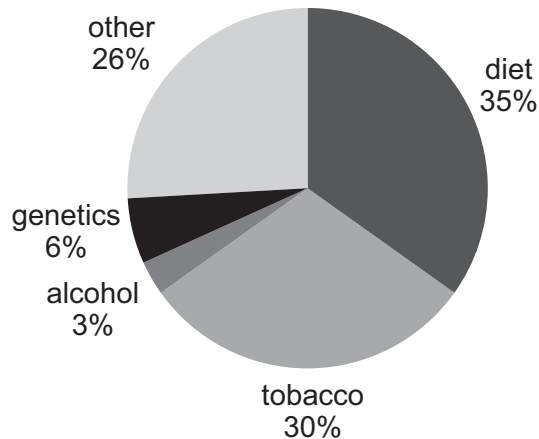
1

2

[1]

(b) Health in humans is affected by cancer.

Look at the pie chart that shows factors that cause cancer.



(i) What is the total percentage of cancer caused by diet and tobacco?

..... % [1]

(ii) Diet and tobacco use are lifestyle choices.

Suggest **one other** lifestyle choice that causes cancer.

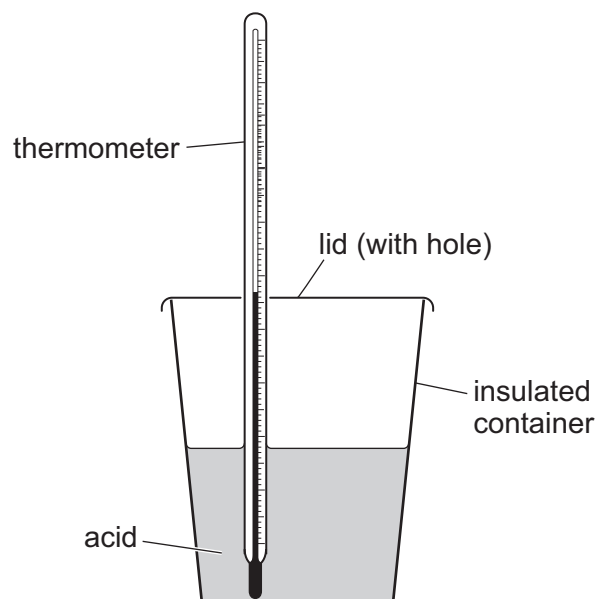
..... [1]

6 Priya investigates the changes in temperature during some reactions.



Priya:

- assembles the equipment shown in the diagram



- measures the temperature of the acid at the start
- adds solid **A** to the acid
- measures the temperature of the acid at the end after all of solid **A** reacts
- repeats this experiment with solids **B**, **C** and **D**.

Look at her results.

solid	temperature at start in °C	temperature at end in °C	temperature change in °C
A	15	29	+14
B	17	10	
C	20	45	
D	18	18	

(a) Calculate the temperature change for each solid.

Write your answers in the table.

One has been done for you.

[1]

(b) Which solid has an **endothermic** reaction with the acid?

..... [1]

(c) Suggest a reason for the results with solid **D**.

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

7 Look at part of a recent news report.



Space telescope discovers remote galaxy

This may be the most distant galaxy from Earth.

Scientists predict that the newly discovered galaxy contains stars.

Suggest **two other** objects the newly found galaxy contains.

1

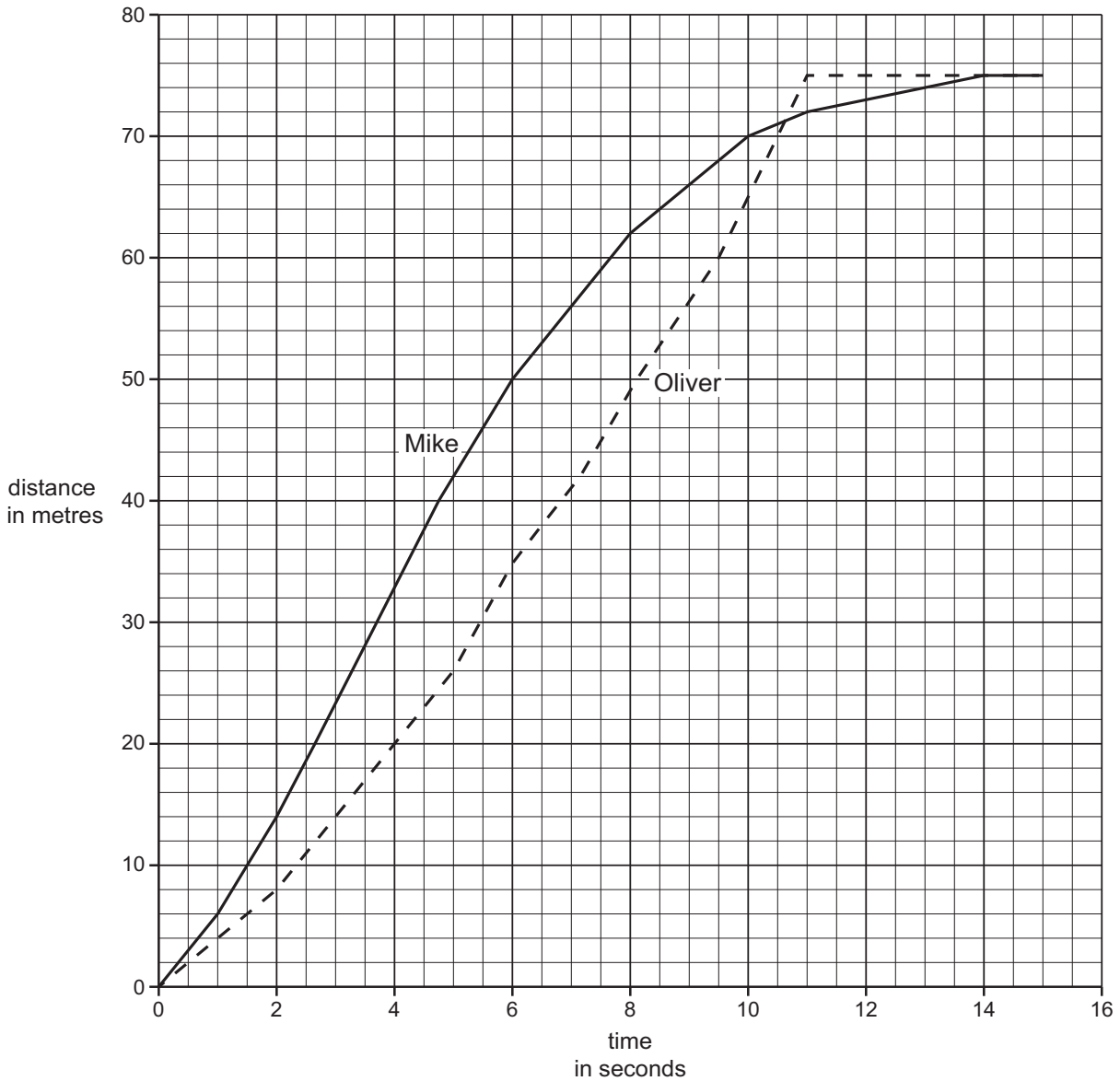
2

[1]

8 Oliver and Mike run a race.



Look at the distance / time graphs for the race.



(a) What distance do Oliver and Mike run in the race?

..... m [1]

(b) What is the distance Mike runs in the first 8 seconds of the race?

..... m [1]

(c) Mike is the faster runner at the start of the race.

Explain how you can tell from the **shape** of the graph.

.....
 [1]

(d) Describe how the graph shows that Oliver won the race.

.....

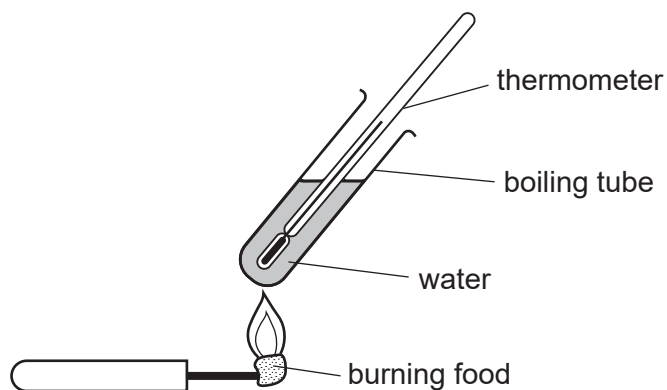
..... [1]

9 Pierre investigates the energy content in different foods.



In his first experiment Pierre:

- uses the equipment shown in the diagram



- measures the initial temperature of the water in the boiling tube
- measures the mass of one of the foods
- completely burns the food
- measures the final temperature of the water in the boiling tube
- repeats the experiment with two other foods.

Pierre then repeats the investigation for all three foods two more times.

Look at his table of results showing the measurements taken and the increases in temperature calculated.

food	mass of food used in each repeat in g	temperature of water in °C								
		initial			final			increase		
		repeats			repeats			repeats		
		1	2	3	1	2	3	1	2	3
bread	3.3	32	30	41	40	9	10
sunflower seeds	1.7	27	29	30	48	49	47	21	20	17
biscuit	2.2	30	31	31	42	36	43	12	5	12

(a) (i) In the first experiment he uses 3.3 g of bread.

The initial temperature of the water is 33°C and the final temperature of the water is 42°C.

Complete the results table. [1]

(ii) One of the **final temperature** readings is anomalous.

Write down this anomalous **final temperature** reading.

..... °C [1]

(iii) Pierre predicts:

‘Bread contains the most energy as it has the largest mass.’

Do the results support his prediction?

Tick (✓) the correct answer.

yes no

Explain your answer.

Use data from the table.

.....
 [1]

(b) This table shows the mass of the constituents found in 100 g of food X.

constituent	mass in g
carbohydrate	35
fat	51
protein	6
water	8

Explain why food X is a good energy source.

Use information from the table.

.....

 [2]

10 Sodium reacts quickly with cold water.



(a) Name the **two** products of this reaction.

1

2

[2]

(b) Silver does **not** react with cold water.

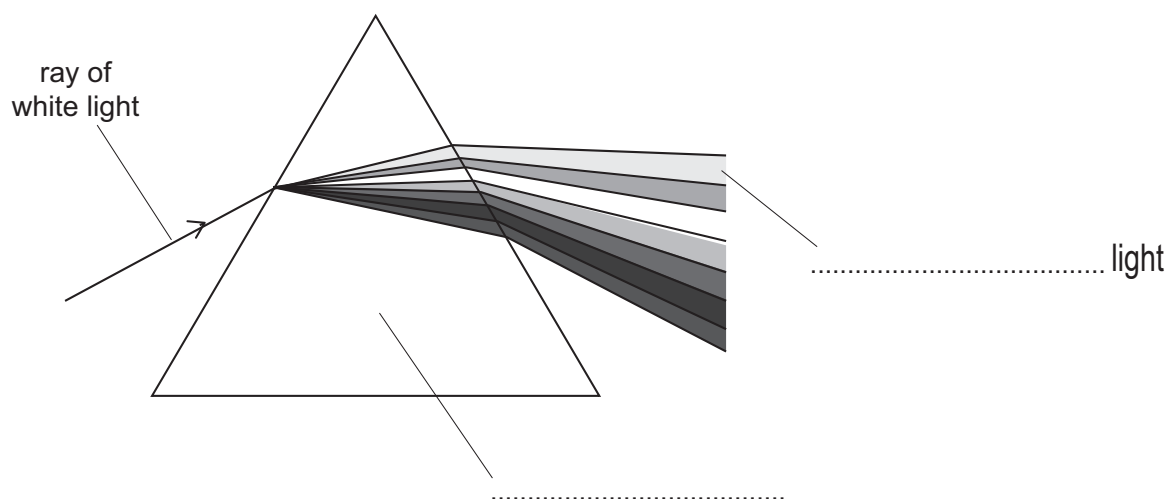
Write down the word used to describe substances that are **unreactive**.

..... [1]

11 This question is about coloured light.



(a) The diagram shows what happens when a narrow beam of white light is shone towards a special piece of glass.



(i) Complete the labels on the diagram.

Choose words from the list.

black

lens

mirror

prism

red

violet

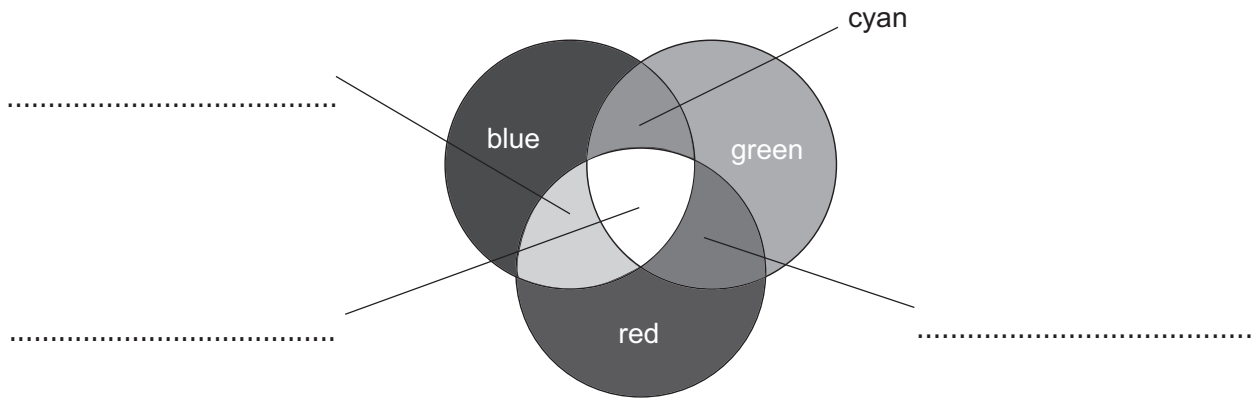
[2]

(ii) The white light is split into different colours.

What is the name of this process?

..... [1]

(b) Different coloured light from three sources is shone onto the same area of a white screen.



Complete the labels on the diagram.

Choose words from the list.

indigo

magenta

pink

orange

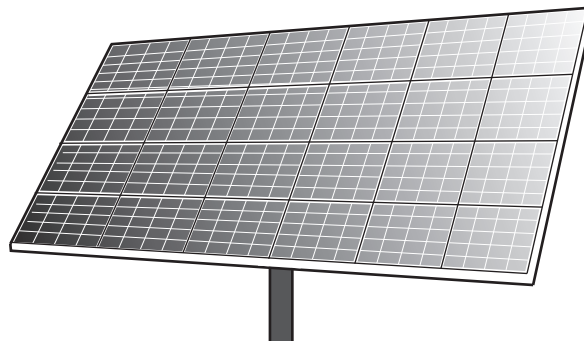
violet

white

yellow

[2]

12 Solar power is one example of a renewable energy resource.



(a) Write down **one** use of a solar panel.

..... [1]

(b) Complete the sentences.

One other example of a renewable energy resource is

An example of a non-renewable energy resource is

[2]

13 Rajiv investigates how the solubility of potassium nitrate changes as the temperature increases.



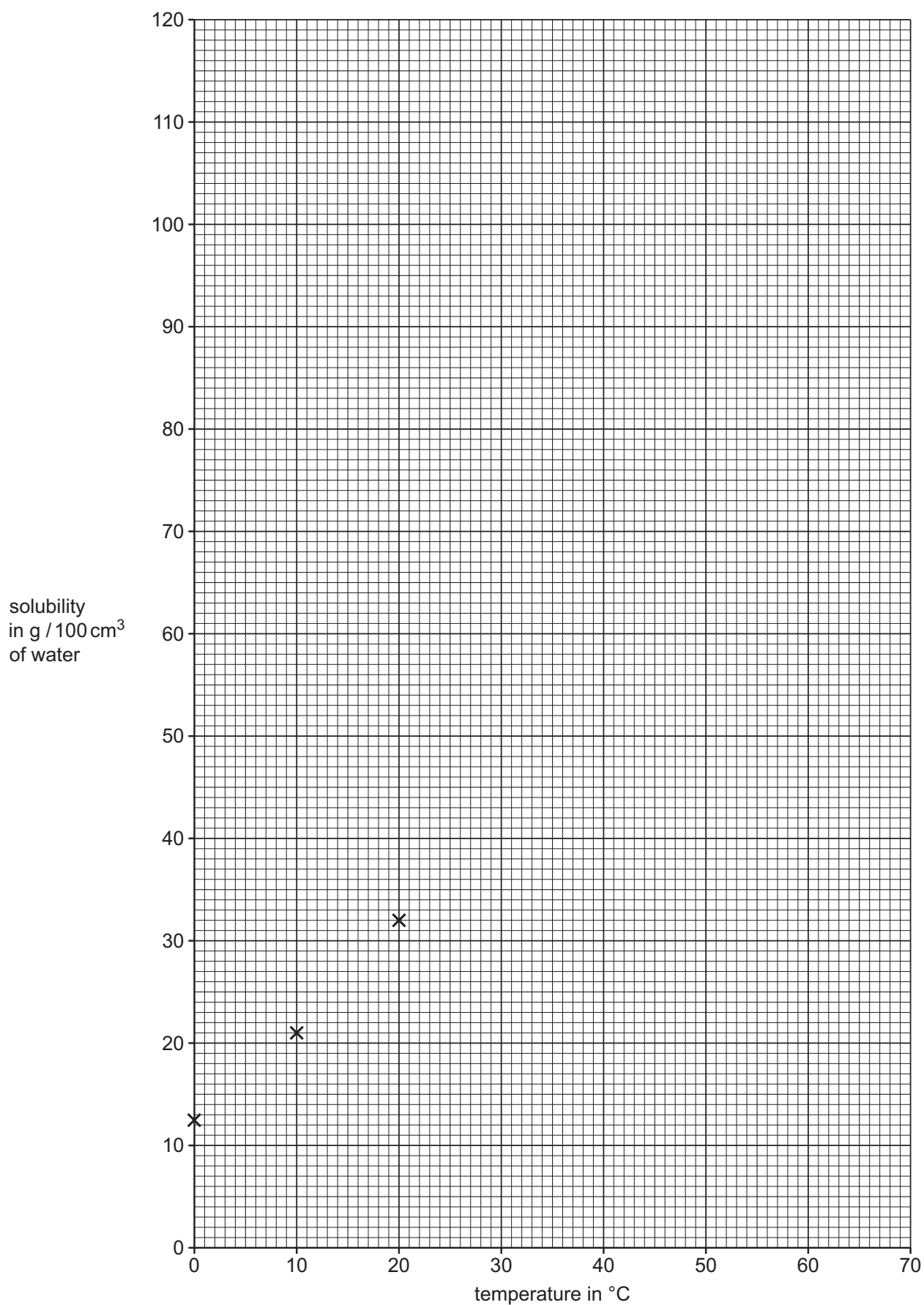
The solubility of a solid is the number of grams of the solid that dissolves in 100 g of water.

Look at his results.

temperature in °C	solubility in g/100 cm ³ of water
0	13
10	21
20	32
40	64
60	110

(a) Plot his results on the grid. Some have been done for you.

Draw the curve of best fit.



[2]

- (b) Describe how the solubility of potassium nitrate changes as the temperature of the water increases.

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

14 Gabriella investigates the strength of an electromagnet.



Gabriella:

- holds an electromagnet above some pins and switches the electromagnet on
- counts how many pins the electromagnet attracts
- repeats the experiment using a different number of turns on the coil of the electromagnet.

(a) Write down **one** way Gabriella makes her investigation a fair test.

..... [1]

(b) Here are her results.

number of turns on the coil	number of pins attracted	
	1 st try	2 nd try
0	0	0
20	7	9
40	12	13
60	21	37
80	31	33
100	38	42

(i) Explain how the data in the table shows that the results are **unreliable**.

.....
 [1]

(ii) Suggest what Gabriella does to make her results more reliable.

.....
 [1]

(iii) Gabriella uses 30 turns of wire on the coil.

Predict how many pins are attracted to the electromagnet.

..... [1]

15 This question is about a model used in science.



The concentration of a solution depends on how many solute particles are present in 1 cm³ of water.

The number of people in a room is used as an **analogy** for concentration.

Explain what is meant by an analogy.

.....

..... [1]

16 This question is about climate and weather.



(a) Blessy makes four statements about changes in climate and weather.

Complete the table to show if each statement refers to **climate change** or to **weather change**.

statement	climate or weather
It is a lot colder today than yesterday.	
Forty years ago, there was a lot more rain than there is today.	
Summers have got warmer over the last three years.	
There will be high winds tomorrow.	

[2]

(b) Suggest **one** human activity that causes changes in the atmosphere linked to climate change.

.....

..... [1]