



General Certificate of Secondary Education

Centre Number

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Candidate Number

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Double Award Science: Physics

Unit 7 Practical Skills
Booklet B
Foundation Tier



[GDW74]

GDW74

Assessment

TIME

30 minutes.

Assessment Level of Control:

Tick the relevant box (✓)

Controlled Conditions	
Other	

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

You must answer the questions in the spaces provided.

Do not write outside the boxed area on each page or on blank pages.

Complete in black ink only. **Do not write with a gel pen.**

Answer **all** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 35.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

Quality of written communication will be assessed in Question 4.

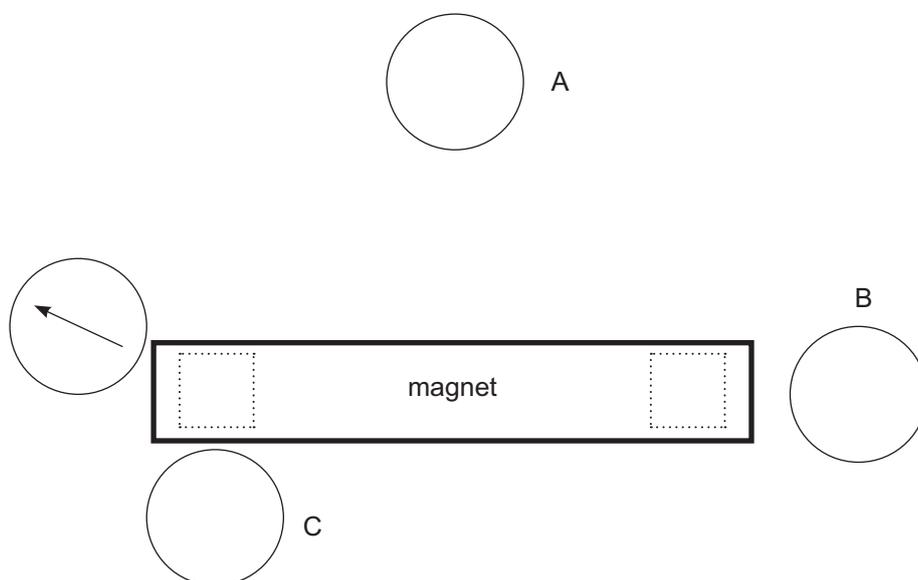
12651.05R



12GDW7401

- 1 A student investigates the properties of a bar magnet. He places a plotting compass in the four positions shown below.

The compass needle direction is shown in one instance below.



Source: Chief Examiner

- (a) (i) Label the two poles of the magnet in the dotted boxes. [1]

- (ii) Insert the direction of the plotting compass needle when the compass is at A, B, and C. [3]

- (b) What name is given to the region around the bar magnet? [1]
- _____



2 A student wants to measure the average speed of a cyclist riding down a slope.



© Getty Images

(a) (i) Name the two measuring instruments that would be needed to measure the cyclist's average speed.

1. _____

2. _____

[2]

(ii) The length of the slope is 250 m and it takes the cyclist 15 s to cycle to the bottom.

Calculate the cyclist's average speed.

Give your answer correct to one decimal place.

You are advised to show your working out.

Average speed = _____ m/s

[4]

[Turn over



- (b) In another experiment, the speed is measured at different times as the cyclist travels down the slope.

The results are recorded below.

Time / s	Speed at this time / m/s
5	3.0
10	5.0
15	7.0
20	9.0
25	11.0

- (i) Describe the motion of the cyclist down the slope.

_____ [1]

- (ii) The cyclist's initial speed is 1 m/s.

Calculate the cyclist's average speed over the 25 s of the journey.

You are advised to show your working out.

Average speed = _____ m/s [3]



(c) In any experiment, how do you ensure the reliability of the measurements?

[2]

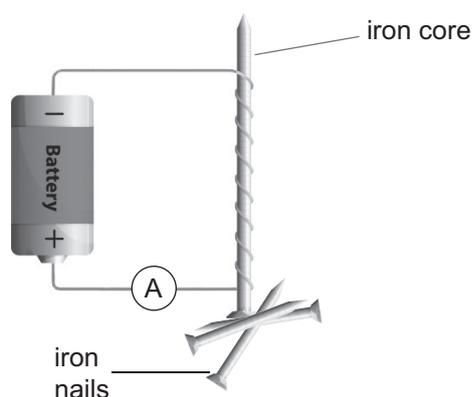
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12651.05R



12GDW7405

3 An electromagnet is shown below.



The strength of the electromagnet can be measured by the number of nails it can pick up.

A student wants to find how the strength of the electromagnet depends on the current flowing through it.

The size of current was changed and the number of iron nails held by the electromagnet is shown in the table.

Current / A	Number of iron nails held by electromagnet		Average number of iron nails held
	Experiment 1	Experiment 2	
0.1	5	7	6
0.2	13	11	12
0.3		16	18
0.4	23	25	24
0.5	29	31	



(a) (i) Identify the dependent and independent variables in this investigation.

Dependent variable: _____

Independent variable: _____ [2]

(ii) Complete the table by filling in the empty cells.
Give your answers to the nearest whole number. [2]

[Turn over

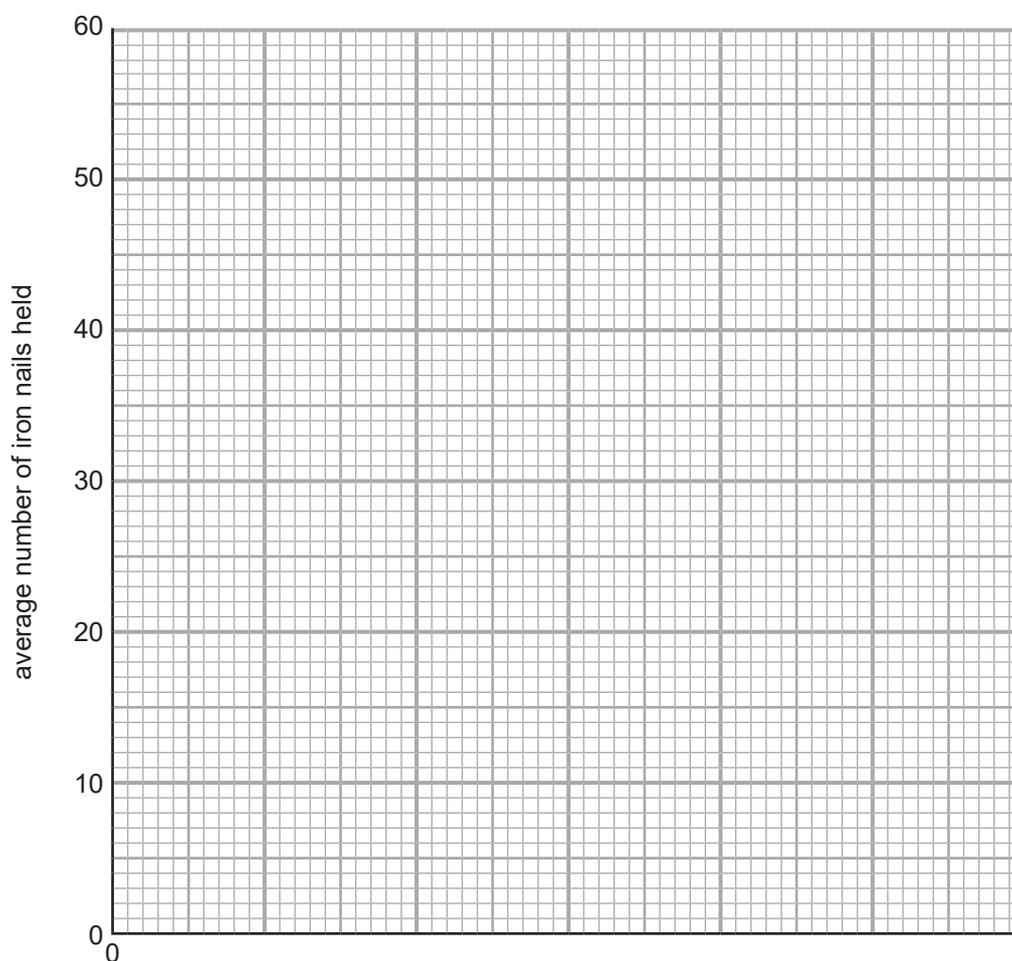
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12GDW7407

(b) The experiment was then repeated with a different type of iron nail and the following results obtained.

Current / A	Number of iron nails held by electromagnet		Average number of iron nails held
	Experiment 1	Experiment 2	
0.10	11	13	12
0.20	27	21	24
0.30	34	38	36
0.40	46	50	48
0.50	61	59	60



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12GDW7408

You are asked to plot a graph of average number of iron nails held against current.

(i) Choose a suitable scale for the horizontal axis and label it. [2]

(ii) Plot the points. [2]

(iii) Draw the best fit line. [1]

(iv) Use your graph to find the current that would be needed to hold 42 nails.
Give your answer to two decimal places.

Current needed = _____ A [1]

Decreasing the current will decrease the strength of the electromagnet.

(c) State two other ways of decreasing the strength of the electromagnet.

1. _____

2. _____

[2]

[Turn over

12651.05R



12GDW7409

4 In this question you will be assessed on your written communication skills including the use of specialist scientific terms.

A student wants to find how weight depends on mass.

Mass is measured in kg.

What do you understand by mass?

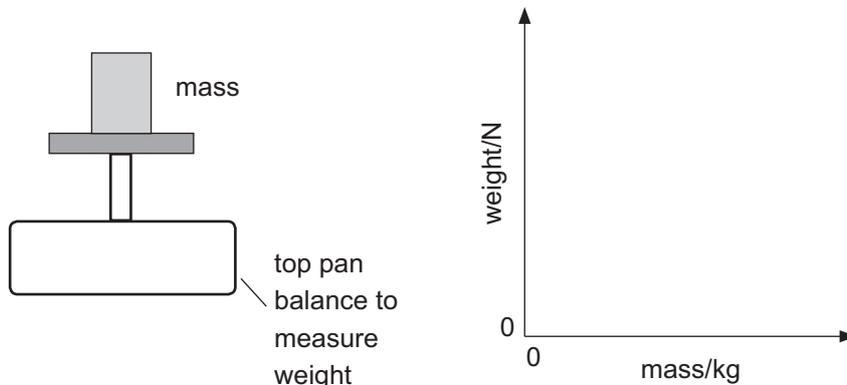
Weight is measured in N.

What do you understand by weight?



The student uses the apparatus shown and obtains a number of readings of mass and weight.

She plots the points and draws the graph of weight against mass.



Source: Chief Examiner

Describe the graph she would obtain.

She measures the gradient of the graph.

State the unit of the gradient.

[6]

THIS IS THE END OF THE QUESTION PAPER



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For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	

Total Marks	
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Examiner Number

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