UNITED LEARNING

YEAR 8

SCIENCE

END OF YEAR PHYSICS ASSESSMENT 2023

TIME ALLOWED: 40 MINUTES

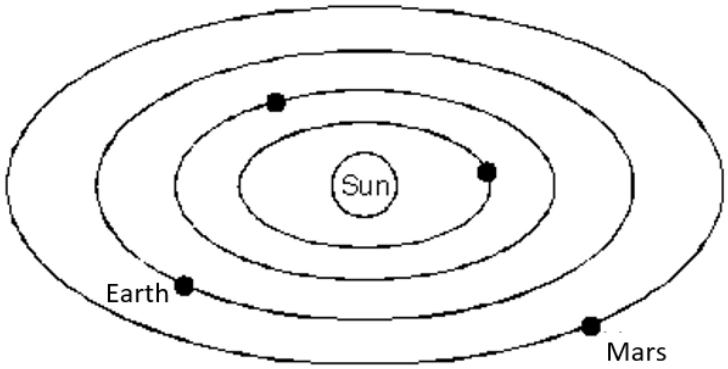
Student Name	
Class	

Total Mark	/40

QUESTION 1 – EARTH (5 marks)

The drawing below shows the orbits of the first four planets in the solar system.

The Sun, Mars and Earth have been labelled.



not to scale

1.1 How long does it take for the Earth to complete one orbit of the Sun? [1]

_____

1.2 How many **hours** does it take for the Earth to rotate once on its axis? [1]

_____

1.3 Compare the time taken for Mars and Earth to orbit the Sun. [1]

_____

1.4 The Earth is kept in orbit by a force acting between the Sun and the Earth.

What is the name of this force? [1]

_____

1.5 The Earth is accelerating.

What does this tell you about the forces acting on the Earth?

_____

1

Turn over for the next question.

QUESTION 2 – CIRCUITS (5 marks)

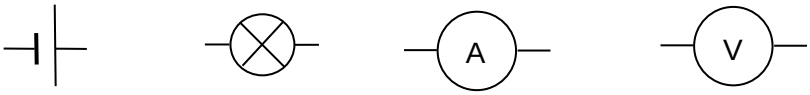
A student set up a simple circuit with a **cell** and a **lamp**.

The lamp lit up.

They attached an **ammeter** to measure the current in the circuit, and a **voltmeter** to measure the potential difference across the cell.

2. 1 In the space below, draw a circuit diagram for the circuit.

Use the following symbols:



cell **lamp** **ammeter** **voltmeter**

3

2.2 The ammeter measures the current.

What is current?

_____

_____ 1

2.3 The student added a second identical lamp in series with the first lamp.

Describe what happens to the brightness of the first lamp.

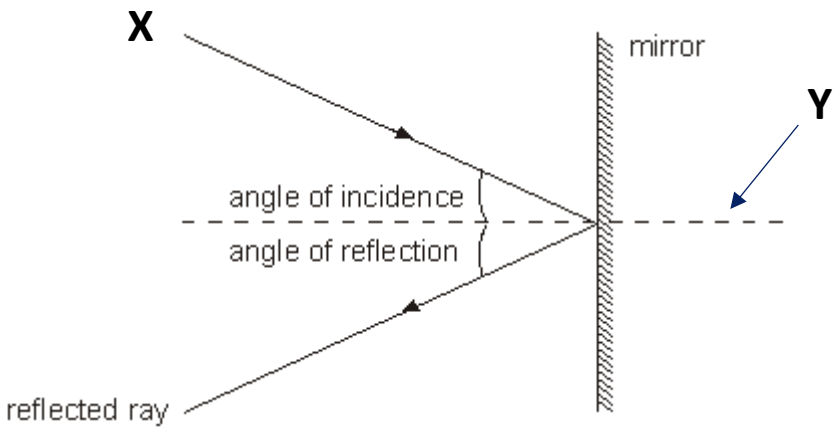
_____

_____ 1

Turn over for the next question.

QUESTION 3 – REFLECTION (4 marks)

A student shone a ray of light at a mirror as shown below.



3.1 What is the name given to ray **X**?

_____

_____ 1

3.2 The student drew a dotted line (**Y**) to help measure the angles.

What is the name given to **Y**?

_____

_____ 1

3.3 The student measured the angle of **reflection** for different angles of incidence.

The student drew a table to record their results.

Complete the table below with **all** of the missing values for the angles of reflection.

angle of **incidence** (°)	30	40	50	60	70
angle of **reflection** (°)					

1

3.4 Another student tried to repeat the investigation.

They made errors in their measurements.

Suggest a source of error for this investigation.

_____

_____

1

Turn over for the next question.

QUESTION 4 – SOLAR SYSTEM (9 marks)

4.1 The Sun and stars are light sources.

Planets are not light sources.

Explain how we can see the planets.

_____

_____

_____

_____

2

The table below gives information about the planets of the solar system.

planet	**average distance from the Sun in million km**	**temperature on surface of planet in °C**
Mercury	58	350
Venus	110	480
Earth	150	22
Mars	230	–23
Jupiter	780	–150
Saturn	1400	–180
Uranus	2900	–210
Neptune	4500	–220

4.2 Describe the relationship between average distance from the Sun and temperature on surface of the planet.

Include data to support your description, including any anomalies in the data.

_____

_____

_____

_____

_____

_____

3

4.3 A probe was sent to Mars.

The weight of the probe was less on Mars than it was on Earth.

The mass did not change.

Why was the weight of the probe less on Mars than on Earth?

_____

_____

1

Turn over for the next question.

4.4 The mass of the probe is 75 kg.

The gravitational field strength on Mars is 3.7 N / kg.

Calculate the weight of the buggy.

Use the equation below:

weight = mass x gravitational field strength

_____

_____

_____

_____

Weight: _____N

2

4.5 Why does Mars have a smaller gravitational field strength than Earth?

_____

_____

1

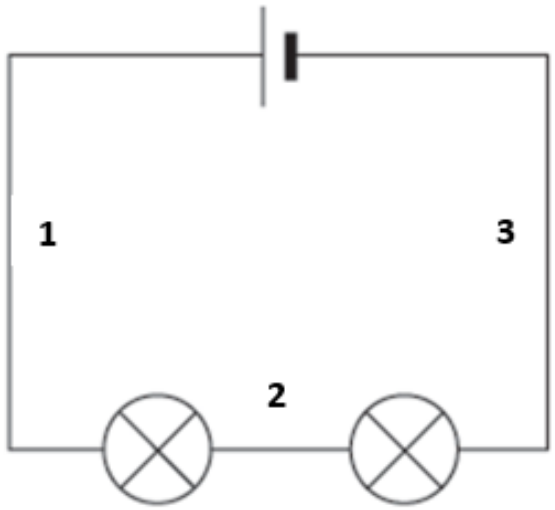
There are no questions printed on this page.

Turn over for the next question.

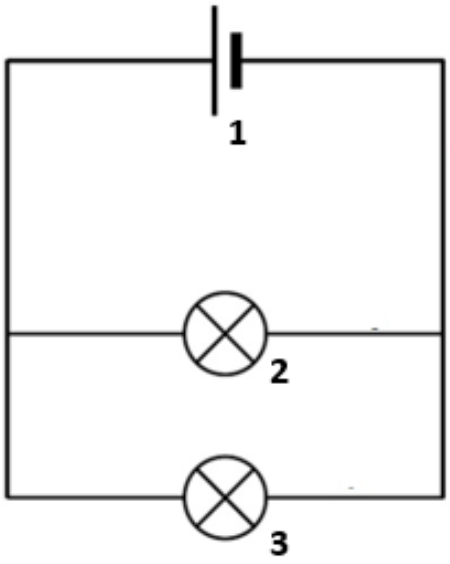
QUESTION 5 – SERIES AND PARALLEL CIRCUITS (8 marks)

Below are two circuits.
Circuit A is a series circuit. Circuit B is a parallel circuit.

A - Series circuit



B - Parallel circuit



5.1 A student placed an **ammeter** at points 1, 2 and 3 on the **series** circuit.

Which statement best describes the readings on the ammeter?

Give the correct letter.

A – the current was highest at 1 and decreased at 2 and 3

B – the current was the same at 1, 2 and 3

C – the current was highest at 2

D – the potential difference was the same at 1, 2 and 3

Letter: 1

5.2 A student placed a **voltmeter** across points 1, 2 and 3 on the **parallel** circuit.

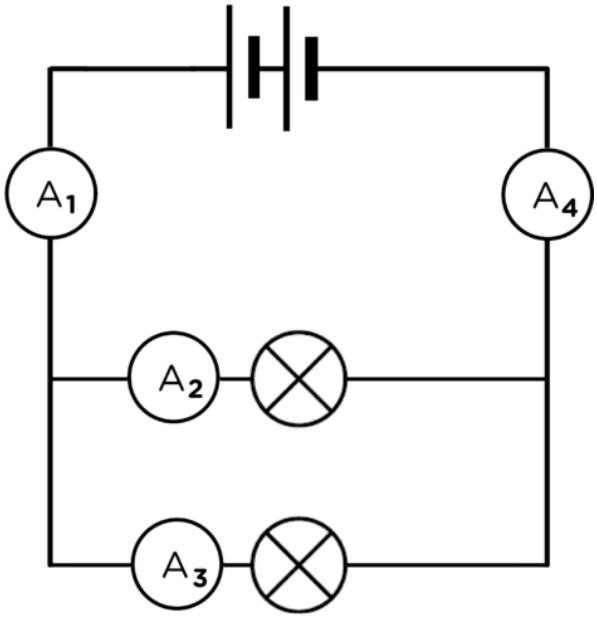
Describe the pattern in their reading.

_____

_____

1

The diagram below shows a different parallel circuit.



The current at **A_1** was recorded as 0.7 A

The current at **A_2** was recorded as 0.3 A.

5.3 Calculate the current measured by ammeter **A_3**.

Current = ...A

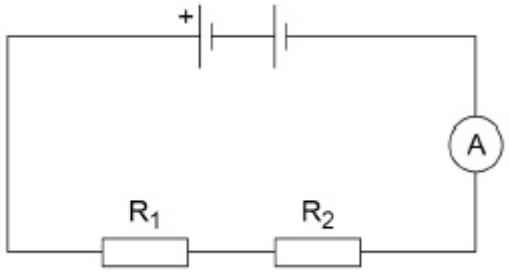
1

5.4 What will be the current measured by ammeter **A_4**?

Current = ...A

1

5.5 The diagram below shows another series circuit.



The ammeter reads 0.3 A.

Resistor **R_2** breaks.

What happens to the reading on the ammeter?

_____

_____ 1

5.6 The reading on the ammeter says 0.2 A.

The potential difference supplied by the battery is 6.0 V.

Calculate the total resistance of the circuit.

Use the equation:

resistance = potential difference ÷ current

Give the correct unit

_____

_____

_____

_____ 3

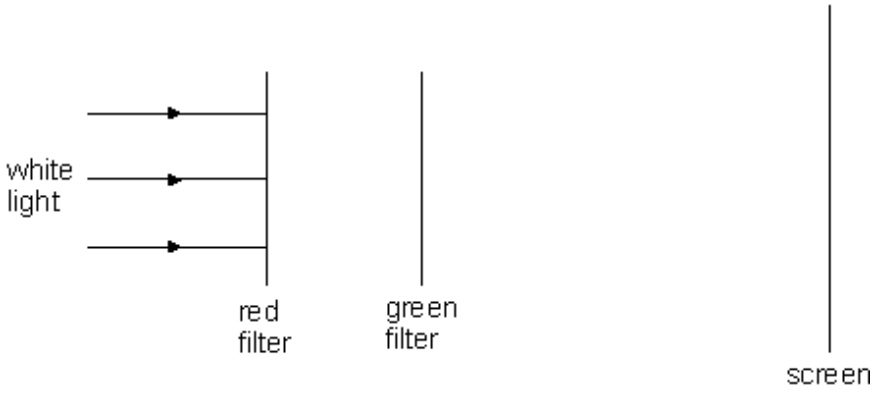
Resistance _____

Unit _____

QUESTION 6 – COLOUR (5 marks)

A scientist used a torch to shine white light through a red filter and a green filter.

The diagram below represents the experiment.



6.1 **No** light reached the screen.

Explain why.

_____

_____

_____

_____

2

Turn over for the next question.

6.2 In another experiment different colour lights were shined on different coloured balls.

Complete the table to show the colours that the balls appear to be.

Colour of ball	**Colour of light**	**Colour the ball appears to be**
white	red	
red	blue	

2

6.3 Why does a black object appear black in any light?

_____

_____

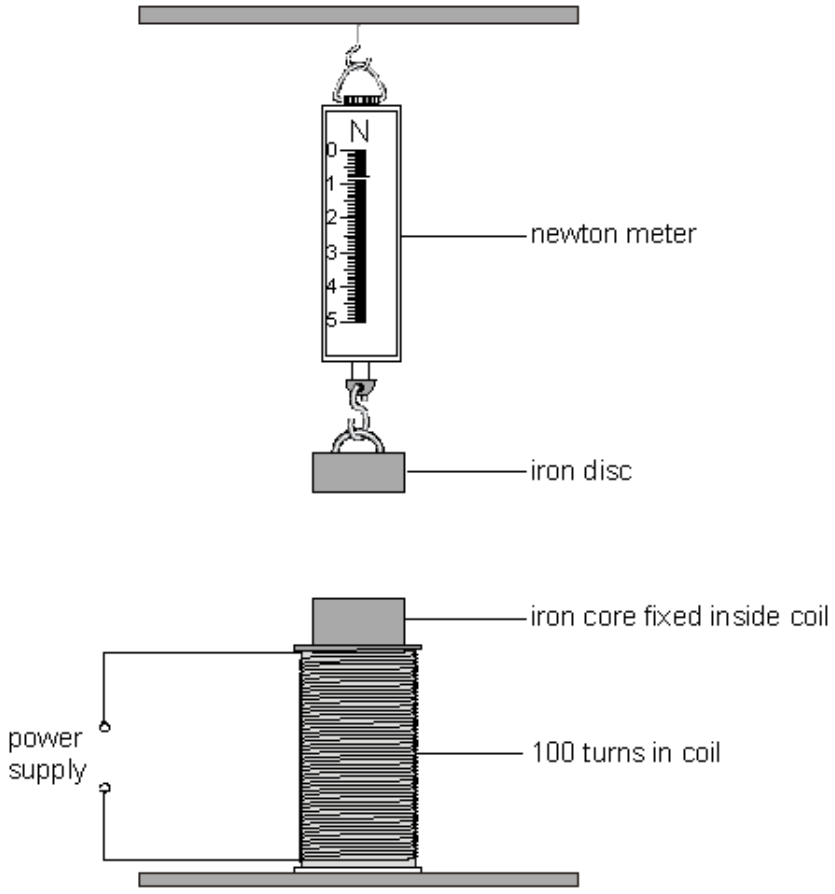
_____

1

QUESTION 7 – ELECTROMAGNETISM (4 marks)

A student used the apparatus below to test the strength of an electromagnet.

She used the reading on the newton meter to measure the force of the magnet on the iron disc.



7. 1 Explain why the reading on the newton meter increases when a current passes through the coil.

_____

_____

_____

_____

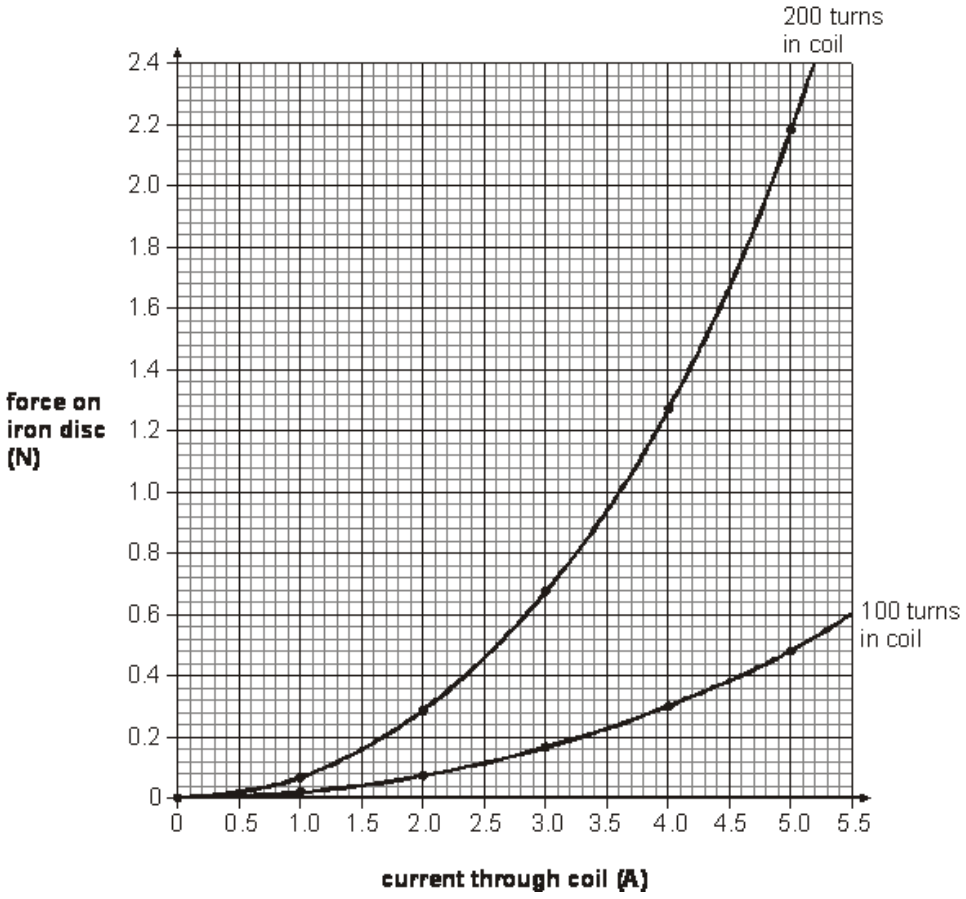
2

The student made two electromagnets, one with 100 turns of wire in the coil and one with 200 turns.

She varied the current through the coil of each electromagnet.

She measured the force of each electromagnet on the iron disc.

The graph shows her results.



7.2 Write **two** conclusions that the student could make from these results.

1._____

_____

2._____

_____ 2

END OF ASSESSMENT

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