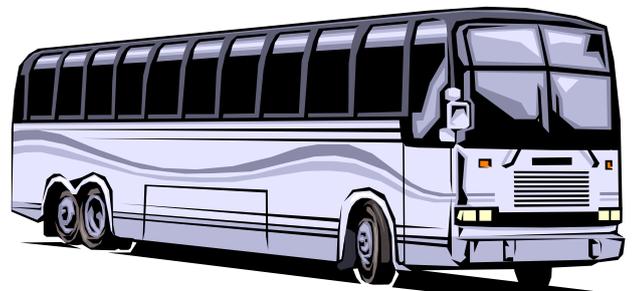
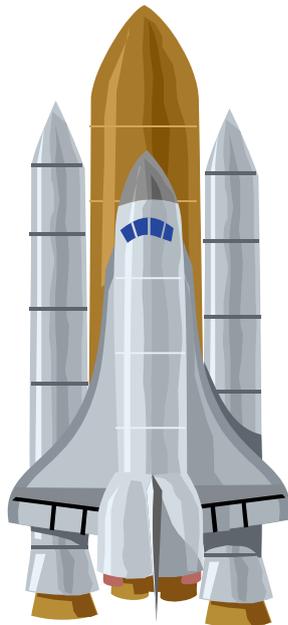


Standard Grade Physics

North Berwick High School
Physics Department

UNIT 5

Measuring Energy



Homework Sheets

Measuring Energy

Working at Home

TO THE PUPIL

Each day you have physics at school, you should set aside time for work at home. By this stage you should be accepting more responsibility for your own learning and should undertake the following tasks on a regular basis:

- Tackle the supplied homework sheets as each section of work is completed in class.
- Check your own progress in the homework sheets by referring to the homework answer files available in class. Discuss any difficulties that arise with your class teacher.
- Complete any formal homework tasks that your teacher may issue from time to time and hand them in on the due date for marking.
- Revise the work you have covered in class activities by referring to your classwork jotters.

TO THE PARENT

Your co-operation would be appreciated in ensuring that pupils are encouraged to complete homework. It would be helpful if you could talk over the work given for homework and sign the homework record sheet on this page after they have completed each exercise.

The physics department hopes that this record of your child's achievement will be of interest to you, and we would welcome any comments on this or other areas related to the work of the department.

Please sign here to confirm that you have seen the homework record sheet: _____

HOMEWORK RECORD SHEET

| HOMEWORK | SECTION OF WORK | MARK | CHECK | PARENTAL SIGNATURE |
|----------|-------------------------|------|-------|--------------------|
| 4.1 | Movement Means Energy 1 | | | |
| 4.2 | Movement Means Energy 2 | | | |

Some questions in the pack are marked with symbols to give you specific information. Here is the key:

CR

Credit Level question. This relates directly to the Credit Level learning outcomes.

PS

Problem Solving question. This puts the knowledge you have gained into new contexts.

Measuring energy

Homework Exercises

Homework 4.1 – Movement Means Energy I

- In each of the cases below, state the **main** energy change involved for the vehicle.
 - A rollercoaster carriage rolling up a slope to a high point. (1)
 - A skier skiing down a slope. (1)
 - A bus driving along a level road at a constant speed. (1)
- What is work done? Your answer should **not** be an equation! (1)
 - Calculate the work done by a horse when it uses a force of 800 N to pull a sled a distance of 150 m. (2)



- Copy and complete the table below. You must show full calculations for each problem. (4)

| POWER(W) | WORK DONE(J) | TIME(s) |
|----------|--------------|---------|
| | 400 | 4 |
| | 1000 | 0.5 |
| 30 | | 10 |
| 100 | | 60 |

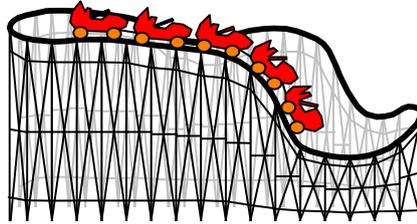
Total 10 marks

Measuring energy

Homework Exercises

Homework 4.2 - Movement Means Energy II

1. A roller coaster carriage has a mass of 300 kg when it is carrying a full load.



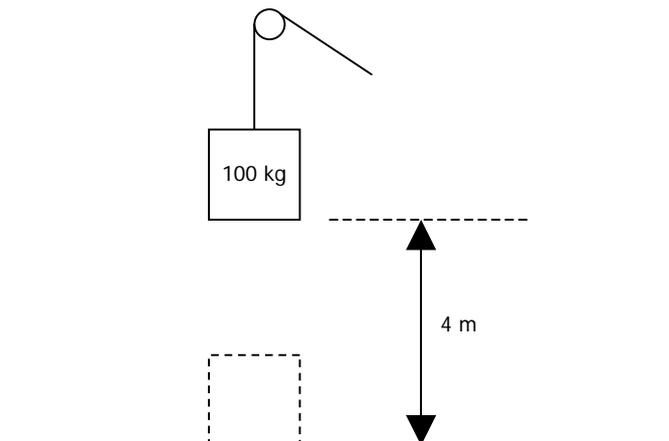
- (a) Calculate the potential energy of the carriage when it is at the top of a drop, 30 m above the ground. (2)
(b) At the bottom of the drop it is at a height of 2 m above the ground. Calculate its potential energy now. (1)
(c) Calculate how much kinetic energy the carriage will have at this point. (1)

CR

2. Name two quantities that affect a vehicle's kinetic energy. (1)

CR

3. A winch pulls a crate up to a height of 4 m in a time of 20 s. If the crate has a mass of 100 kg, find the power of the motor. (3)



CR

4. Find the kinetic energy of a car of mass 800 kg travelling at 30 m/s. (2)

Total 10 marks