

Sets (s): Triple award

YEAR 11

SUBJECT Physics

Knowledge Focus: Work and energy, Further motion concepts



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High School

**This half term : Skills, Knowledge and**

**Understanding to be developed:** Continue to study Forces including Hooke's law, kinetic and gravitational potential energy. Then study further motion concepts., which covers uniformly accelerated motion in a straight line, the turning effects of forces on objects and the concept of momentum and its conservation.

**Key Terms to be learned this half term:**

work done, energy transfer, kinetic energy, gravitational potential energy, elastic potential energy, momentum, mass, velocity, conservation of momentum, moments, pivot, rotation.

**Week 1 and 2 Learning Objectives etc:**

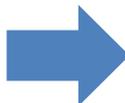
Learn and practice the equations for kinetic energy and changes in gravitational potential energy.

Study the relationship between force and extension for a spring. Carry out the specified practical – investigate the force extension graph for a spring.

Study the work done in stretching by finding the area under the force-extension graph.

Look at how efficiency of vehicles can be improved (aerodynamic, rolling resistance, idling losses and inertial losses)

Learn the principles of forces and motion to an analysis of safety features of cars.



**Objective assessments:**

Complete analysis of the investigation by calculating the mean length for each mass, then the extension for each mass, plot the graph and determine whether it obeys Hooke's law.

**Homework:**

Question on kinetic energy and GPE

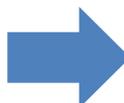
**Week 3 and 4 Learning Objectives etc:**

Study how the momentum of a body depends on its mass and its velocity, use the equation Momentum=mass x velocity

Look at Newton's second law of motion in the form Force = change in momentum÷time

Learn the law of conservation of momentum and relate it to Newton's third law of motion and use it quantitatively to perform calculations involving collisions or explosions and use kinetic energy equation to compare kinetic energy before and after an interaction.

Learn how the motion of objects with constant acceleration can be described using equations.



**Objective assessments:**

Literacy task

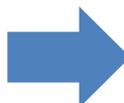
**Homework:**

Question on momentum

Question on suvat equations

**Week 5 and 6 Learning Objectives etc:**

Mock examinations



**Objective assessments:**

Mock examinations

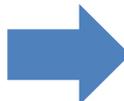
**Homework:**

Revise for mock examinations

**Week 7 Learning Objectives etc:**

Study the principle of moments and carry out the specified practical.

Look at examples in which forces cause rotation; and calculate the moment of force in such examples.



**Objective assessments:**

Investigate the Principle of Moments

**Homework:**

Question on moments

Literacy task hw