

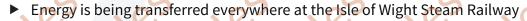


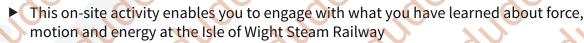
KS4 Science
Physics
Transferring Energy



Transferring Energy

STUDENT INTRODUCTION







Did you know?

When a carriage is pulled/pushed by the engine to start it moving, the force exerted gives the carriage momentum. But this pull/push also transfers energy to the carriage.

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(carriage). We say that the force does 'wwww.edudestaukepends on:

b) The distance the carriage moves in the direction of the force.

You should therefore be familiar with the following formula:

Work done by a force =	force	v dist	ance move	d in the dire	ction of the	force
		£ .	arrect move			,°
(Joules, J)	(Newtons, N)	0,7	(0,7)	(metres, m)	(0,7	

This formula also tells us the amount of energy transferred because they are both the same.

Energy and work are both measured in Joules. A force of 1 Newton applied over a distance of 1 metre does 1 Joule of work which is the same as saying it transfers 1 Joule of energy.

You also need to know that 1kg = 9.81 N
Task 1: Fact Finding
The number of carriages on your train today is
of the the the the the the
The total weight of the carriages in tonnes if each weighs 25 tonnes
The total weight of the carriages in kg (1 tonne = 1000 kg)
3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3
Your engine today weighs tonnes or kg (refer to the stock list on page 3)

Task 2: Using the information on page one, work out the following:

1) What is the force of the engine?

2) How much energy is transferred to move ONE carriage 10 metres?

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Stage	Description	Distance	Energy transferred in Joules (J)
1	Wootton station -> under road bridge at Briddlesford Copse	0.9 miles	W W W
25	Road bridge -> Havenstreet station	0.6 miles	5. 62. 62. 16. 16. 16. 16. 16. 16. 16. 16. 16. 16
3	Havenstreet station -> over road bridge at Havenstreet	0.1 miles	Sqrice Sqrice Sqrice
4	Over road bridge -> under road bridge at Rowlands Wood	0.62 miles	\(\tau \)
5	Under road bridge -> Ashey station	1.0 miles	S.J. SZ.J. SZ.J.
6	Ashey station -> start of tunnel	0.7 miles	Ynge Ynge Yng
7	Start of tunnel -> end of tunnel	0.15 miles	
8	End of tunnel -> Smallbrook station	1.5 miles	X.J.F. Z.J.F

