

Gateway Science Physics A

J249/01 Physics A P1-P4 and P9 (Foundation Tier)

Question Set 19

19

Four students investigate the work done in moving a trolley.

work done = force × distance

Each student moves a trolley by a different distance using a different force.

Their results are shown in the table.

Student	Force (N)	Distance moved (m)
A	100	5
B	50	10
C	120	12
D	40	4

(a) Which student does the most work?

work done = F x distance

$$\begin{aligned}
 A &= 100 \times 5 = 500 \\
 B &= 50 \times 10 = 500 \\
 C &= 120 \times 12 = 1440 \\
 D &= 40 \times 4 = 160
 \end{aligned}$$

Show your working.

Student C is doing the most work

[2]

(b) Which **two** students do the same amount of work?

Students A and B

[1]

(c) State **two** reasons why it is important to repeat measurements in any experiment.

1. There is a chance of random errors happening

Thus repeating allows identification of anomalies

[2]

2. you can calculate a mean making the results more reliable.

(d) Student C pushes the trolley for 0.5 minutes.

What is the power, in W, used by student C?

Show your working.

$$P = \frac{W}{t} = \frac{1440}{0.5 \times 60} = 48$$

48

Answer = W

[4]

Total Marks for Question Set 19: 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