Year 7

Harris Academy Greenwich

Sport, Enterprise and Communication

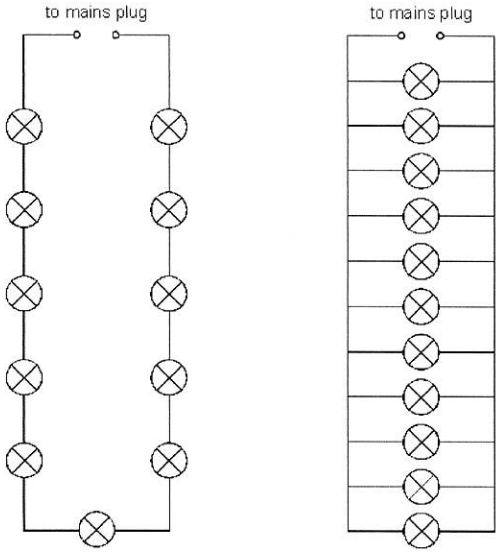
Summer 2
Science Assessment

Name: _____

Teacher: _____

- 62 marks = 62 minutes
- Do not leave **any** blanks – have a go at **every** question

Q1. (a) Ahmed bought two sets of lights to put on a tree in his garden.
Circuit diagrams for the two sets of lights are shown below.



circuit A **circuit B**

Choose words from the list below to fill the gaps in the sentences.

all **none** **some** **parallel** **series** **short**

(i) **Circuit A** is a ..... circuit.

If one of the bulbs breaks in **circuit A** ..... of the other bulbs will go out.

1 mark

(ii) **Circuit B** is a ..... circuit.

If one of the bulbs breaks in **circuit B** ..... of the other bulbs will go out.

1 mark

(b) Light rays from the bulbs hit the mirror of Ahmed's car.

What happened to the light rays when they hit the mirror?

.....

1 mark

(c) The tree has root hairs.
What are the functions of root hairs?
Tick the **two** correct boxes.

They absorb water from the soil.	☐	They absorb sunlight.	☐
They produce seeds.	☐	They absorb minerals from the soil.	☐
They attract bees for pollination.	☐		

2 marks
maximum 5 marks

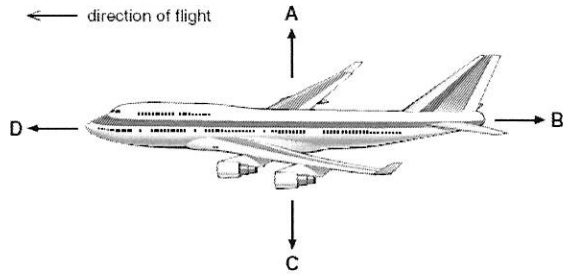
Q2. Each of the observations shown below has one explanation.

Draw a line from each observation to the correct explanation.

observation	**explanation**
A ship going out to sea goes out of sight.	The Earth spins on its axis.
We have day and night.	The Earth is a sphere.
We have summer and winter.	The Earth orbits the Sun and the Earth's axis is tilted.
One year on Earth is 365 days.	Gravity attracts objects towards the Earth.
	The Earth orbits the Sun.

maximum 4 marks

Q3. The diagram shows four forces acting on a plane in flight.



(a) Which arrow represents air resistance?
Give the letter.

.....

1 mark

(b) (i) When the plane is flying at a constant height, which **two** forces must be balanced?
Give the letters.

..... and .....

1 mark

(ii) When the plane is flying at a constant speed in the direction shown, which **two** forces must be balanced?
Give the letters.

..... and .....

1 mark

(c) (i) Just before take-off, the plane is speeding up along the ground.

Which statement is true?
Tick the correct box.

Force B is zero.	☐
Force B is greater than force D.	☐
Force D is equal to force B.	☐
Force D is greater than force B.	☐

1 mark

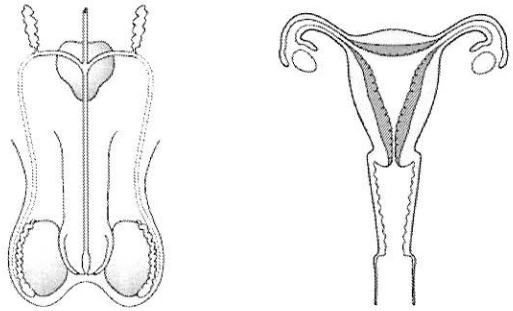
(ii) Which statement is true about the plane just as it leaves the ground?
Tick the correct box.

Force C is zero.	☐
Force C is greater than force A.	☐
Force A is equal to force C.	☐
Force A is greater than force C.	☐

1 mark
maximum 5 marks

Q4. The diagrams below show the male and female human reproductive systems.

male and female reproductive systems



male **female**

not to scale

(a) The table below contains descriptions of parts of the human reproductive system.
Complete the table to give the name of each part.

name of part	description
	the tube that carries an egg to the uterus
	the organ that produces sperm
	he organ that produces the egg

3 marks

(b) The diagram below shows an unborn baby.

Complete the sentences below by filling in the gaps.

In humans, normal pregnancy lasts for ..... months.

When the foetus is ready to be born, muscles in the uterus wall start

to ..... .

2 marks

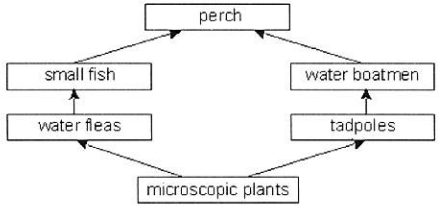
After the baby is born, the ..... connecting

the foetus to the mother is cut.

1 marks
maximum 6 marks

Q5. A pupil studied the organisms in a pond.

From her observations she drew this simple food web.



(a) Use **only** the information in the food web to answer the following.

(i) Write down **one** food chain from this food web. There should be **four** organisms in the food chain.

..... → ..... → ..... → .....

1 mark

(ii) Write down the **producer** in the food web.

.....

1 mark

(b) Disease suddenly kills all the small fish. Complete the sentence to explain what is likely to happen to the number of water boatmen.

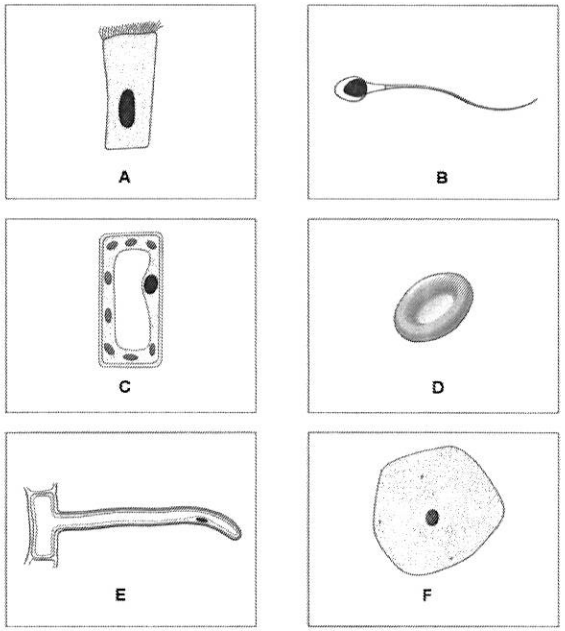
The number of water boatmen is likely to .....

because .....

.....

2 marks
Maximum 4 marks

Q6. The diagram below shows six cells.



(a) (i) Give the letters of the **two** plant cells in the diagrams.

..... and .....

1 mark

(ii) Which **one** of these plant cells contains chloroplasts?
Give the letter.

.....

1 mark

(iii) Give the function of chloroplasts.

.....

.....

1 mark

(b) (i) Give the letter of the ciliated cell.

.....

1 mark

(ii) In which part of the body are ciliated cells found?

.....

1 mark

(iii) What is the function of ciliated cells in this part of the body?

.....

.....

1 mark

(c) Give the letter of the cell which transfers genetic information from father to offspring.

.....

1 mark
maximum 7 marks

Q7. Matthew measured the pH of different soils.

(a) Tick **one** box in each row to show if each soil is acidic, neutral **or** alkaline.

soil	pH of soil	acidic	neutral	alkaline
A	4.5			
B	5.5			
C	6.3			
D	7.0			
E	7.8			

2 marks

(b) A hydrangea is a flowering plant. Matthew notices that the colour of hydrangea flowers is different for plants grown in different places.

He records the colour of the flowers on each plant.

His results are shown in the table below.

hydrangea flower

soil	pH of soil	colour of flowers			
		blue	violet	light pink	dark pink
A	4.5	✓			
B	5.5		✓		
C	6.3		✓		
D	7.0			✓	
E	7.8				✓

Look at Matthew's results.
Do his results support the statement that the colour of hydrangea flowers depends on pH?

yes ☐ no ☐

Explain your answer.

.....

.....

1 mark

(c) Matthew measured the pH of the soil near hydrangea plants found in different places.

Suggest one **other** variable Matthew could **not** control in his investigation.

.....

.....

1 mark

(d) Matthew wants to find out if the colour of blue hydrangea flowers depends on inherited factors **or** environmental factors.
The flowers were growing in soil of pH 4.5.
He plants them in soil of pH 6.3.

Complete the table below to show the colours of the new flowers in soil of **pH 6.3**
(i) if the colour is due to inheritance
(ii) if the colour is due to the environment

Use the table above to complete the table below.

	colour
starting colour of hydrangea flowers	blue
colour of new flowers if only due to inheritance	
colour of new flowers if only due to environment	

2 marks
maximum 6 marks

Q8. Hydrochloric acid is a strong acid.

(a) Winston used universal indicator solution to find the pH of some hydrochloric acid.

(i) Suggest the **colour** of the mixture of universal indicator solution and the hydrochloric acid.

.....

1 mark

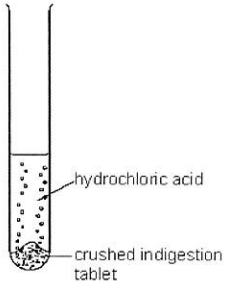
(ii) Suggest the **pH** of the hydrochloric acid.

.....

1 mark

(b) Indigestion can be caused when too much hydrochloric acid is produced in the stomach. Magnesium carbonate can be used to treat indigestion.

Winston crushed some indigestion tablets containing magnesium carbonate. He added them to hydrochloric acid in a test-tube. The mixture fizzed.



The word equation for the reaction is shown below.

magnesium carbonate + hydrochloric acid → magnesium chloride + carbon dioxide + water

(i) Use the word equation to explain why the mixture fizzed when the reaction took place.

.....

.....

1 mark

(ii) Winston continued to add crushed tablets to the acid until the mixture stopped fizzing.
Why did the fizzing stop?

.....

.....

1 mark

(c) When magnesium carbonate reacts with hydrochloric acid, magnesium chloride is formed.

Which **two** words describe magnesium chloride?
Tick the **two** correct boxes.

a compound	☐	a mixture	☐
an element	☐	a salt	☐
a metal	☐	a solvent	☐

2 marks

(d) It is important that the hydrochloric acid in the stomach is **not** completely neutralised by indigestion tablets.

Why is hydrochloric acid needed in the stomach?

.....

.....

1 mark
maximum 7 marks

Q9. (a) Complete the word equation below for the reaction between calcium carbonate and hydrochloric acid.

calcium carbonate + hydrochloric acid → ..... + carbon dioxide + water

1 mark

Limestone is mainly calcium carbonate. It is weathered by acids in the air or in soil.

(b) In June 1990, a Year 9 class planned a long-term investigation into the chemical weathering of limestone by acids in soil.

They put limestone chippings of similar size in three nylon mesh bags.
They buried the bags outside in soils of different pH.

sample A in soil of pH5 | **sample B in soil of pH7** | **sample C in soil of pH8**

(i) Chemical weathering took place in sample A, and the mass of the sample decreased.

Give the reason for the decrease in mass. Use the word equation above to help you.

.....

.....

1 mark

(ii) The pupils predicted that chemical weathering would **not** take place in samples B and C.

Give the reason for their prediction.

.....

.....

1 mark

(iii) Some chemical weathering did take place in samples B and C.
What could have changed the conditions in these soils to cause weathering to take place?

.....

1 mark

(c) The table shows how the mass of each sample changed between the years 1990 and 2000.

year	mass, in g		
	sample A, at pH 5	sample B, at pH 7	sample C, at pH 8
1990	1000	1000	1000
1995	980	992	997
2000	960	984	995

In 2000, a year 9 class buried another identical 1000 g sample of limestone chippings in soil of pH 6.

(i) Use the results in the table to predict an approximate value for the mass of this sample in 2010.

..... g

1 mark

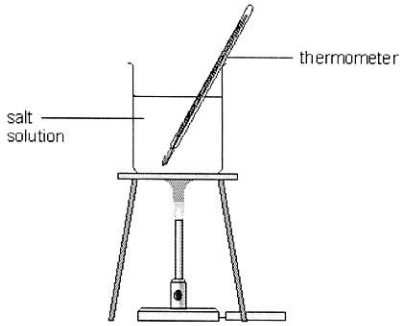
(ii) Why is it **not** possible to be certain what the mass of this sample will be in 2010?

.....

.....

1 mark
Maximum 6 marks

Q10. Neera and Tom dissolved different masses of salt in 500 cm^3 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?

.....

1 mark

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

.....

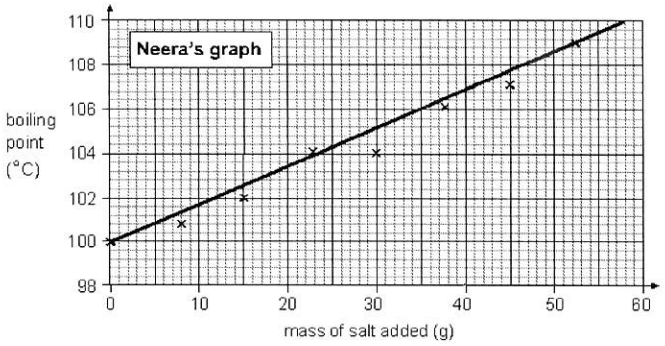
1 mark

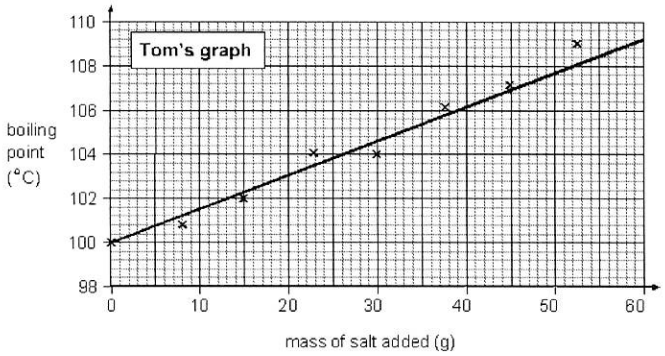
(iii) Which variable above would affect the experiment the least?

.....

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

Q11. Diagram A represents a gas in a container.
The gas can be compressed by moving the piston to the right.

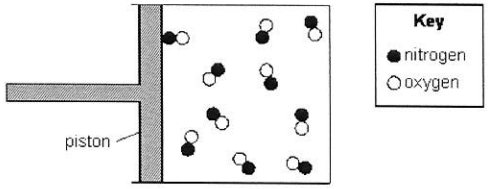


diagram A

(a) (i) How can you tell that the substance in the container is a gas?

.....

.....

1 mark

(ii) How can you tell from the diagram that the gas is pure?

.....

.....

1 mark

(b) The piston is moved to the right as shown in diagram **B**.

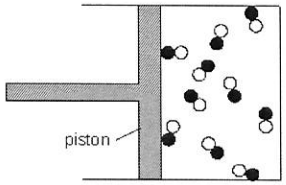


diagram B

How can you tell, from diagram **B**, that the pressure of the gas has increased?

.....

.....

1 mark

(c) Diagram **C** shows what happened to the molecules after the gas was compressed more.

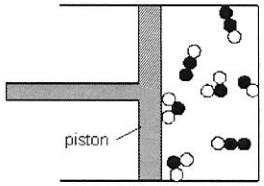


diagram C

(i) How can you tell that a chemical reaction happened when the gas was compressed?

.....

.....

1 mark

(ii) The mass of the gas in both diagrams **B** and **C** was 0.3 g.

Why did the mass of the gas **not** change when it was compressed?

.....

.....

1 mark

(iii) Complete the table below with the correct chemical formula of each substance. Use the key to help you.

substance	formula
●○	
●●○	

Key
● nitrogen
○ oxygen

1 mark

(iv) What is the **name** of the substance represented by the symbol ●○?

.....

1 mark
maximum 7 marks