

45 minutes

# Science Paper 1

## Stage 8

Name .....

Additional materials: Ruler

### READ THESE INSTRUCTIONS FIRST

Answer **all** questions in the spaces provided on the question paper.

You should show all your working on the question paper.

The number of marks is given in brackets [ ] at the end of each question or part question.

The total number of marks for this paper is 50.

For Teacher's Use	
Page	Mark
1	
2	
3	
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<b>Total</b>	

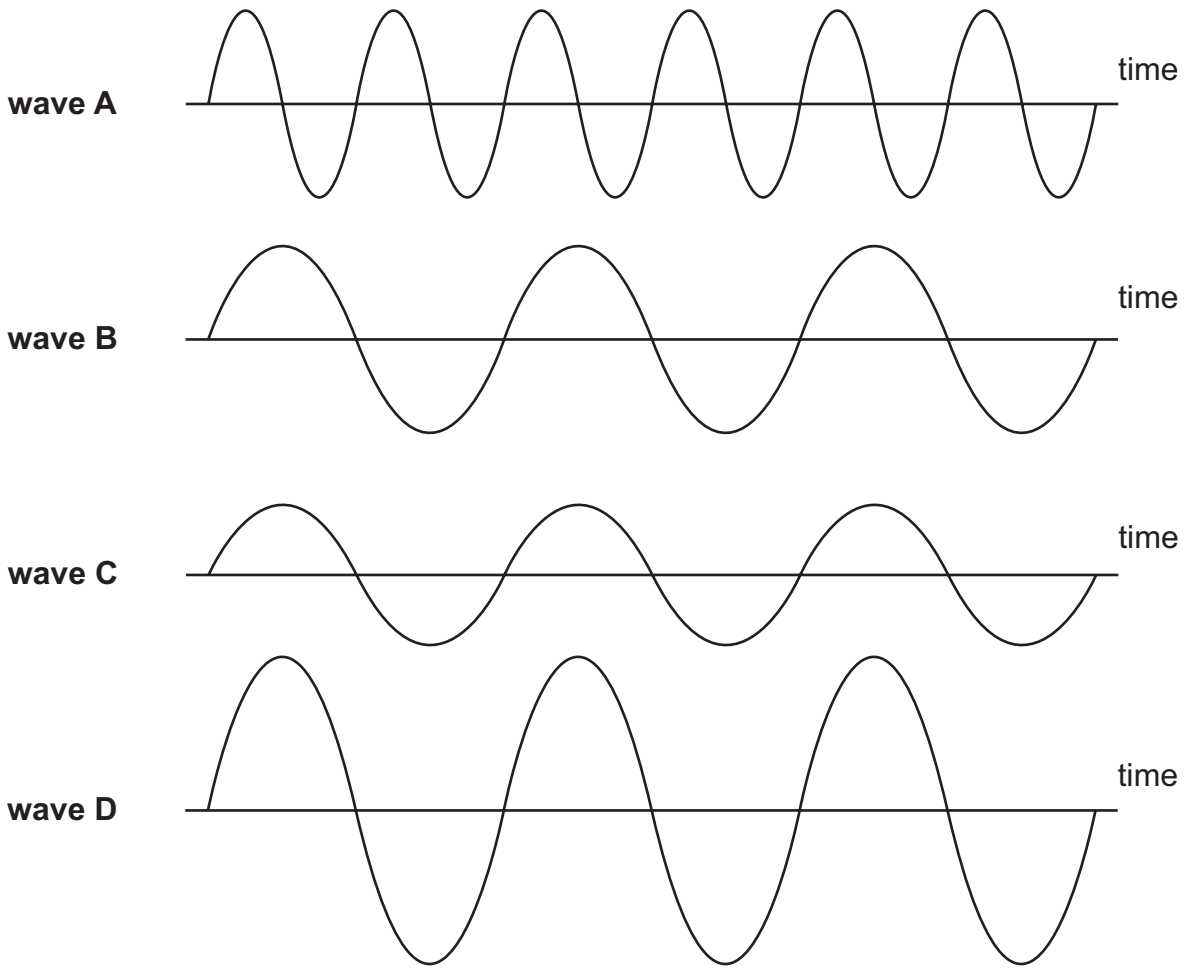
- 1 The elements in the periodic table have different chemical symbols.

Draw lines to connect the **element** to its **chemical** symbol.

element	chemical symbol
aluminium	K
argon	Ca
potassium	C
calcium	Ar
carbon	Al

[3]

2 Sound waves can be seen on an oscilloscope trace.



(a) Which wave has the **highest** pitch?

.....

[1]

(b) (i) Which wave is the **loudest**?

.....

[1]

(ii) Which property of the wave makes it the loudest?

Underline the answer from the list.

**low amplitude**

**high amplitude**

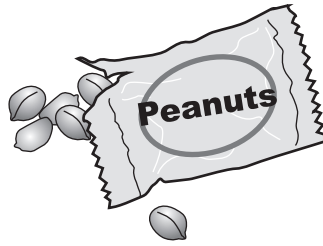
**low frequency**

**high frequency**

[1]

3 Akio eats some peanuts.

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- (a) He looks at the back of this peanut packet.  
It shows some of the nutrients found in 100g of peanuts.

100 g of peanuts contains	
protein	24.8 g
fat	50.2 g

- (i) These two nutrients do not add up to 100g.

Name one **other** nutrient group found in peanuts.

..... [1]

- (ii) Peanuts are a good source of protein.

What is the main use of protein in the body?

..... [1]

- (iii) Protein is a large complex molecule.  
It must be broken down into simpler chemicals.

Where in the body is protein broken down?

..... [1]

(b) Akio looks at the other information on the packet.

100 g of peanuts contains		
		percentage of GDA
energy	2375 kJ	29%
protein	24.8 g	46%
fat	50.2 g	167%
iron	1.0 mg	12%

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The **GDA** is the Guideline Daily Amount.

(i) Akio must be careful about the amount of peanuts he eats each day.

Give **two** reasons why.

1 .....

2 ..... [2]

(ii) Iron is essential for human health.

Name one **other** food rich in iron.

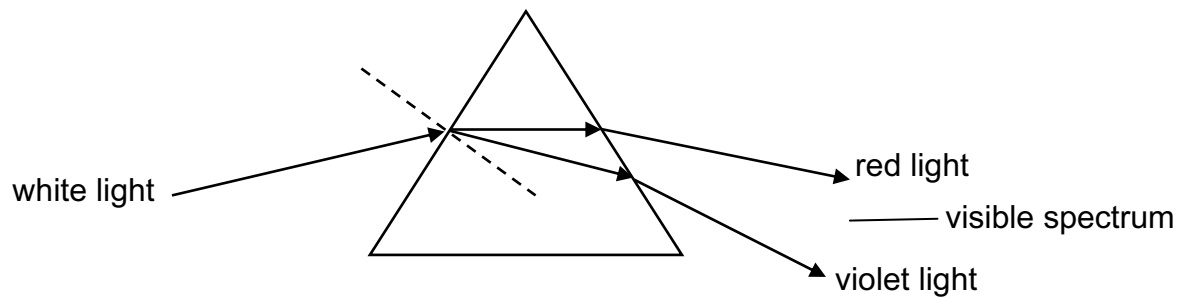
..... [1]

(iii) What is the main effect of iron deficiency?

..... [1]

4 White light can be split into the visible spectrum.

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(a) What word describes the splitting of white light into different colours?

Underline the answer from the list.

**absorption**

**dispersion**

**reflection**

**refraction**

**subtraction**

[1]

(b) The white light is split into colours.

Put the colours in the correct order as they appear in the visible spectrum.

The first three have been done for you.

colour	order
orange	<input type="text" value="2"/>
green	<input type="text"/>
red	<input type="text" value="1"/>
yellow	<input type="text" value="3"/>
blue	<input type="text"/>
violet	<input type="text"/>
indigo	<input type="text"/>

[2]

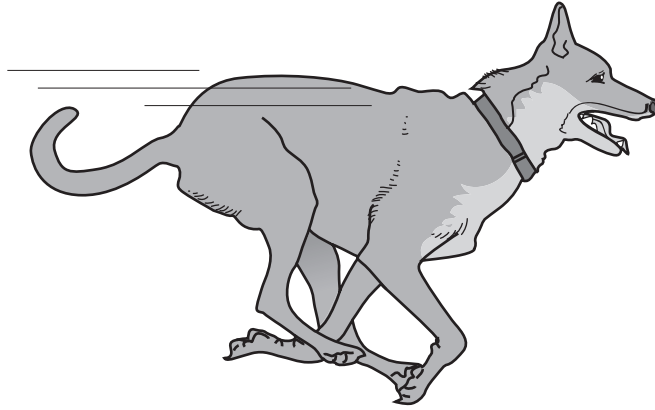
(c) In the diagram, a prism is used to split the white light into different colours.

Name something else that can split white light.

..... [1]

5 Janya measures the speed of her dog running.

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(a) (i) Her dog runs 100 m in 20 seconds.

What is the average speed of the dog?

Average speed is ..... units ..... [2]

(ii) Why is it the **average** speed and not just the speed?

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



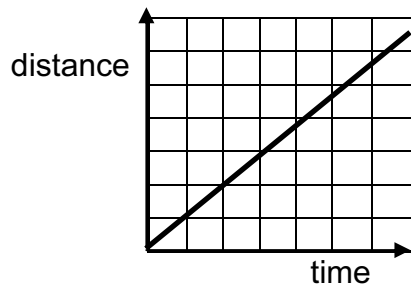
(b) Janya draws three distance/time graphs of her dog running.

For each graph describe the motion of the dog.

Choose from:

- A** The dog is running at a constant speed.
- B** The dog is slowing down.
- C** The dog is speeding up.
- D** The dog is not moving.

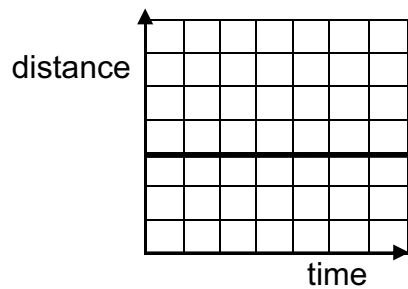
(i)



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

[1]

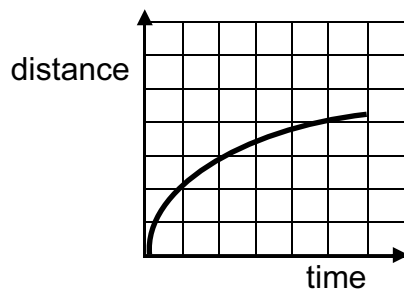
(ii)



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

[1]

(iii)



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

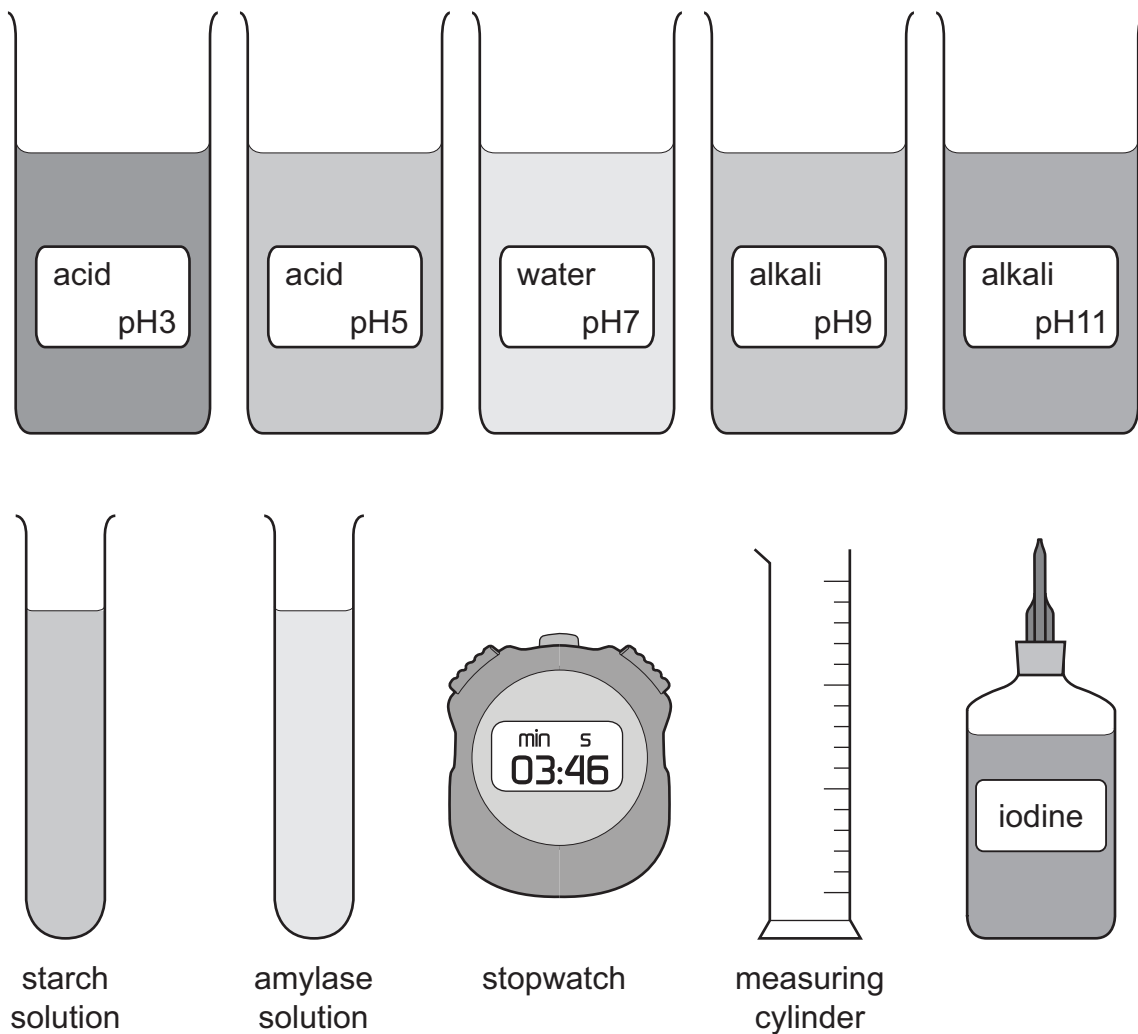
[1]

6 Amrit investigates the enzyme amylase.

She already knows these facts.

**The enzyme amylase breaks down starch in the mouth.**  
**The pH in the mouth is 7.**  
**Iodine solution is very dark blue when there is starch.**  
**Iodine solution is yellow when there is no starch.**

(a) She uses this apparatus.



(i) At which pH do you predict the enzyme amylase will work best?

.....

[1]

(ii) Amrit wants to check her prediction by doing an investigation.

Some variables need to be kept the same and some need to be changed.  
Tick (✓) the variables she needs to keep the same.

**variable**

- volume of starch added
- pH of the solution
- temperature of the solution
- volume of amylase added

[1]

(iii) Amrit wants to control risks when carrying out this investigation.  
Suggest **one** way she could make sure she is safe.

.....  
.....

[1]

(b) Amrit writes her results in a table.

pH	result
3	stays dark blue
5	changes from dark blue to yellow very slowly
7	changes from dark blue to yellow very quickly
9	changes from dark blue to yellow very slowly
11	stays dark blue

(i) What conclusions can you draw from Amrit's results?

.....  
.....

[2]

(ii) Suggest **two** different ways to improve Amrit's investigation.

- 1 .....
- 2 .....

[2]

7 Complete the word equations.



[1]



[1]



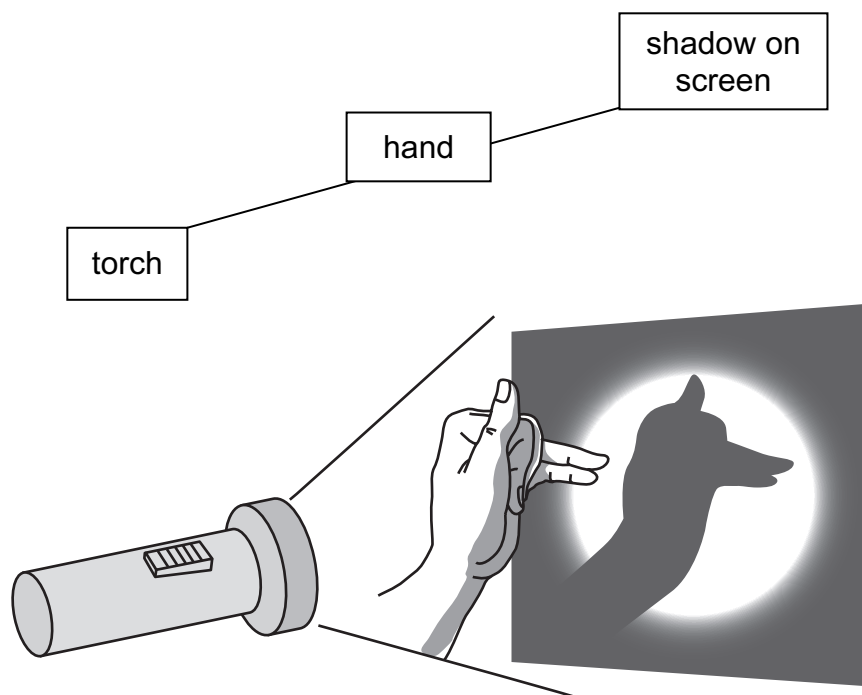
[1]

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8 Francesco makes shapes with his hands.

He shines a light behind them.

This makes a shadow on a screen.



Francesco wants to change the size of the shadow.

(a) (i) One way he could change the size of the shadow is to use someone with smaller hands.

Predict what happens to the **size** of the shadow.

..... [1]

(ii) Suggest **two** other ways he could change the size of the shadow.

1 .....

2 ..... [2]

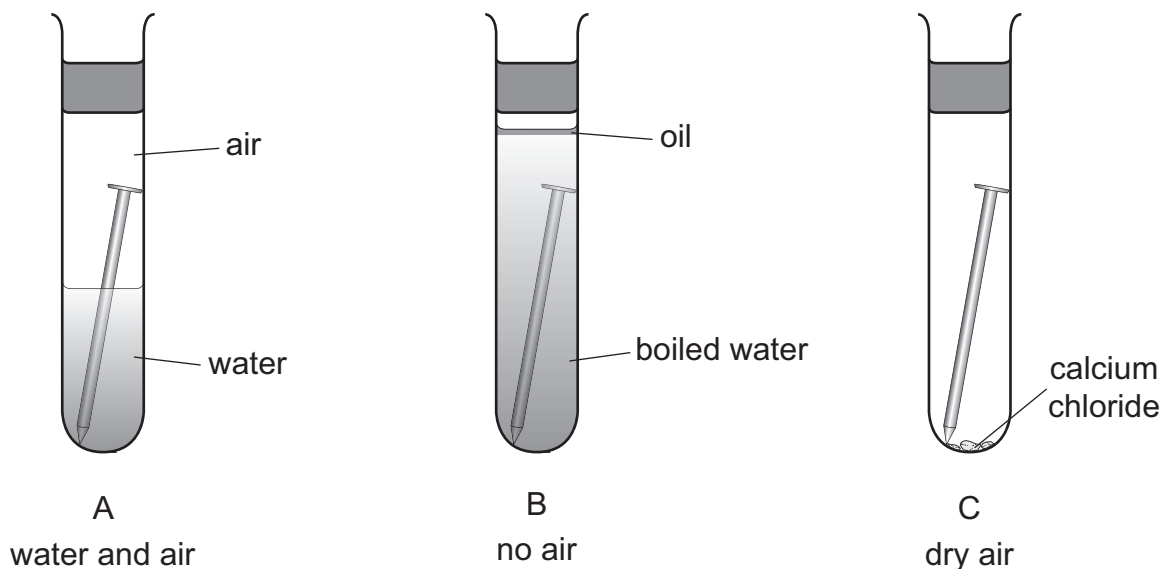
(b) Francesco wants to measure the size of the different shadows formed. What measurements should he make and what apparatus should he use?

Measurement .....

Apparatus ..... [1]

9 Rusting is an example of a chemical reaction that is **not** useful.

(a) Mia investigates the conditions needed for iron nails to rust. She uses this equipment.



(i) In which boiling tube will the nail go rusty?

..... [1]

(ii) Complete the equation to describe this reaction.

Choose words from the list.

**aluminium**

**carbon dioxide**

**iron**

**oxygen**

**water**

..... + ..... + ..... → rust

[2]

(b) Describe **two** things Mia could do to iron to stop it from rusting.

1 .....

2 .....

[2]

10 Zoran has an unknown element.

He wants to know if it is a metal or a non-metal.

Zoran writes down his results.

When I heated one end of the element, the other end got hot very quickly.

The element did not dissolve in water.

The element is an orange colour.

(a) Do you think this element is a metal or a non-metal?

.....

Which **one** piece of evidence in Zoran's results made you decide this?

.....

..... [1]

(b) Describe **two other** differences between metals and non-metals.

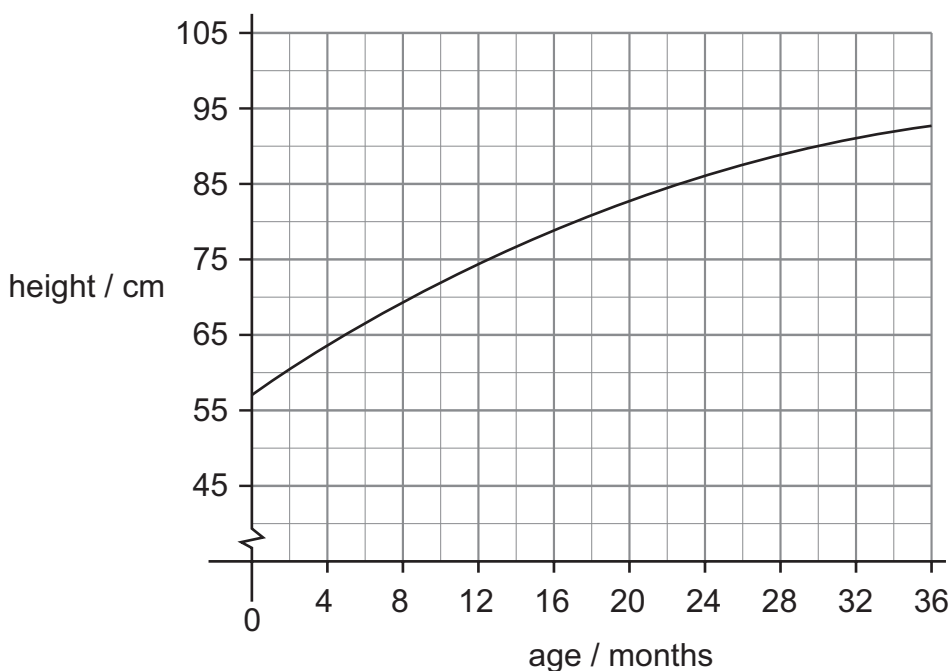
1 .....  
.....

2 .....  
.....

..... [2]

11 The growth rates of babies are checked regularly using growth charts.

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(a) This growth chart measures the height of a healthy baby boy.

What other measurement of the baby boy could be used to draw a growth chart?

..... [1]

(b) Why is it important that doctors use growth charts?

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

(c) A baby boy was 55 cm at birth.  
 He has a poor diet and is malnourished (is not fed enough).

Draw a line on the growth chart to show the growth of this baby boy.

[1]



**12** Chemicals can be elements or compounds.

Tick (✓) the box to show which chemicals are elements and which chemicals are compounds.

The first one has been done for you.

<b>chemical (formulae)</b>	<b>element</b>	<b>compound</b>
water (H <sub>2</sub> O)		✓
carbon dioxide (CO <sub>2</sub> )		
hydrogen (H <sub>2</sub> )		
helium (He)		
magnesium (Mg)		

[2]

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