



## Cambridge IGCSE™

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## PHYSICS

0625/62

Paper 6 Alternative to Practical

February/March 2026

1 hour

You must answer on the question paper.

No additional materials are needed.

## INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen. Do **not** use correction fluid or tape.
- Do **not** write on any bar codes.
- You may use a calculator.
- You should show all your working and use appropriate units.

## INFORMATION

- The total mark for this paper is 40.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **16** pages. Any blank pages are indicated.

1 A student determines the density of a glass ball.

(a) The student:

- pours water into a measuring cylinder until it is approximately half full
- places the measuring cylinder of water on a top-pan balance
- records the combined mass  $m_1$  of the measuring cylinder and water.

$$m_1 = \dots\dots\dots 125.6 \text{ g}$$

(i) Describe **one** technique for using a top-pan balance to measure the mass of the measuring cylinder and water to ensure an accurate reading.

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

(ii) Figure 1.1 shows the water level in the measuring cylinder.

Record the volume  $V_1$  of water in the measuring cylinder.

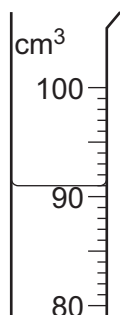


Figure 1.1

$$V_1 = \dots\dots\dots \text{ cm}^3 \text{ [1]}$$

(iii) Describe **two** techniques that the student uses when measuring the volume of the water to ensure an accurate reading.

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



- (b) The student places four glass balls into the water in the measuring cylinder, ensuring no water splashes out.

The student records the mass  $m_2$  of the measuring cylinder, water and 4 glass balls.

$$m_2 = \frac{132.8 \text{ g}}{\dots\dots\dots}$$

- (i) Calculate the mass  $m$  of one glass ball.

$$m = \dots\dots\dots \text{ g [1]}$$

- (ii) The student records the volume  $V_2$  of the water and four glass balls.

$$V_2 = \frac{94 \text{ cm}^3}{\dots\dots\dots}$$

Calculate the volume  $V$  of one glass ball.

$$V = \dots\dots\dots \text{ cm}^3 \text{ [1]}$$

- (iii) Calculate the density  $\rho$  of a glass ball. Use your values from **1(b)(i)** and **1(b)(ii)** and give the unit. Use the equation shown.

$$\rho = \frac{m}{V}$$

$$\rho = \dots\dots\dots \text{ unit } \dots\dots\dots \text{ [2]}$$

- (c) Suggest **two** improvements that will help a student to determine a more accurate value for the volume of a glass ball.

1 .....  
 .....  
 2 .....  
 .....

[2]

[Total: 10]

[Turn over]





- 2 A student investigates the behaviour of a spring.

Refer to Figure 2.1.

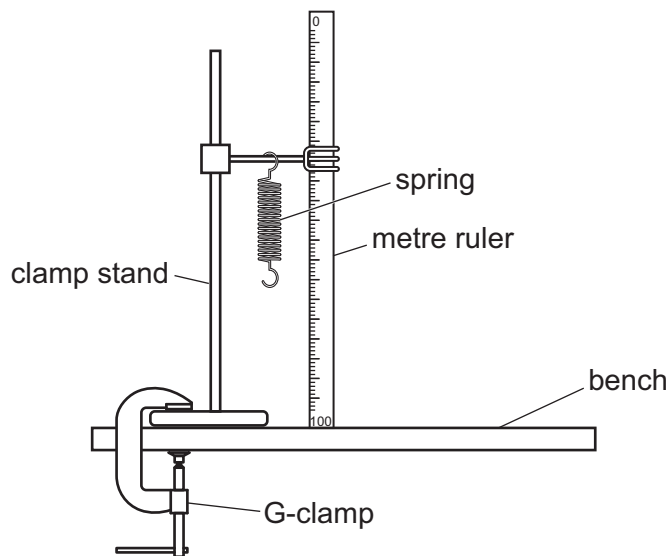


Figure 2.1

- (a) (i) Describe **two** techniques the student uses when measuring the length of the spring to ensure an accurate reading. You may draw a diagram.

- 1 .....
- 2 .....

[2]

(ii) Using Figure 2.2 record the initial length  $l_0$  of the spring with no load.

Do **not** include the loops at the ends of the spring in your measurement.

Show clearly on Figure 2.2 how you made your measurement.

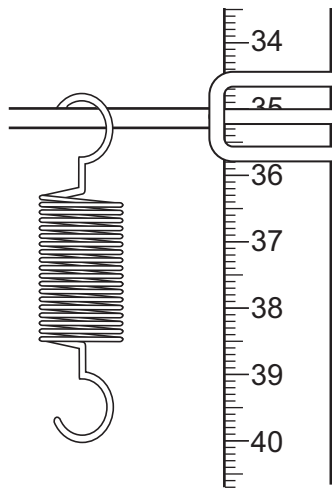


Figure 2.2

$l_0$  ..... mm [2]

(b) The student:

- suspends a load  $L = 1.0 \text{ N}$  from the spring
- records the new length  $l$  of the spring in Table 2.1
- calculates the extension  $x$  of the spring using the equation  $x = l - l_0$
- records the value of  $x$  in Table 2.1
- repeats the procedure using loads  $L = 2.0 \text{ N}$ ,  $3.0 \text{ N}$ ,  $4.0 \text{ N}$  and  $5.0 \text{ N}$ .

Complete Table 2.1.

Table 2.1

| $L/\text{N}$ | $l/\text{mm}$ | $x/\text{mm}$ |
|--------------|---------------|---------------|
| 1.0          | 42            |               |
| 2.0          | 61            |               |
| 3.0          | 82            |               |
| 4.0          | 107           |               |
| 5.0          | 125           |               |

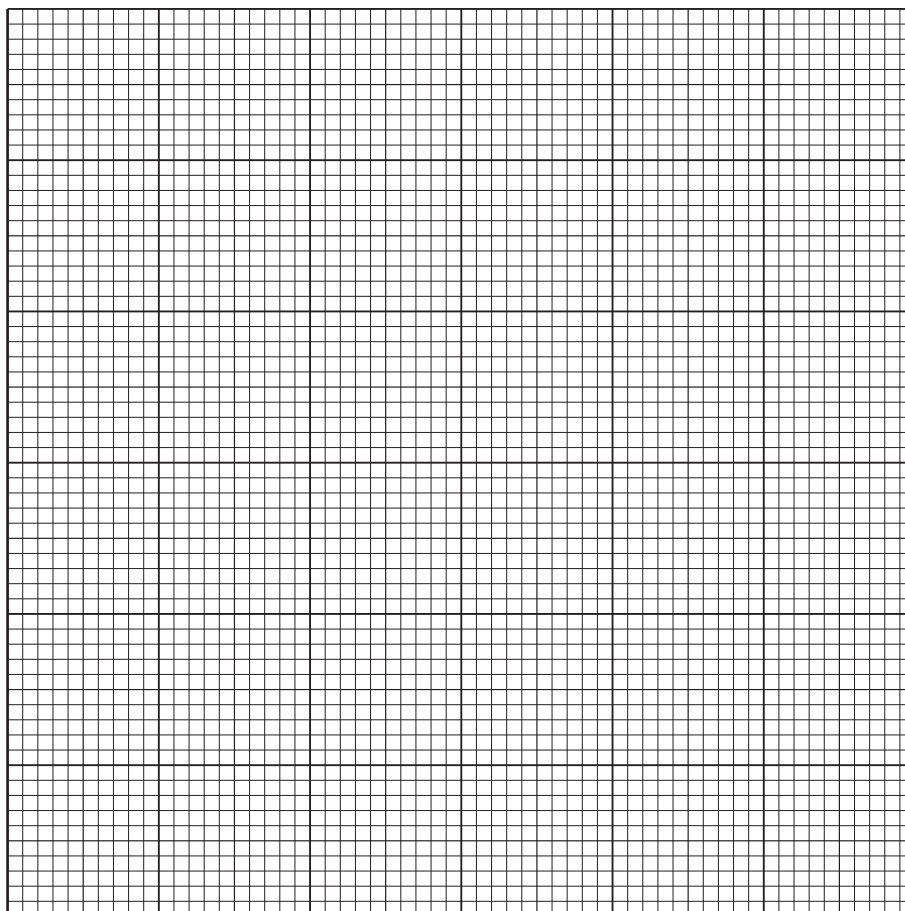
[2]



(c) (i) Plot a graph of  $L/N$  (y-axis) against  $x/\text{mm}$  (x-axis).

Start the axes from the origin (0, 0)

Draw the best-fit line.



[4]

(ii) State and explain if your line shows  $L$  and  $x$  are directly proportional.

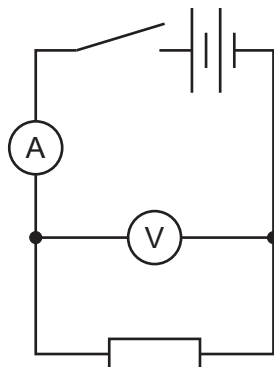
.....  
.....  
..... [1]

[Total: 11]

3 A student investigates circuits containing different combinations of resistors.

(a) (i) Figure 3.1 shows circuit 1.

Circuit 1.

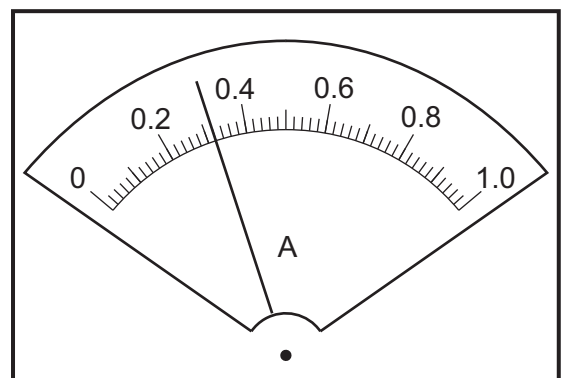
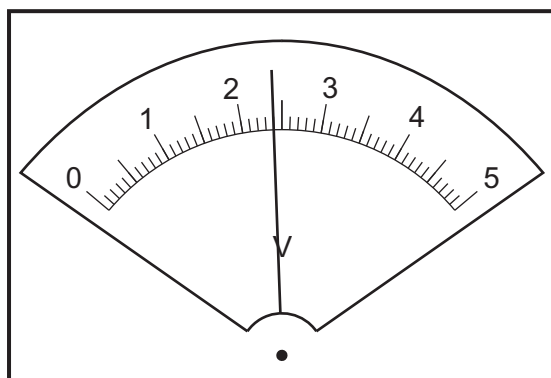


**Figure 3.1**

Circuit 1 contains one resistor of resistance  $X \Omega$ .

The student closes the switch and measures the potential difference (p.d.) and current.

Record, in Table 3.1, the voltmeter and ammeter readings shown in Figure 3.2 for circuit 1.



**Figure 3.2**

**Table 3.1**

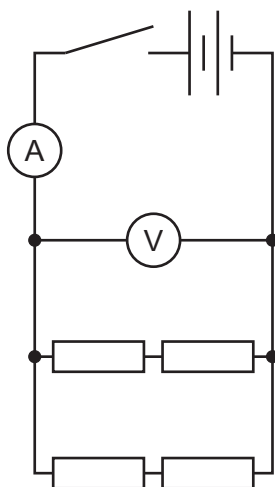
| circuit | $V/V$ | $I/A$ | $R/\Omega$ |
|---------|-------|-------|------------|
| 1       |       |       |            |
| 2       |       |       |            |

[1]



(ii) Figure 3.3 shows circuit 2.

Circuit 2.

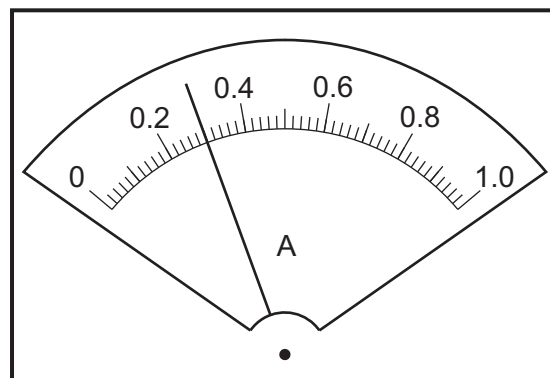
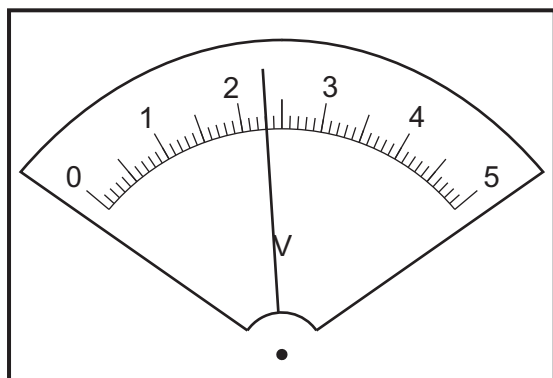


**Figure 3.3**

Circuit 2 contains four identical resistors each of resistance  $X \Omega$ .

The student closes the switch and measures the potential difference (p.d.) and current.

Record, in Table 3.1, the voltmeter and ammeter readings shown in Figure 3.4 for circuit 2.



**Figure 3.4**

[1]



- (iii) Calculate, and record in Table 3.1, the resistance of each circuit. Give your answers to 2 significant figures.

Use your readings from Table 3.1 and the equation shown.

$$R = \frac{V}{I}$$

[3]

- (iv) Theory suggests that the resistance of circuit 1 and circuit 2 are the same.

State whether the results support this suggestion. Justify your statement by reference to values from your results.

statement .....

justification .....

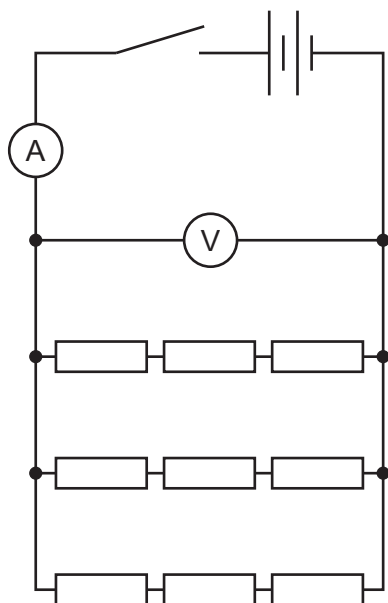
.....

[2]



(v) Figure 3.5 shows circuit 3.

Circuit 3.



**Figure 3.5**

Circuit 3 contains nine identical resistors each of resistance  $X \Omega$ .

Predict the resistance of this combination of resistors.

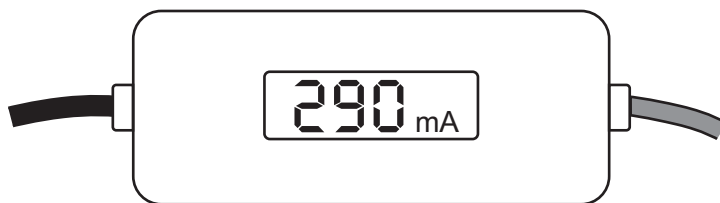
.....  $\Omega$  [1]

(b) Another student performs the same experiment but uses a digital ammeter.

(i) State **one** advantage of using a digital meter.

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

(ii) Figure 3.6 shows a digital ammeter display when it is connected in a circuit.



**Figure 3.6**

Record the value for the current shown in amperes.

..... A [1]



(c) Suggest **two** reasons why the switch is opened after readings are taken.

1 .....

.....

2 .....

.....

[2]

[Total: 12]





Turn over

- 4 A student investigates the rate of cooling of hot water in a container which has a lid.

Plan an experiment which enables the student to investigate the effect of different starting temperatures on the rate of cooling.

The apparatus available includes:

- a beaker
- a measuring cylinder
- a supply of hot water
- a lid

In your plan:

- state any additional apparatus required
- explain briefly how to do the investigation
- state the key variables to keep constant
- draw a table, or tables, with column headings, to show how to display your readings (you are **not** required to enter any readings in the table)
- explain how to use your readings to reach a conclusion.





[7]



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