Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME										
CENTRE NUMBER						CANDIDATE NUMBER				

* 4 3 7 4 1 4 9 4 3 3 *

PHYSICS **0625/52**

Paper 5 Practical Test **October/November 2016**

1 hour 15 minutes

Candidates answer on the Question Paper.

Additional Materials: As listed in the Confidential Instructions.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name in the spaces at the top of the page.
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 are advised to spend about 20 minutes on each of questions 1 to 3, and 15 minutes on question 4.
Electronic calculators may be used.
You may lose marks if you do not show your working or if you do not use appropriate units.

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.

For Examiner's Use	
1	
2	
3	
4	
Total	

The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **11** printed pages and **1** blank page.

DC (NH/JG) 115584/2

CAMBRIDGE
International Examinations

[Turn over

1 In this experiment, you will determine the weight of a load using a balancing method.

Carry out the following instructions, referring to Fig. 1.1.

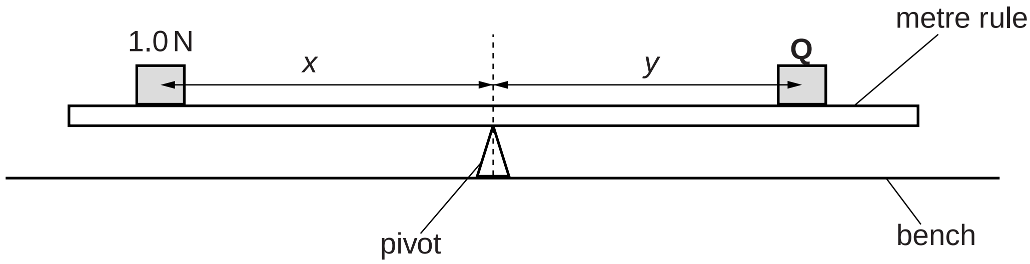

Fig. 1.1

(a) **(i)** Place the metre rule on the pivot and adjust its position so that the metre rule is as near as possible to being balanced. **The rule must remain at this position on the pivot throughout the experiment**.

Record the scale reading of the metre rule at the point where the rule balances on the pivot.

scale reading = ... cm [1]

(ii) Place the 1.0 N load on the metre rule so that its centre is exactly at the 20.0 cm mark on the rule.

Record the distance *x* between the 20.0 cm mark and the pivot.

x = ... cm [1]

(iii) Place the load **Q** on the metre rule and adjust the position of **Q** so that the metre rule is as near as possible to being balanced.

Measure the distance *y* between the centre of load **Q** and the pivot.

y = ... cm [1]

(iv) Calculate the weight *W* of the load **Q** using the equation $W = \frac{kx}{y}$, where k = 1.0 N.

W = ...[1]

(b) Repeat the procedure using a different, suitably chosen, distance x.

x = ...cm

y = ...cm

W = ... [3]

(c) Suggest two reasons why your values for W in **(a)(iv)** and **(b)** may not be the same.

1. ....

2. .... [2]

(d) Calculate the average W_{AV} of your values for W, the weight of load **Q**. Give your answer to a suitable number of significant figures for this experiment.

W_{AV} = ...[2]

[Total: 11]

2 In this experiment, you will investigate the resistance of a resistor.

The circuit shown in Fig. 2.1 has been set up for you.

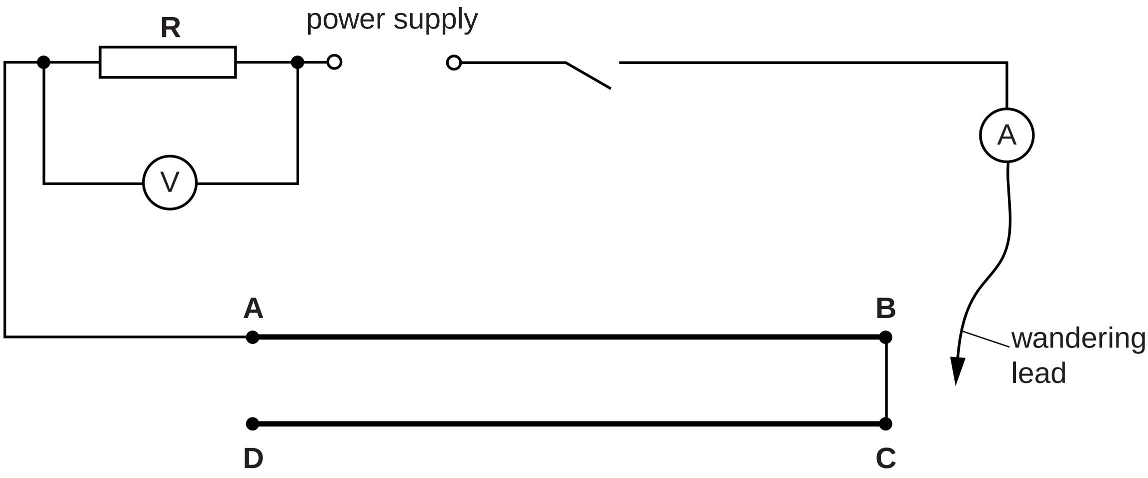

Fig. 2.1

(a) **(i)** Connect the wandering lead to point **B** in the circuit. Switch on.

Measure and record the potential difference V_1 across the resistor **R** and the current I_1 in the circuit. Switch off.

V_1 = ...

I_1 = ...
[1]

(ii) Calculate the resistance R of the resistor **R** using the equation $R = \frac{V_1}{I_1}$.

R = ...[1]

(b) Connect the wandering lead to point **D** in the circuit. Switch on.

(i) Measure and record the potential difference V_2 across the resistor **R** and the current I_2 in the circuit. Switch off.

V_2 = ...

I_2 = ...
[2]

(ii) Calculate the resistance R of the resistor **R** using the equation $R = \frac{V_2}{I_2}$.

R = ...[1]

(c) Connect points **A** and **D** together using a spare lead.

Connect the wandering lead to point **B** in the circuit. Switch on.

(i) Measure and record the potential difference V_3 across the resistor **R** and the current I_3 in the circuit. Switch off.

V_3 = ...

I_3 = ...
[1]

(ii) Calculate the resistance R of the resistor **R** using the equation $R = \frac{V_3}{I_3}$.

R = ...[1]

(d) Connect the wandering lead to point **A** in the circuit. Switch on.

(i) Measure and record the potential difference V_4 across the resistor **R** and the current I_4 in the circuit. Switch off.

V_4 = ...

I_4 = ...

(ii) Calculate the resistance R of the resistor **R** using the equation $R = \frac{V_4}{I_4}$.

R = ...[1]

(e) A student suggests that the resistance R should be constant throughout the experiment.

State whether your results agree with this suggestion. Justify your answer by reference to the results.

statement ....

justification ....

....

....[2]

(f) Suggest **one** practical reason why the value obtained for V_1 may be different from your value in **(a)(i)** if the experiment is repeated. You are **not** required to repeat the experiment.

....

....[1]

[Total: 11]

3 In this experiment, you will investigate reflection using a plane mirror.

Carry out the following instructions, using the separate ray-trace sheet provided. You may refer to Fig. 3.1 for guidance.

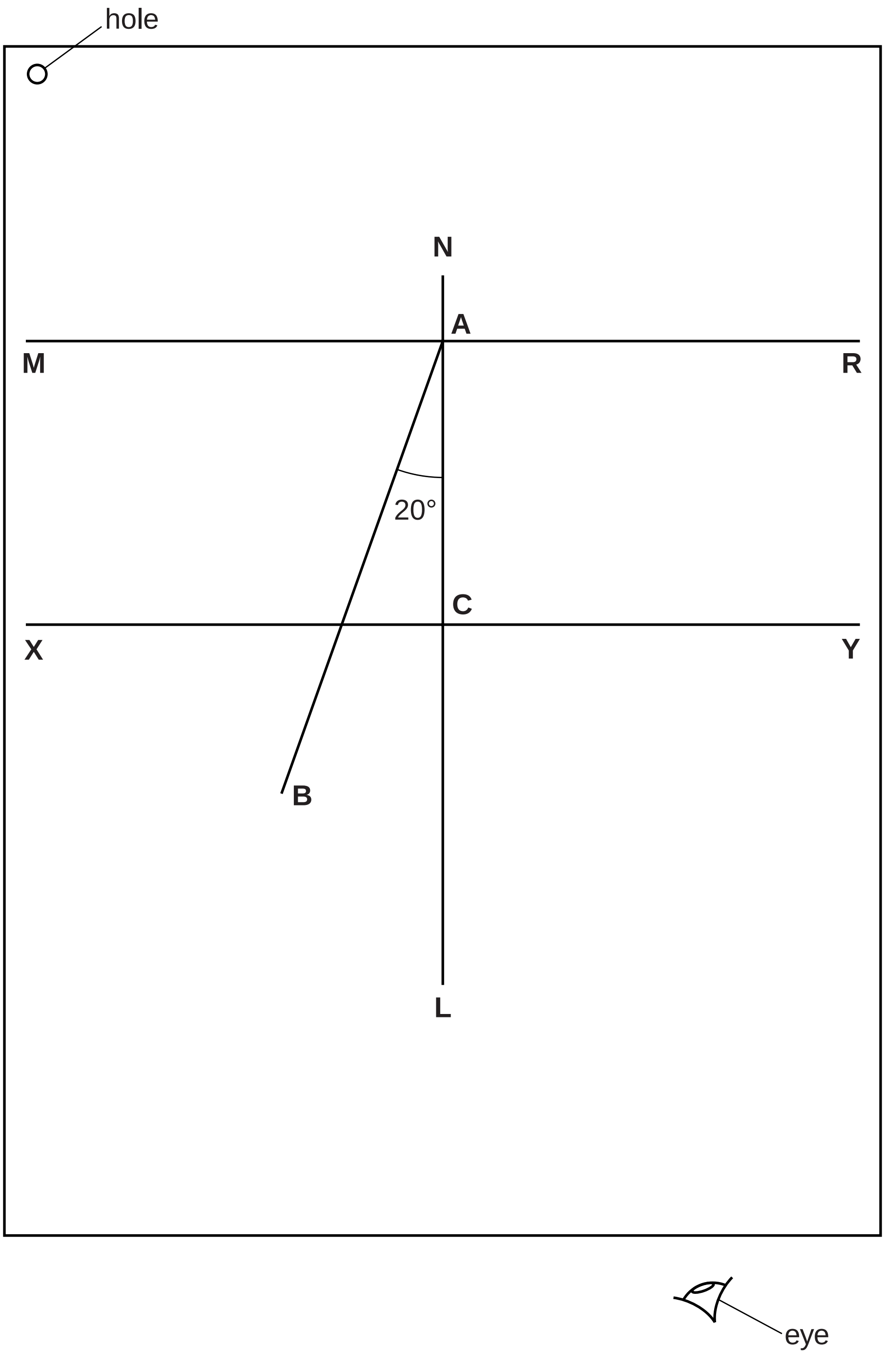

Fig. 3.1

(a) • Draw a line 18.0 cm long near the top of your ray-trace sheet. Label the line **MR**.

• Draw a normal to this line that passes through its centre. Label the normal **NL**. Label the point at which **NL** crosses **MR** with the letter **A**.

• Draw a line 8.0 cm long from **A** at an angle of incidence i = 20° to the normal, below **MR** and to the left of the normal. Label the end of this line **B**.

• Draw a line 18.0 cm long, 5.0 cm below **MR** and parallel to **MR**. Label the line **XY**. Label the point at which **NL** crosses **XY** with the letter **C**.

[2]

(b) • Place the reflecting face of the mirror vertically along the line **MR**. The mirror should be approximately centred on point **A**.

• Place a pin P_1 at point **B**, 8.0 cm from the point **A**.

• Place a pin P_2 on line **AB** a suitable distance from pin P_1.

• View the images of pins P_1 and P_2 from the direction indicated by the eye in Fig. 3.1. Place two pins P_3 and P_4, a suitable distance apart, so that pins P_3 and P_4, and the images of P_2 and P_1, all appear exactly one behind the other. Label the positions of P_3 and P_4.

[1]

(c) • Remove the pins and the mirror. Draw the line joining the positions of P_3 and P_4. Label the point at which this line crosses **XY** with the letter **D**.

• Measure, and record in Table 3.1, the distance *d* between **C** and **D**, for $i = 20°$.

• When $i = 0°$, $d = 0.0$ cm. These values are already entered in Table 3.1.

• Repeat the procedure to determine the distance *d* for lines with *i* values of 30°, 40°, 50° and 60°. Record all your results in Table 3.1.

Table 3.1

i / °	*d* / cm
0	0.0
20	
30	
40	
50	
60	

[3]

(d) Plot a graph of d / cm (y-axis) against i / ° (x-axis).

[4]

(e) Suggest one practical difficulty in obtaining accurate readings in this experiment.

....

....[1]

Tie your ray-trace sheet into this Booklet between pages 8 and 9.

[Total: 11]

4 A student is investigating whether using a lid reduces the time taken to heat a beaker of water to boiling point.

The student can use the following apparatus:

thermometer
250 cm^3 glass beaker
250 cm^3 measuring cylinder
heatproof mat
lid to fit the beaker
clamp, boss and stand.

Plan an experiment to investigate whether using a lid reduces the heating time. You are **not** required to carry out this experiment.

You should

- list the additional apparatus that you would require
- explain briefly how you would carry out the investigation
- state the key variables that you would control
- draw a table with column headings, to show how you would display your readings; you are not required to enter any readings in the table
- explain how you would use your readings to reach a conclusion.

A diagram is not required but you may draw a diagram if it helps your explanation.

....

....

....[7]

[Total: 7]

BLANK PAGE