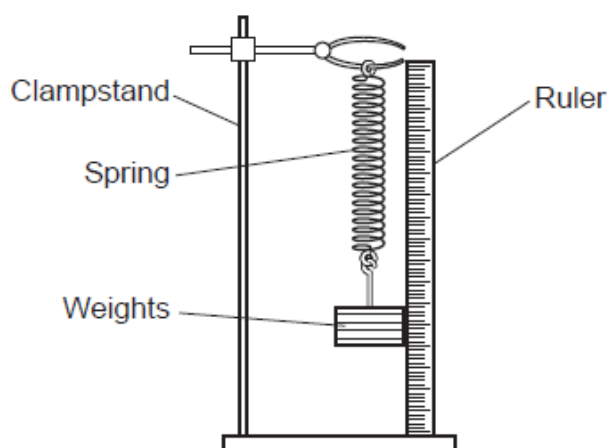


GCSE Physics B (Twenty First Century Science)
J259/04 Depth in physics (Higher Tier)

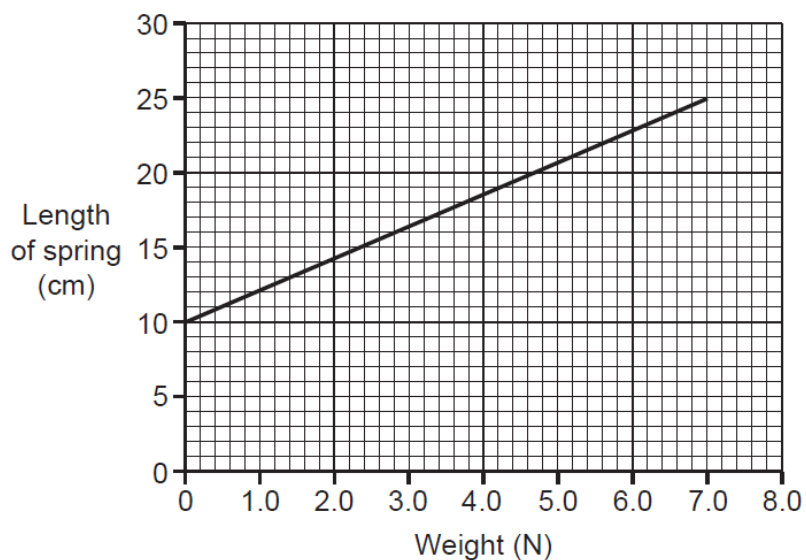
Question Set 24

1

Li does an experiment to investigate the stretching of a spring.



Li records the length of the spring for different weights on the spring, and plots the graph, as shown.



- (a) (i) The relationship for the spring can be expressed in the form $L = mW + c$, where L is the length and W is the weight.

Find out the gradient, m , and the y-intercept, c , to complete the relationship for this spring.

- (ii) The length of the spring is proportional to the weight on the spring. Relationship for the spring = [3]

What physical quantities are represented by the y-intercept, c and the gradient, m ?

[2]

(b) Li tests another spring which has a spring constant of 60 N/m.

The spring has an original length of 6 cm, and stretches to a length of 18 cm when some weights are added.

Calculate the energy stored in this spring when these weights are added.

Use the equation:

energy stored in a stretched spring = $\frac{1}{2} \times$ spring constant \times (extension)²

Energy stored = J [4]

Total Marks for Question Set 24: 9

OCR

Oxford Cambridge and RSA

Copyright Information

OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download from our public website (www.ocr.org.uk) after the live examination series.

If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material, OCR will be happy to correct its mistake at the earliest possible opportunity.

For queries or further information please contact The OCR Copyright Team, The Triangle Building, Shaftesbury Road, Cambridge CB2 8EA.

OCR is part of the Cambridge Assessment Group; Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge