

GCSE Physics A (Gateway)

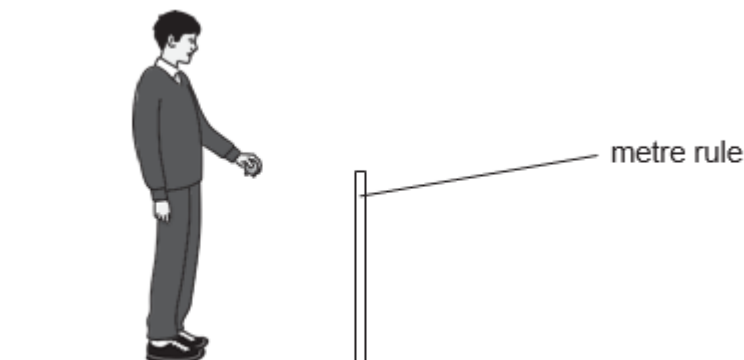
J249/02 Physics A P5-P8 and P9 (Foundation Tier)

Question Set 10

1

A student wants to investigate how a ball bounces.

He drops the ball from different heights and measures the bounce height each time.



He calculates the ratio bounce height / drop height.

The table shows his results.

Drop height (cm)	Bounce height (cm)	Bounce height / drop height
100	70	0.70
80	64	0.80
60	54	0.90
40	40	1.00
20		

(a) The student predicts the ratio bounce height / drop height to be 1.10 when the drop height is 20 cm.

(i) Suggest why he has made this prediction.

[1]

(ii) Use ideas about energy to explain why this prediction cannot be correct.

[1]

(b) Suggest **two** improvements to his experiment.

[2]

(c) The mass of the ball is 60 grams.

(i) Calculate the mass of the ball in kg.

$$60g = 0.06kg$$

Mass =0.06..... kg

[1]

(ii) Calculate the potential energy of the ball when it is 0.80 m above the ground.

Use your answer to (c)(i) and the equation:

potential energy = mass \times height \times gravitational field strength

Gravitational field strength = 10 N/kg

$$\begin{aligned} GPE &= mgh \\ &= 0.06 \times 10 \times 0.8 \\ &= 0.48J \end{aligned}$$

Potential energy =0.48..... J

[2]

Total Marks for Question Set 10: 7

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