

Interactive Example Candidate Responses

Paper 6 (May / June 2016), Question 1

Cambridge IGCSE™
Physics 0625



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- 1 A student is investigating the stretching of a spring.

The apparatus is shown in Fig. 1.1.

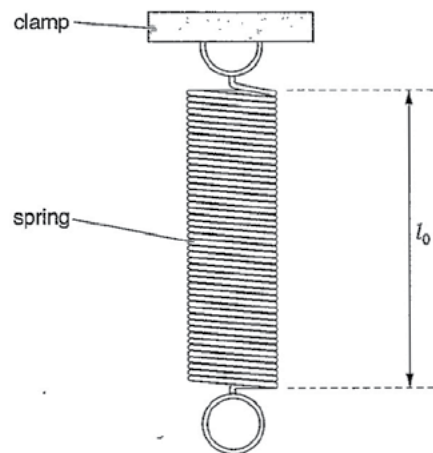


Fig. 1.1

- (a) On Fig. 1.1, measure the unstretched length l_0 of the spring. Record l_0 in the first row of Table 1.1. [1]
- (b) The student hangs a load L of 1.0 N on the spring and measures the new length l of the spring. She repeats the measurements using loads of 2.0 N, 3.0 N, 4.0 N and 5.0 N. The readings are shown in Table 1.1.
- (i) For each set of readings, calculate the extension e of the spring using the equation $e = (l - l_0)$. Record the values of e in the table.

Table 1.1

L/N	l/mm	e/mm
0.0	55	0
1.0	59	4
2.0	64	9
3.0	69	14
4.0	74	19
5.0	78	23

[1]

- (ii) Explain briefly one precaution that you would take in order to obtain reliable readings.

Wait for the spring to go back to its original length before taking the next reading. [1]

Select
page

Your
Mark

1(a)

1(b)(i)

1(b)(ii)

1(c)

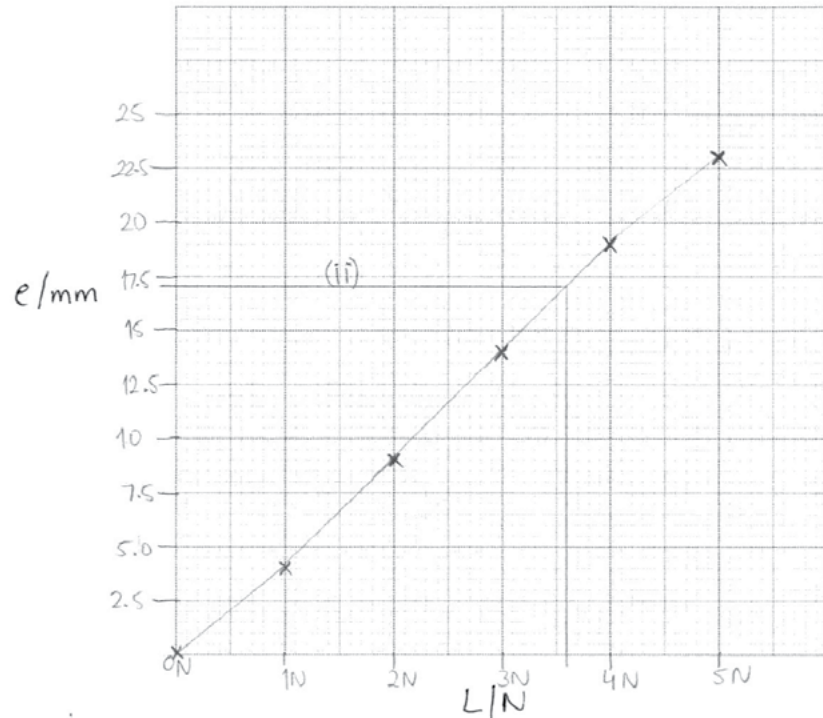
1(d)(i)

1(d)(ii)

Q1 Mark scheme

(a)	$l_0 = 55 \text{ (mm) c.a.o.}$
(b)(i)	4, 9, 14, 19, 23 ecf (a)
(b)(ii)	Viewing scale at right angles or use of straight edge/set square/pointer between bottom of spring and scale/ruler
(c)	Graph: Axes correctly labelled with quantity and unit Suitable scales All plots correct to $\frac{1}{2}$ small square Good line judgement, thin, continuous line, neat plots
(d)(i)	$e = 17 \text{ (mm) ecf (a)}$
(d)(ii)	method clearly shown on graph W value 3.5–3.75 Unit N needed No ecf from (i)

(c) Plot a graph of e/mm (y-axis) against L/N (x-axis).



[4]

(d) The student removes the load from the spring and hangs an unknown load **X** on the spring. She measures the length l of the spring.

$$l = \dots\dots\dots 72 \text{ mm}$$

(i) Calculate the extension e of the spring.

$$e = l - l_0$$

$$e = 72 - 55 = 17$$

$$e = \dots\dots\dots 17 \text{ mm} \dots\dots\dots [1]$$

(ii) Use the graph to determine the weight W of the load **X**. Show clearly on the graph how you obtained the necessary information.

$$W = \dots\dots\dots 3.6 \text{ N} \dots\dots\dots [2]$$

[Total: 10]

Your
Mark

1(a)

1(b)(i)

1(b)(ii)

1(c)

1(d)(i)

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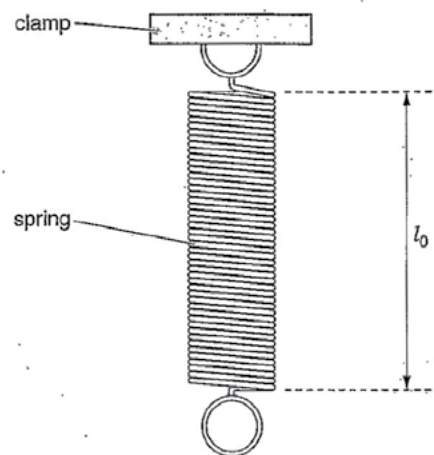


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[1]

- (ii) Explain briefly one precaution that you would take in order to obtain reliable readings.

I won't put any external force on the load as the length of the spring will change. [1]

Select page

Your Mark

1(a)

1(b)(i)

1(b)(ii)

1(c)

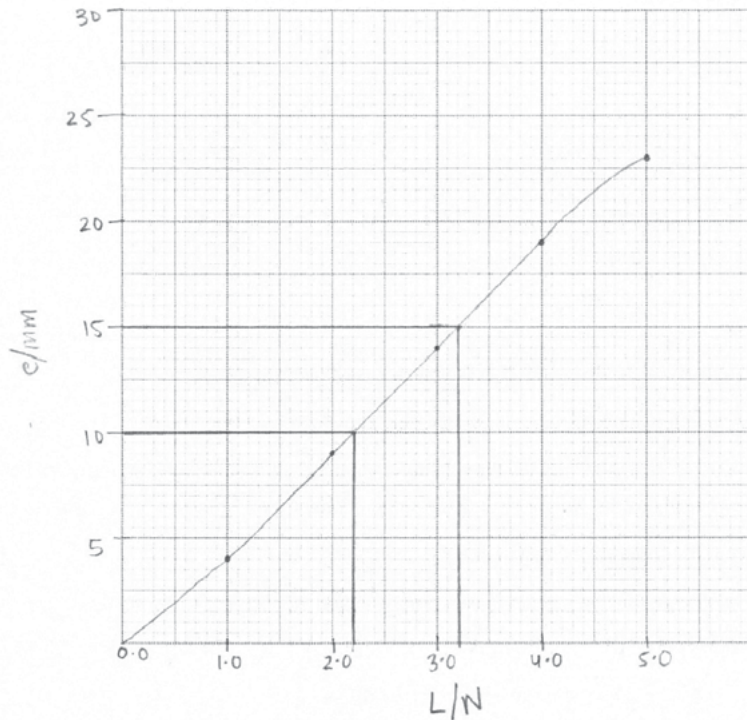
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(c) Plot a graph of e/mm (y-axis) against L/N (x-axis).



[4]

(d) The student removes the load from the spring and hangs an unknown load X on the spring. She measures the length l of the spring.

$$l = \dots\dots\dots 72\text{mm}$$

(i) Calculate the extension e of the spring.

$$e = \dots\dots\dots 17\text{ mm} \dots\dots\dots [1]$$

(ii) Use the graph to determine the weight W of the load X . Show clearly on the graph how you obtained the necessary information.

gradient = $\frac{y_2 - y_1}{x_2 - x_1} = \frac{15 - 10}{3.0 - 2.0} = 5$

$W = \dots\dots\dots 14.6\text{ N} \dots\dots\dots [2]$

[Total: 10]

$5 = \frac{72 - 15}{x - 3.0}$

$5(x - 3.0) = 72 - 15$

$5x - 15 = 57$

$5x = 72$

$x = 14.6$

Your Mark

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1(b)(i)

1(b)(ii)

1(c)

1(d)(i)

1(d)(ii)

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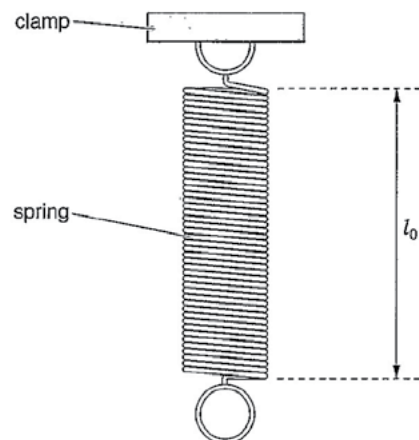


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L/N	l/mm	e/mm
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1.0	59	4
2.0	64	5
3.0	69	5
4.0	74	5
5.0	78	4

[1]

- (ii) Explain briefly one precaution that you would take in order to obtain reliable readings.

It was a spring law the spring law could happen in this process, when the weight was increase. maybe the spring just decreasing its range from original length when put on weight [1]

Select page

Your Mark

1(a)

1(b)(i)

1(b)(ii)

1(c)

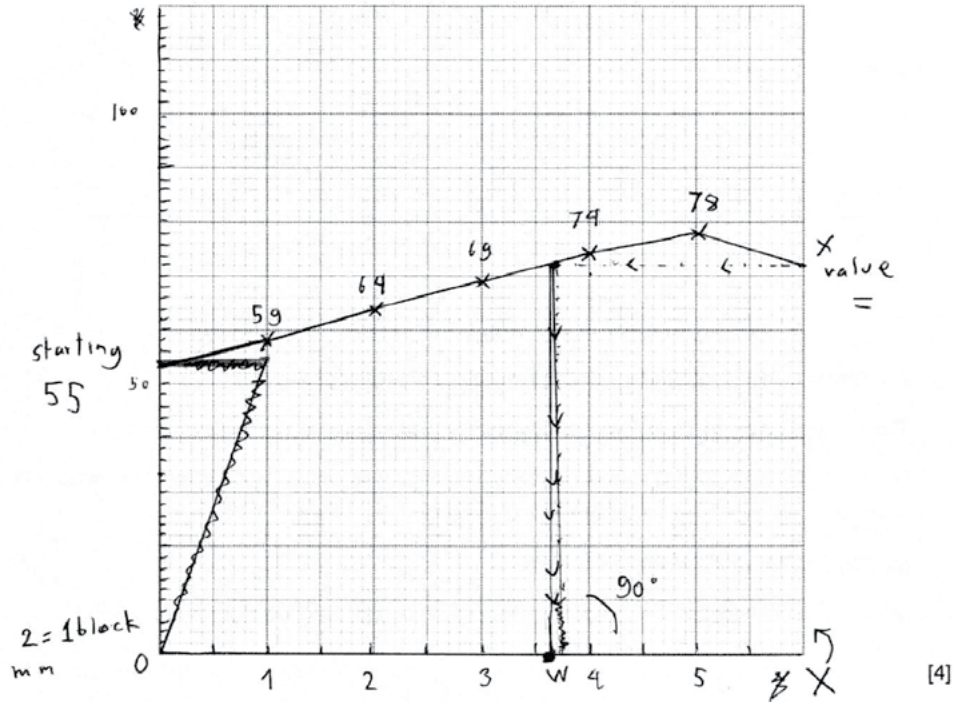
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(i) Calculate the extension e of the spring.

$$e = \dots\dots\dots 17 \text{ mm} \quad [1]$$

(ii) Use the graph to determine the weight W of the load X . Show clearly on the graph how you obtained the necessary information.

$$W = \dots\dots\dots 3.7 \text{ N} \quad [2]$$

[Total: 10]

Your
Mark

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1(b)(i)

1(b)(ii)

1(c)

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