

Sc

KEY STAGE
3

TIER
5-7

Science test

Paper 2 - Part A

First name _____

Last name _____

School _____

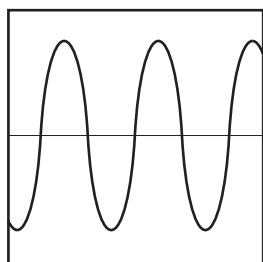
Remember

- The test is 1 hour long.
- You will need: pen, pencil, rubber, ruler, protractor and calculator.
- The test starts with easier questions.
- Try to answer all of the questions.
- The number of marks available for each question is given below the mark boxes in the margin. You should not write in this margin.
- If you are asked to plan an investigation, there will be space for you to write down your thoughts and ideas.
- Do not use any rough paper.
- Check your work carefully.
- Ask your teacher if you are not sure what to do.

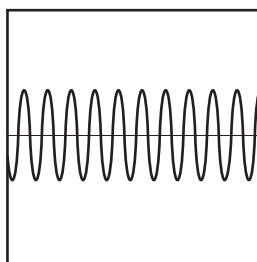
For marker's use only

TOTAL MARKS	
-------------	--

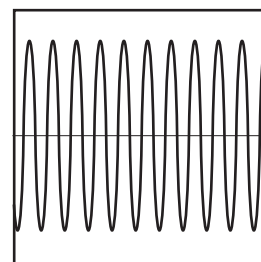
1. (a) The diagrams below show the patterns produced on an oscilloscope by three different sound waves.



A



B



C

- (i) Which **two** waves have the same loudness?
Write the letters.

_____ and _____

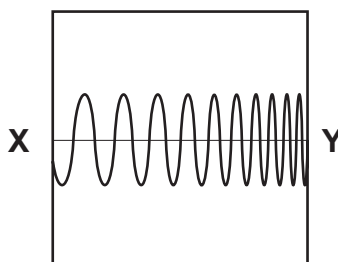
How do the diagrams show this?

- (ii) Which **two** waves have the same pitch?
Write the letters.

_____ and _____

How do the diagrams show this?

- (iii) Shuli is listening to a sound that produces the pattern below.



Describe how the sound that Shuli **hears** changes between X and Y.



1ai

1 mark



1aii

1 mark



1aiii

1 mark

- (b) The table below shows the maximum time a person can listen to music at different sound levels without damage to the ear.

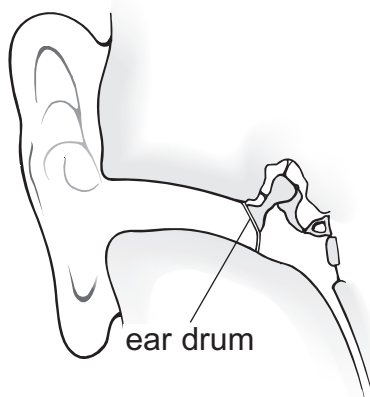
sound level (decibels)	maximum time (hours)
86	8
88	4
90	2
92	1
94	0.5

Estimate the maximum time a person could listen to a sound of 87 decibels.

_____ hours

1b
1 mark

- (c) The diagram below shows part of the human ear.



What happens to the ear drum as a sound gets louder?

1c
1 mark

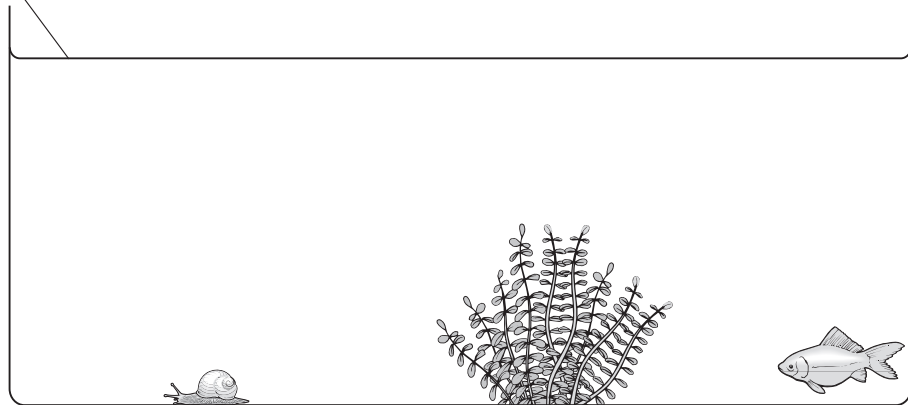
maximum 5 marks

3. (a) The diagram below shows a fish tank.

The surface of the water acts like a mirror.

The fish can see the snail reflected in the surface of the water.

surface
of water
(mirror)



3a
1 mark

3a
1 mark

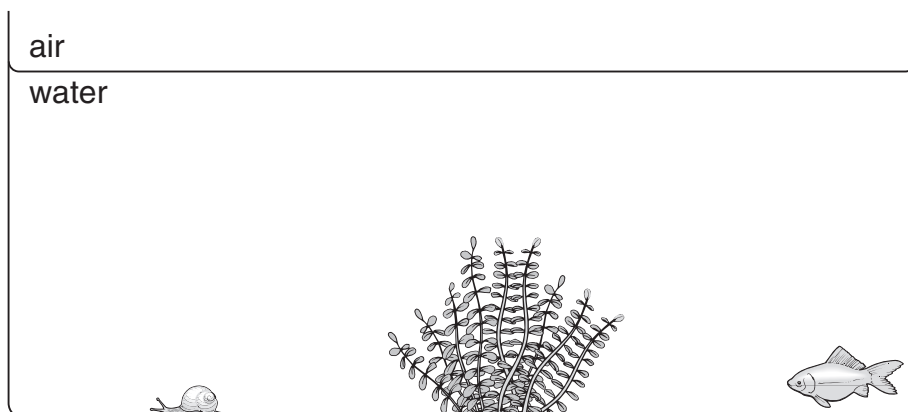
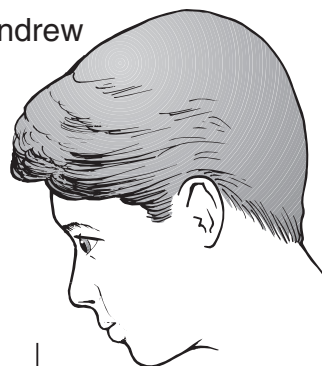
3a
1 mark

Draw a ray of light which passes from the snail, and reflects from the surface, to show how the fish can see the snail. Use a ruler.

Put arrows on the ray of light.

(b) Andrew is looking at the snail.

Andrew



When a ray of light passes from water to air it changes direction.

(i) Draw a ray of light from the snail to Andrew to show how Andrew can see the snail. Use a ruler.

Put arrows on the ray of light.

(ii) What is the name given to this change in the direction of a ray of light?

3bi
1 mark

3bi
1 mark

3bii
1 mark

maximum 6 marks

5. The drawing below shows a gemstone set in a gold ring.



Crystals of gemstones are found in different rocks.

(a) There are three groups of rocks:

igneous	metamorphic	sedimentary
----------------	--------------------	--------------------

(i) Crystals can be found in rocks that have been changed into different rocks by high temperature and high pressure.

Which group of rocks is formed in this way?

5ai
1 mark

(ii) Crystals can be found in rocks formed by the cooling of hot magma.

Which group of rocks is formed in this way?

5aii
1 mark

(b) How does the rate at which magma cools affect the size of the crystals formed?

5b
1 mark

- (c) Gemstones called rubies are made from an aluminium compound with the formula Al_2O_3 .

The chemical symbol for aluminium is Al.

- (i) Give the name of the element that is combined with aluminium in this compound.

5ci
1 mark

- (ii) Suggest the name of the compound with the formula Al_2O_3 .

5cii
1 mark

- (iii) How many atoms are there in the formula Al_2O_3 ?

5ciii
1 mark

- (d) (i) The gemstone in the drawing is set into a gold ring.
Gold is an element that is found in rocks.
Gold is never found combined with other elements.

Part of the reactivity series of metals is shown below.

more reactive	aluminium
	zinc
	lead
less reactive	copper

Where should gold be placed in this reactivity series?

5di
1 mark

- (ii) The more reactive metals react with acids.

Complete the word equation for the reaction of zinc with hydrochloric acid.

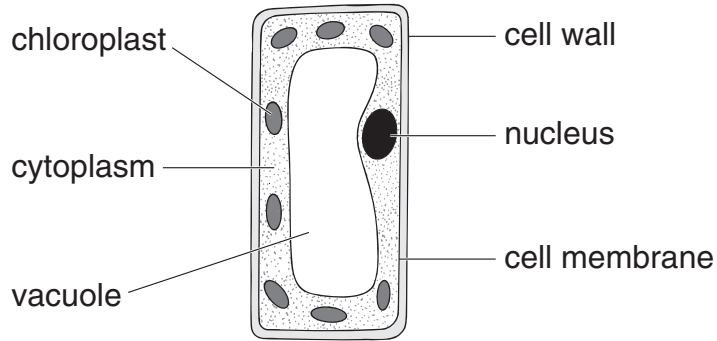
zinc + hydrochloric acid \longrightarrow _____ + _____

5dii
1 mark

5dii
1 mark

maximum 9 marks

7. The diagram below shows a plant cell.



(a) In which part of a plant would you find this type of cell?

7a
1 mark

(b) (i) Give the function of the nucleus.

7bi
1 mark

(ii) Give the function of the chloroplasts.

7bii
1 mark

(iii) Give the function of the cell wall.

7biii
1 mark

(c) Give the names of **two** labelled parts that are **not** present in animal cells.

1. _____
2. _____

7c
1 mark

7c
1 mark

- (d) Tick **one** box in each row to show whether the statement is true for photosynthesis **or** for respiration.

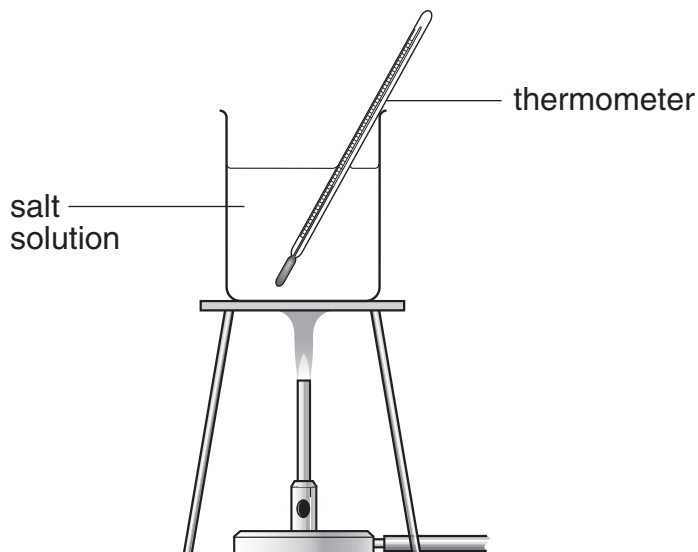
statement	photosynthesis	respiration
carbon dioxide is produced		
light is needed		
it occurs in plants and animals		
oxygen is produced		

7d
1 mark

7d
1 mark

maximum 8 marks

9. Neera and Tom dissolved different masses of salt in 500 cm³ of water. They measured the temperature at which each salt solution boiled.



- (a) They wrote down the variables that might affect the investigation.

temperature of the
laboratory

mass of salt
dissolved in water

starting temperature
of the water

boiling point of
salt solution

volume of water

type of salt used

- (i) What is the independent variable (the variable they changed) in their investigation?

- (ii) What is the dependent variable (the variable they measured) in their investigation?

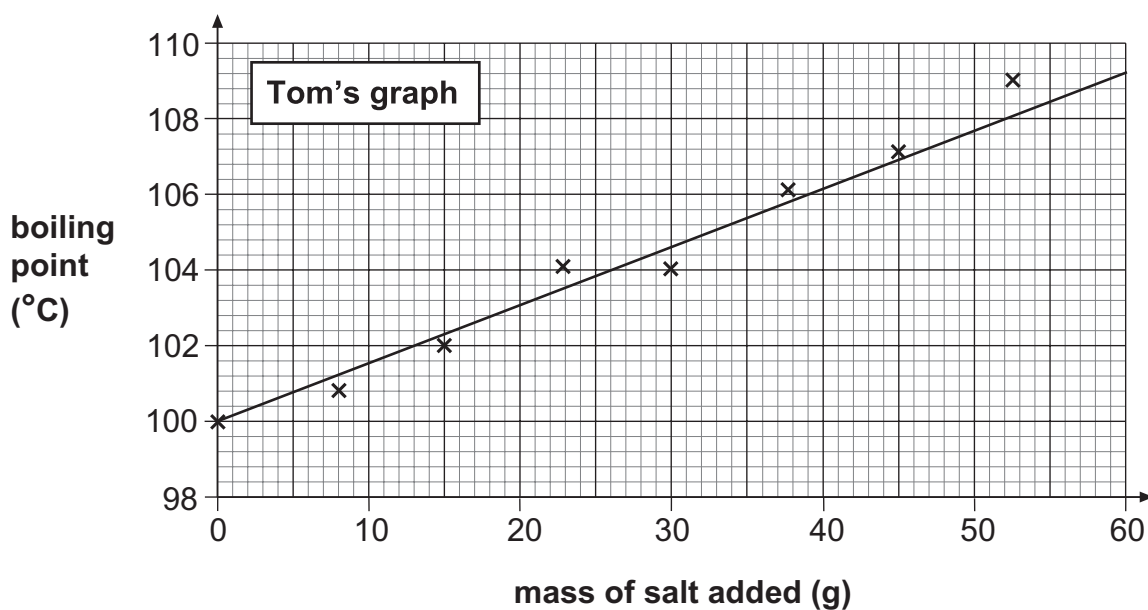
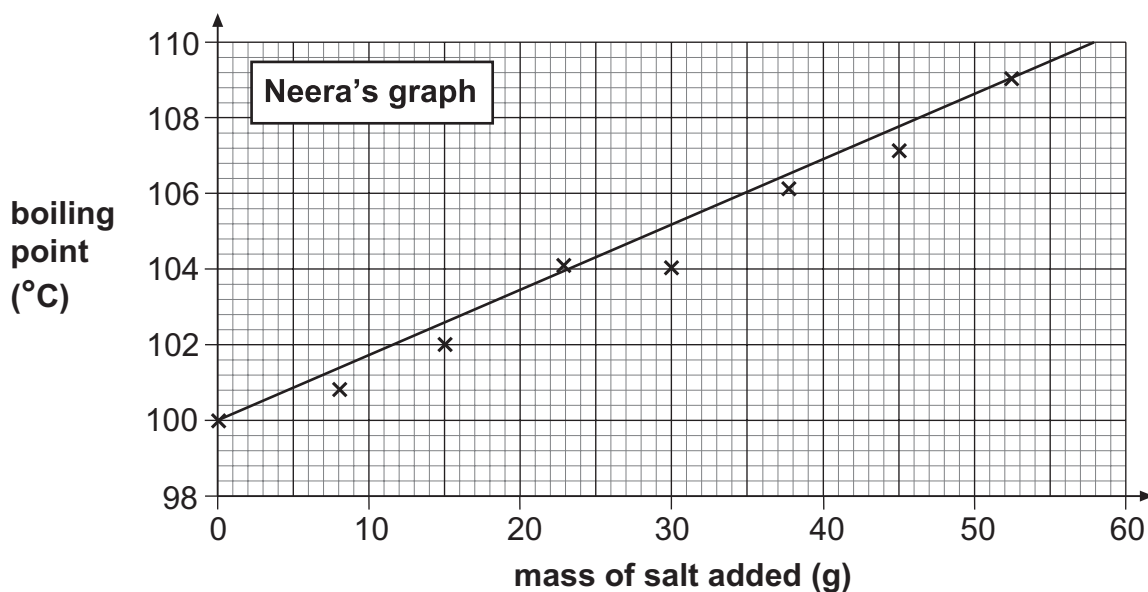
- (iii) Which variable above would affect the experiment the least?

9ai
1 mark

9aia
1 mark

9aiii
1 mark

(b) Neera and Tom plotted their results and drew the graphs shown below.



(i) How can you tell from the graphs that Neera and Tom started with pure water?

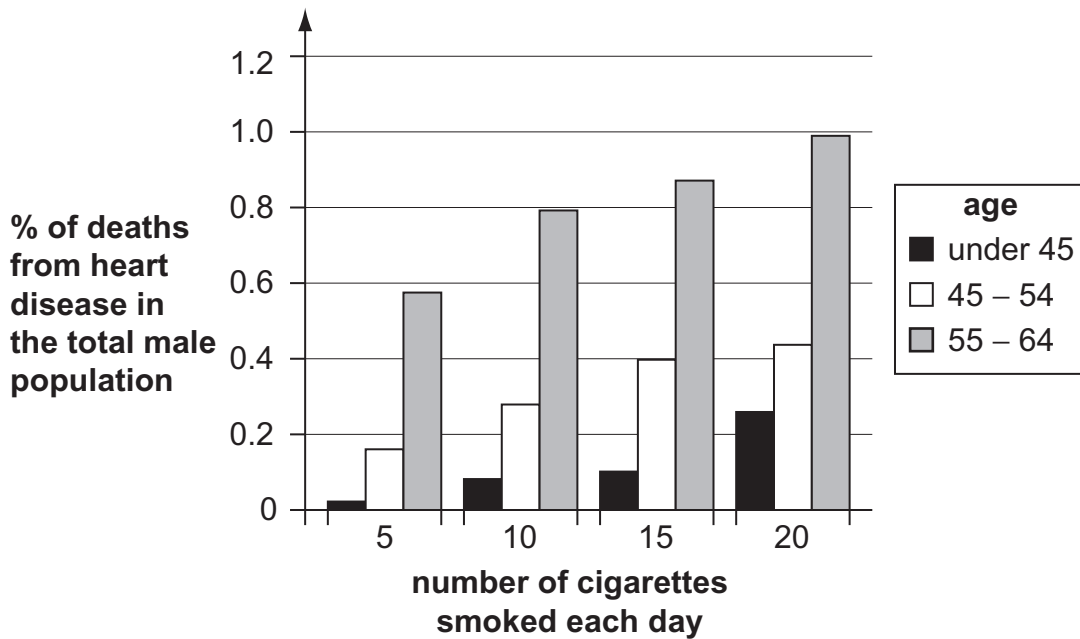
1 mark

(ii) Why is Tom's line of best fit better than Neera's line of best fit?

1 mark

maximum 5 marks

11. The bar chart below shows how the number of cigarettes smoked is linked to the percentage of deaths from heart disease in the total male population.



(a) Use the information in the bar chart to write **two** conclusions about the relationship between smoking and the number of male deaths from heart disease.

1. _____

2. _____

(b) Smoking can cause fat to be deposited in the arteries to the heart muscle.

Explain how this could prevent the heart muscle from working properly.

11a
1 mark

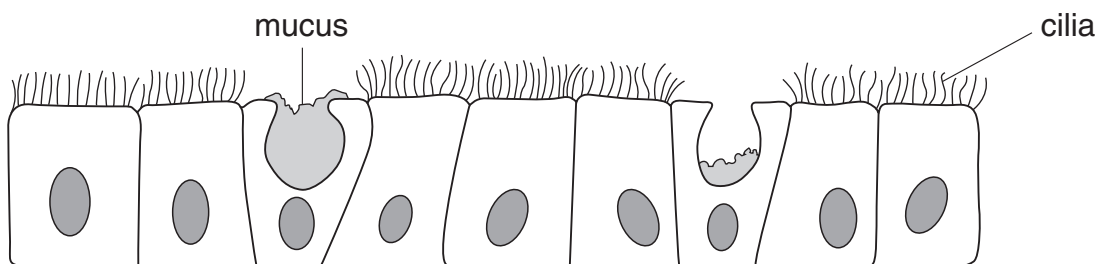
11a
1 mark

11b
1 mark

11b
1 mark

11b
1 mark

- (c) The drawing below shows part of the lining of the airway leading into the lungs.



- (i) Describe how mucus and cilia help to keep the airway free of dust and bacteria.

mucus _____

cilia _____

- (ii) Cigarette smoke contains tar.

What effect does tar have on the cilia?

11ci
1 mark

11ci
1 mark

11ci
1 mark

maximum 8 marks