Rewarding Learning

Centre Number

Candidate Number

General Certificate of Secondary Education
2023

Double Award Science: Physics

Unit 7: Practical Skills

Booklet A
Foundation Tier

[GDW71]

GDW71

TIME

1 hour.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Write your answers in the spaces provided in this question paper.
Answer **all** parts of Question 1.

INFORMATION FOR CANDIDATES

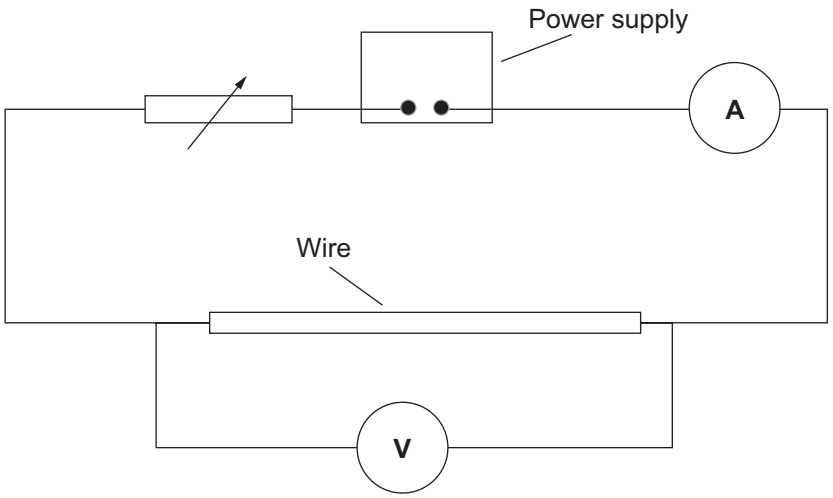
The total mark for this paper is **15**.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part of the question.
Follow all health and safety instructions.
You may use a ruler and a calculator if required.
The apparatus and materials required to complete the task(s) are provided.

For Examiner's use only	
Question Number	Marks
1	
Total Marks	

You may work in a group of up to three candidates in part 1(a) of this question.

Examiner Only	
Marks	Remark

1 The circuit shown below has been set up for you. You will use it to obtain a series of readings of voltage and current for a length of wire.



Do not adjust the power supply at any stage during the experiment.

(a) Turn on the power supply and adjust the variable resistor until the ammeter reads approximately 0.20 A.

Record this current and corresponding voltage in the table below.

The current should be recorded to 2 decimal places and the voltage to 1 decimal place.

Turn off the power supply after recording each pair of values.

Obtain a range of currents and corresponding voltages and record these in the table.

When adjusting the variable resistor, do not exceed 0.50 A on the ammeter.

Current / A	Voltage / V	Voltage / Current

[3]

You must complete the remainder of the paper on your own.

(b) Calculate the value of the voltage divided by the current (voltage/current) for each pair of values and record them in the table on page 2.

What quantity is represented by voltage divided by current? State its unit.

Quantity _____ Unit _____ [4]

(c) In the experiment, you set the current each time and then recorded the voltage.

What is the independent variable in this experiment?

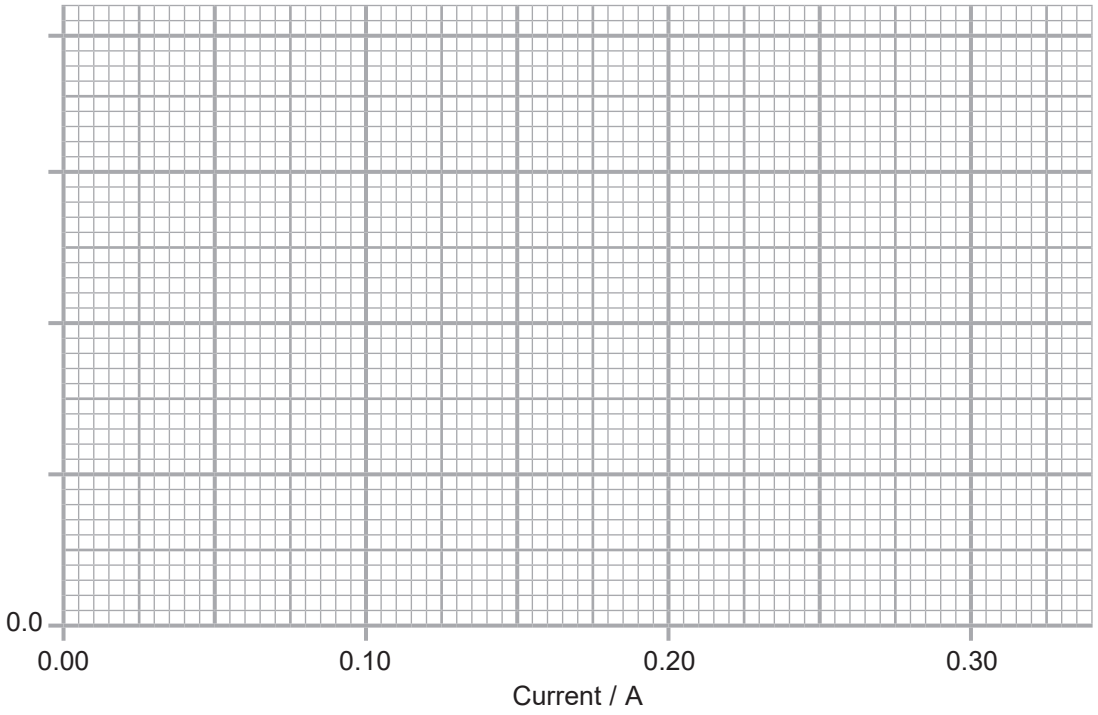
_____ [1]

Examiner Only	
Marks	Remark

(d) This experiment was carried out in another school with a different piece of wire.

The results below were obtained.

Current / A	Voltage / V
0.10	1.2
0.15	1.8
0.20	2.4
0.25	3.0
0.30	3.6



You are asked to plot a graph of voltage against the current.
Choose a suitable scale for the vertical axis and label it.

Plot the points.

Draw the line of best fit. [5]

Examiner Only

Marks	Remark

(e) What relationship between voltage and current does your graph indicate?

Circle your choice below.

direct proportion **inverse (indirect) proportion**

Give two reasons for your choice.

1. _____

2. _____ [2]

Examiner Only	
Marks	Remark

THIS IS THE END OF THE QUESTION PAPER

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APPARATUS AND MATERIALS LIST AND CONFIDENTIAL INSTRUCTIONS

To be accessed by Head of Department only

It is the responsibility of the centre to ensure that appropriate risk assessments are carried out for all practical skills assessments.

Apparatus and Materials list for P7A F and P7A H – Summer 2023

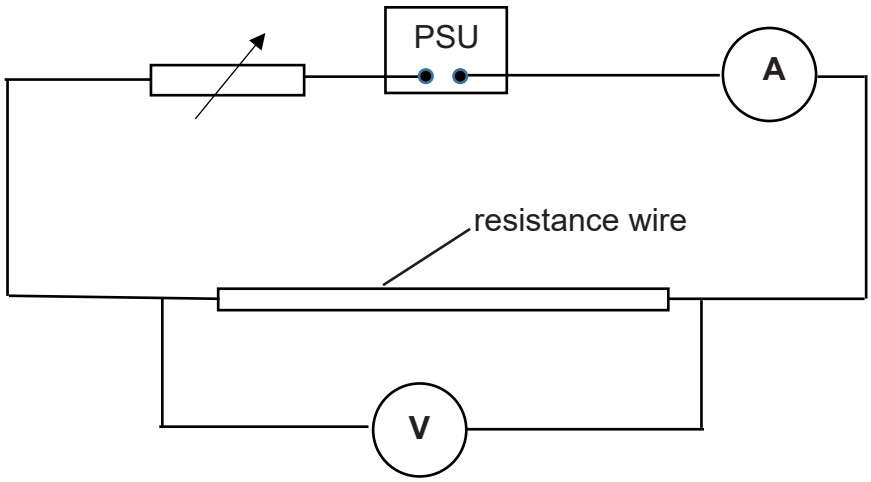
The experiment requires

- Power supply unit (PSU) capable of producing 6V.
- Variable resistor (rheostat) * – see note below.
- Analogue ammeter capable of reading up to 0.50 A ± 0.01 A or digital ammeter reading to 2 decimal places.
- Analogue voltmeter capable of reading 0 – 5.0 V ± 0.1 V or digital voltmeter reading to 1 decimal place.
- 28 SWG nichrome wire.
- Two crocodile clips.
- Metre rule.
- A minimum of 6 connecting wires.

Cut a length of nichrome wire and attach one crocodile clip at each end so that there is a length of **100 cm between the clips**. The wire should be taped to the metre rule.

*The Examining Team does not wish to put schools to the expense of ordering specific variable resistors. For your information, the Team used a 20Ω variable resistor.

In setting up the circuit below, therefore, the supervisor should ensure that the output voltage and variable resistor settings are such that a range of five current readings up to a maximum of 0.50 A can be obtained.



The PSU should now be taped over so that the candidate cannot change the setting.

Health and safety

The power supply should be switched off before the candidate starts the experiment.