

CANDIDATE  
NAME

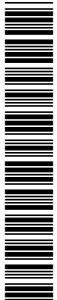
CENTRE  
NUMBER

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CANDIDATE  
NUMBER

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**SCIENCE**

**1113/02**

Paper 2

**October 2017**

**45 minutes**

Candidates answer on the Question Paper.

Additional Materials:      Pen                      Calculator  
                                        Pencil  
                                        Ruler

**READ THESE INSTRUCTIONS FIRST**

Write your Centre number, candidate number and name on all the work you hand in.

Write in dark blue or black pen.

You may use an HB pencil for any diagrams, graphs or rough working.

Do not use staples, paper clips, glue or correction fluid.

DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.

You should show all your working in the booklet.

At the end of the examination, fasten all your work securely together.

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

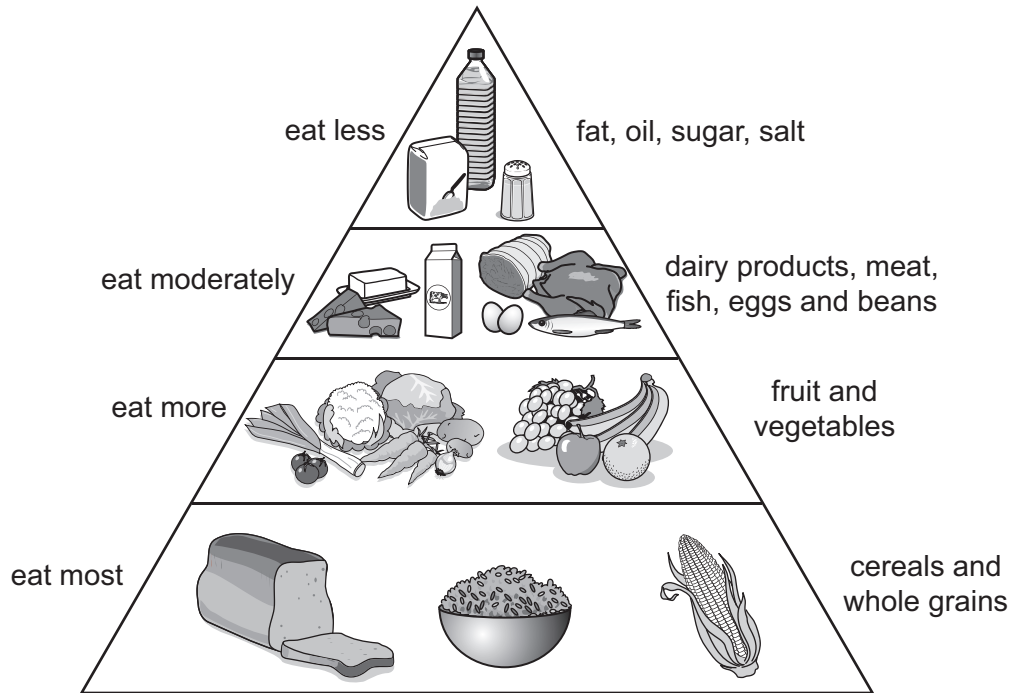
The total number of marks for this paper is 50.

This document consists of **20** printed pages.

1 Angelique and her friends are planning a party.

They want to prepare food that will be part of a healthy, balanced diet.

They find this information on the internet.



You should also drink 6-8 glasses of fluid (including water, weak tea and soup) every day.

(a) The information states that a person should eat mostly cereals and whole grains.

(i) Which group of nutrients is provided by cereals and whole grains?

..... [1]

(ii) Why do we need these nutrients?

..... [1]

(b) People are advised to eat more fruit and vegetables in their diet.

This helps to prevent them from developing deficiency diseases such as scurvy and rickets.

Name the group of nutrients which helps to prevent these deficiency diseases.

..... [1]

(c) Eating too much fat and oil can lead to health problems.

State **one** harmful result of eating too much fat and oil.

..... [1]

2 This question is about states of matter.

(a) Complete these sentences about states of matter.

Choose words from the list.

**be squashed**

**break**

**condense**

**expand**

**melt**

**separate**

The particles in solids are close together which means solids cannot .....

When a liquid evaporates the particles .....

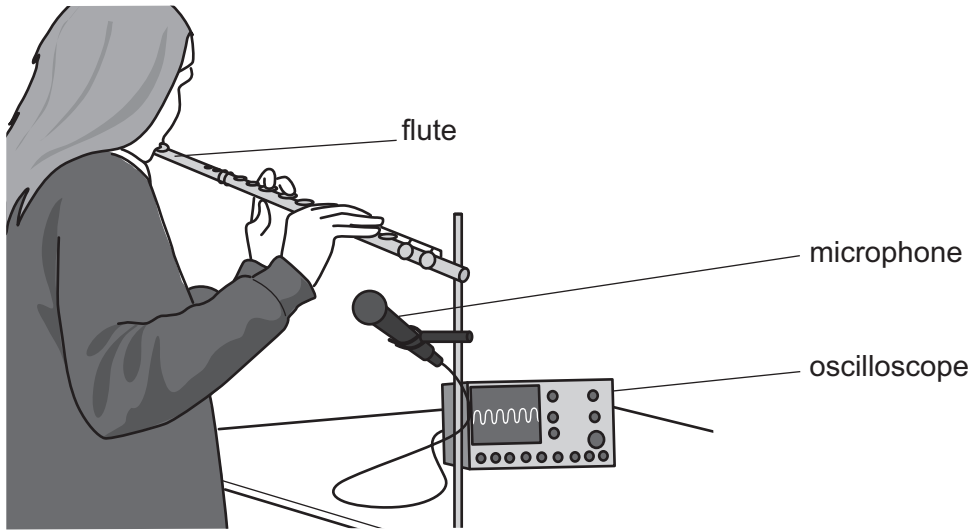
When a solid changes into a liquid it is said to ..... [3]

(b) The particles of a gas fill any container in which they are placed.

Explain why.

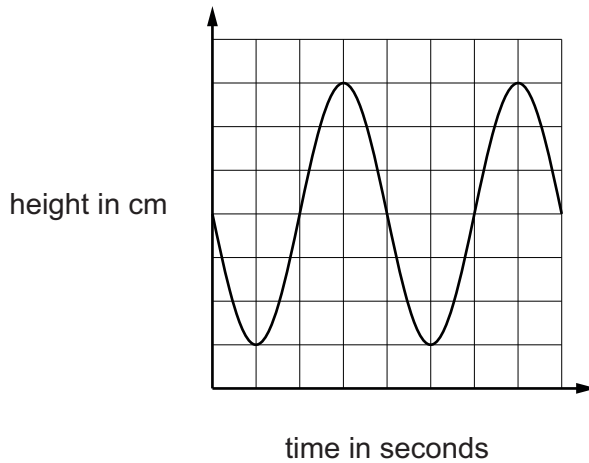
.....  
..... [2]

3 Mia plays her flute.



The oscilloscope shows the sounds the flute makes.

Here is an oscilloscope picture.



(a) There are two complete waves in the picture.

This wave has a frequency of 2 units.

The frequency of the wave increases to 6 units.

The amplitude stays the same.

(i) What is the number of complete waves that are now seen in the oscilloscope picture?

..... [1]

(ii) What happens to the height of the waves on the oscilloscope picture?

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

(b) Mia moves further away from the microphone.

She plays the flute in exactly the same way.

Explain what happens to the oscilloscope picture.

.....

.....

..... [2]

4 There are still many undiscovered species of animals and plants in remote parts of the world.

The diagram shows a newly discovered species which scientists have classified and named *Isothrix barbarabrownae*.



(a) Name the **class** of vertebrates that includes *Isothrix*.

Circle the correct answer.

- amphibians      birds      fish      mammals      reptiles**

[1]

(b) Give **two** reasons for your answer to (a).

Use information from the diagram.

1 .....

.....

2 .....

..... [2]

5 Hassan is a farmer.

The soil on his fields is too acidic to grow some crops.

(a) Hassan wants to find out the pH of the soil.

He uses litmus.

(i) How does litmus tell Hassan that the soil is acidic?

..... [1]

(ii) Hassan's friend suggests that he uses Universal Indicator instead of litmus.

Explain why.

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

(b) Hassan adds an alkali to the field.

The acid in the soil reacts with the alkali.

What is the name of this type of reaction?

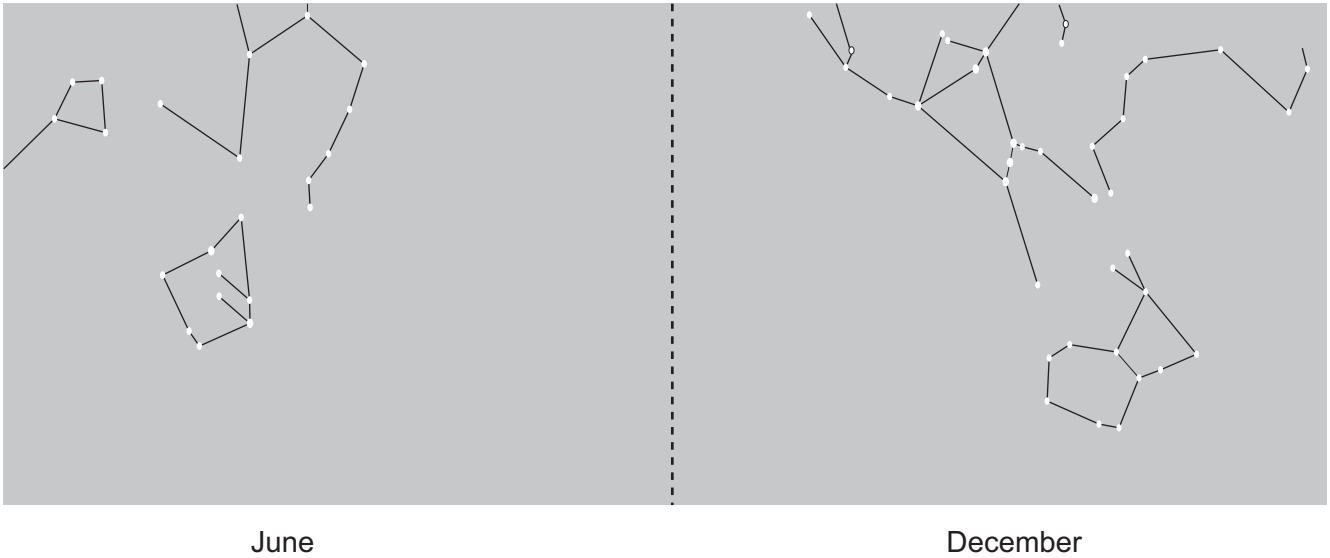
Circle the correct answer.

- evaporation      fertilisation      fossilisation  
neutralisation      respiration

[1]

6 Look at the pictures of stars seen from the same position on the surface of the Earth.

One of the pictures is from June and the other is from December.



(a) Why are the patterns of the stars different?

..... [1]

(b) A picture of stars is taken in October.

It is taken from the same position on the Earth.

What pattern will the stars have in the month of October?

Circle the correct answer.

**same as the pattern in June**

**same as the pattern in December**

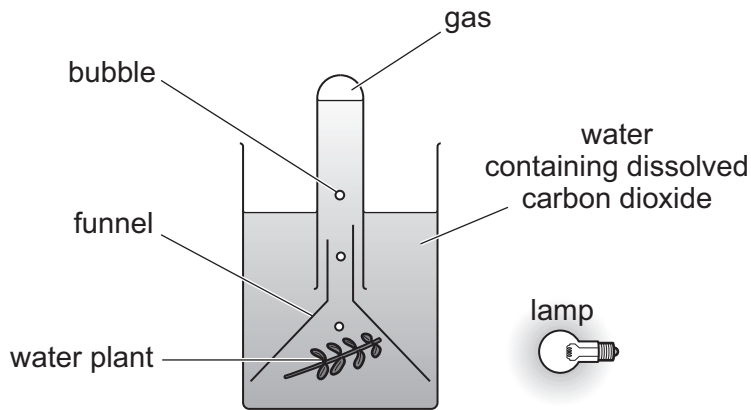
**a different pattern**

[1]



7 Rajiv and Jamila investigate photosynthesis.

They set up their apparatus as shown.



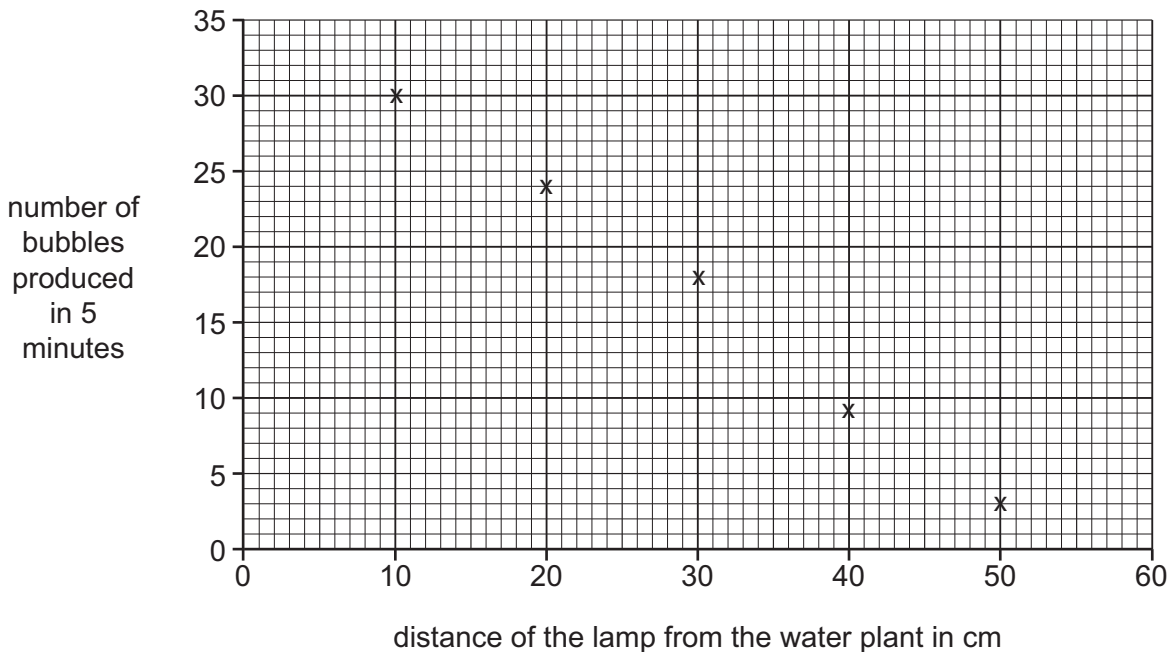
They want to find out how changing the distance of the lamp from the water plant affects the rate of photosynthesis.

(a) Write down two **variables** that they measure.

- 1 .....
- 2 ..... [2]

(b) Rajiv and Jamila do their experiment.

Here are their results.



Describe the pattern shown by the results.

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

8 Safia and Carlos do some displacement reactions.

(a) The sentences **A – D** describe the method they use.

The sentences are in the wrong order.

- A** They look to see if there is a reaction.  
**B** They place different metals into five test-tubes.  
**C** They add copper nitrate solution to each test-tube.  
**D** They repeat the method with different solutions.

Complete the boxes to show the correct order.

One box has been done for you.

<b>B</b>			
----------	--	--	--

[1]

(b) The table shows their results.

✓ = a reaction takes place

✗ = there is no reaction

solution	metal			
	zinc	iron	lead	magnesium
zinc nitrate	✗	✗	✗	✓
iron nitrate	✓	✗	✗	✓
lead nitrate	✓	✓	✗	✓
magnesium nitrate	✗	✗	✗	✗

Use the information in the table to put the metals into the order of reactivity.

most reactive .....



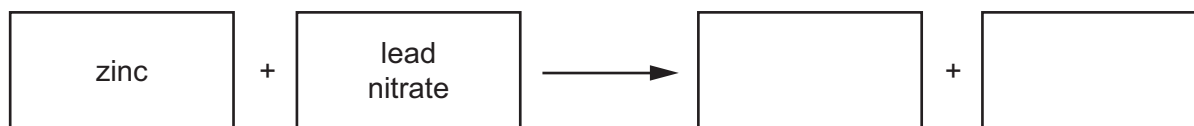
.....

.....

least reactive .....

[2]

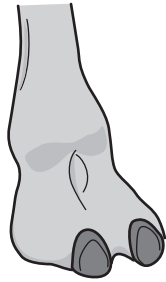
(c) Complete the word equation for the reaction between zinc and lead nitrate.



[2]

9 Jamila and Ahmed collect information about a camel and a horse.

camel



weight = 5000 N  
total area of feet = 2000 cm<sup>2</sup>

horse



weight = 4000 N  
total area of feet = 400 cm<sup>2</sup>

Pressure is calculated by the equation

$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

The total pressure exerted by the camel's feet is 2.5 N/cm<sup>2</sup>.

Calculate the total pressure exerted by the horse's feet.

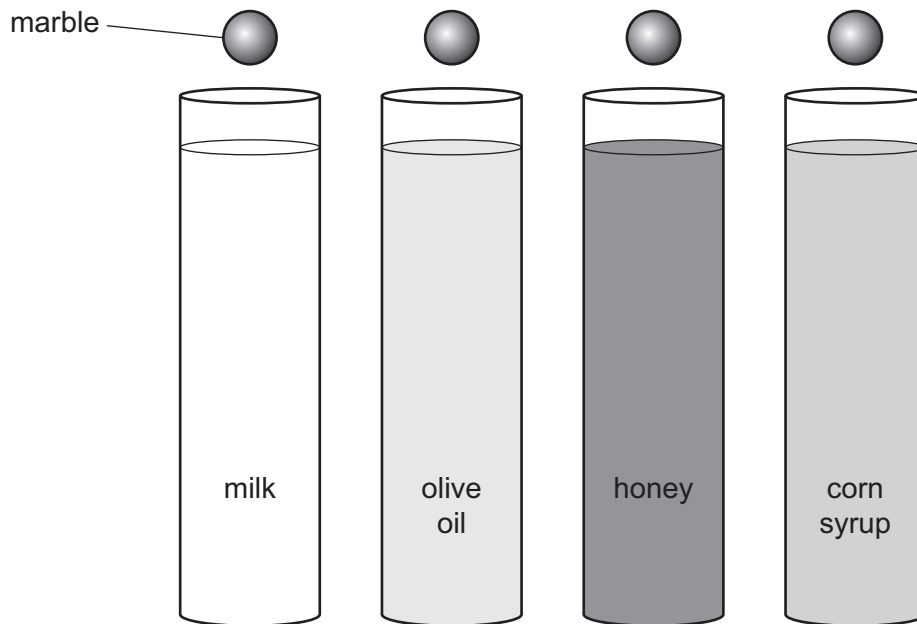
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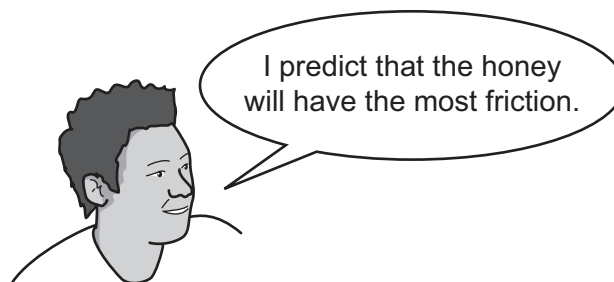
pressure ..... N/cm<sup>2</sup> [2]

10 Youssef investigates friction.

He drops marbles into different liquids.



(a) Youssef makes a prediction.



Here are his results.

liquid	time taken for marble to fall in seconds
milk	2.5
olive oil	3.1
honey	3.4
corn syrup	3.5

Is Youssef's prediction correct?

Circle the correct answer.

**yes**

**no**

Explain your answer using the results.

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

**(b)** Youssef wants to increase the time it takes for the marble to fall.

Describe how he could increase the time it takes for the marble to fall.

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

11 Mike and Oliver find information about some planets.

name of planet	time to orbit the Sun in (Earth) years
Earth	1.0
Jupiter	11.9
Mars	1.9
Mercury	0.2
Venus	0.7

(a) Which **two** of these planets take more time than the Earth to orbit the Sun?

..... **and** ..... [1]

(b) Oliver finds some information about the planets Saturn and Uranus.

name of planet	time to orbit the Sun in (Earth) years
Saturn	84.0
Uranus	29.5

Mike says the information is incorrect.

What is wrong with this information?

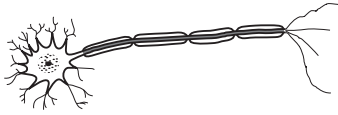
Explain your answer.

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

12 Different cells have different functions.

Draw a line from each **cell** to its **function**.

**cell**



**function**

absorbs water and  
mineral ions from  
the soil

transmits nerve  
impulses around  
the body

fertilises the egg cell

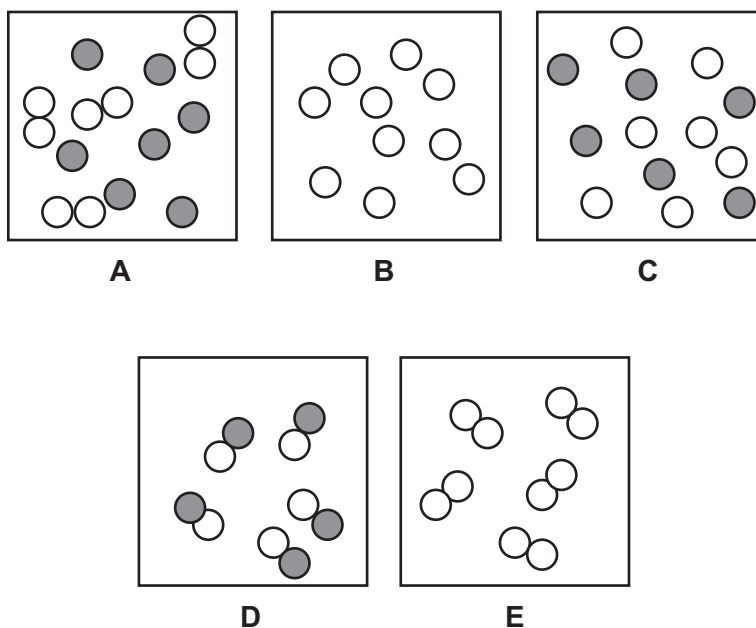
carries oxygen  
around the body

[2]

13 Look at the diagrams.

The diagrams show the particles in five substances.

The white and grey circles represent types of atom.



Which **two** diagrams show mixtures?

Choose from **A**, **B**, **C**, **D** and **E**.

..... **and** .....

Explain your answer.

.....

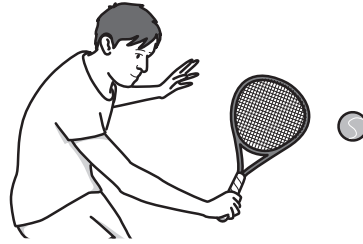
.....

[3]



14 Forces are useful when playing different sports.

(a) Draw an arrow (→) from the **tennis ball** to show the direction of gravity.



[1]

(b) There is a force between the **rugby ball** and the boy's hand.



Write down the name of this force.

..... [1]

(c) When the **golf ball** moves through the air a force slows it down.

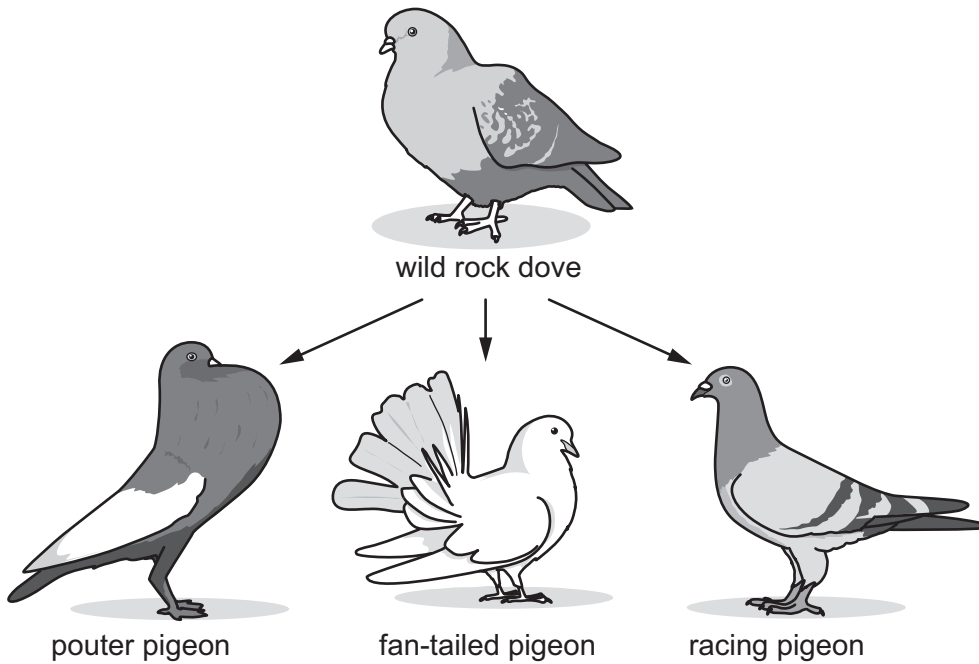


Write down the name of this force.

..... [1]

15 Look at the diagram.

It shows some different varieties of pigeon.



(a) The four pigeons all have different colours.

Describe one **other** difference that you can see in the diagram between a **wild rock dove** and a **fan-tailed pigeon**.

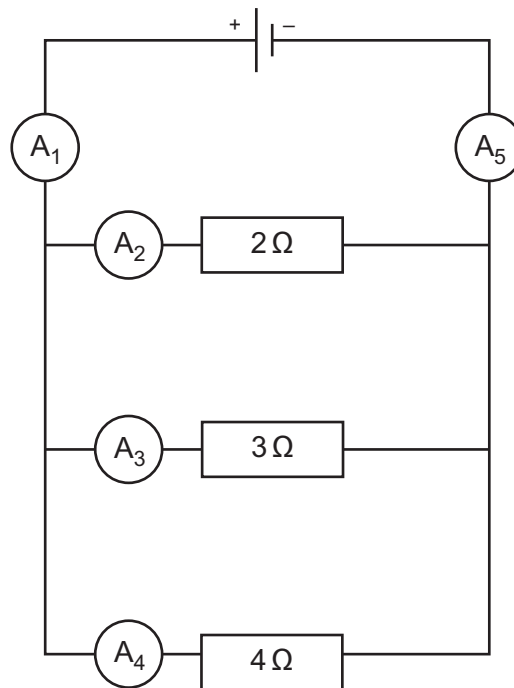
..... [1]

(b) Racing pigeons are specially bred for speed and stamina.

Describe one feature of the racing pigeon, shown in the diagram, that enables it to fly at high speed.

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

16 Piriya connects an electrical circuit.



The  $2\Omega$ ,  $3\Omega$  and  $4\Omega$  components are resistors.

Complete the readings on the ammeters.

$$A_1 = 1.8 \text{ amps}$$

$$A_2 = 0.8 \text{ amps}$$

$$A_3 = 0.6 \text{ amps}$$

$$A_4 \text{ ..... amps}$$

$$A_5 \text{ ..... amps}$$

[2]

17 Oliver investigates which variables affect the decay of leaves.

He puts some fallen leaves in three different types of soil.

The table shows the differences between the three different types of soil.

type of soil	variables		
	pH of soil	percentage of air in soil	percentage of water in soil
<b>A</b>	8	30	30
<b>B</b>	6	20	30
<b>C</b>	8	20	30

(a) Decomposers help to decay the leaves.

Name **one** type of **microorganism** which is a decomposer.

..... [1]

(b) Oliver finds that the leaves in soil **C** decay faster than those in soil **B**.

Suggest why.

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

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