Science (Physics)
Year 9

Week	Learning Objectives
1	**3. Energy and electricity** 3.1 revision of fuels, renewable and non-renewable energy resources a. to identify renewable and non-renewable energy resources b. to recognize that energy is converted to different forms to be useful c. to categorise devices on the type of energy input or output 3.2 Energy transfer and transformation a. to use energy transfer (Sankey) diagrams b. to describe energy transfers in everyday changes c. to describe energy transfers in a range of toys and devices 3.3 Conservation of energy, power a. to distinguish between useful energy and dissipated energy b. to know that when energy is transferred, the total amount of energy is the same c. to know that the rate of transfer of energy is called power
2	3.4 Electrical energy use, efficiency a. to know that electricity is a useful means of transforming energy b. to know that some devices use energy at a greater rate than others 3.5 Current and voltage a. to identify that an ammeter measures flow of current b. to use a simple model describing the link between voltage and energy in a circuit c. to draw from trends about the way voltage varies around a circuit 3.6 Electrical hazards a. to relate the energy transfer in a circuit to both current and voltage b. to give a reasoned report associating the use/hazards of high voltage 3.7 Generating electricity a. to identify a range of energy resources used to generate electricity b. to describe a simple electrical generator
3	3.8 Our energy future a. to present a considered viewpoint based on information from secondary sources, eg identify the problems of pollution associated with electricity generation by fossil fuels and the environmental impact of renewable and nuclear energy source **4. Forces and space** 4.1 What do you know? a. to state that the Earth exerts a force called gravity b. to know that the force of gravity is greater on objects with a bigger mass c. to understand that the gravitational force between two masses gets less with distance 4.2 Gravity on other planets a. to describe why objects have different weights on different planets compared to their weights on Earth

4	**4.3 Space exploration** a. to describe some of the landmarks of exploration of space, eg Neil Armstrong 4.4 How ideas change over time a. to describe ideas of how the Universe began 4.5 and 4.6 Satellites and rockets a. to state that the Moon is a natural satellite of the Earth b. to describe some uses of artificial satellites eg weather forecasting
5	4.7 Measuring speed and interpreting graphs a. to know that comparisons of speed can be made from measurements of time alone b. to take measurements of distance and time and use it to calculate speeds c. to differentiate average speed and speed at a point 4.8 Investigating a. to plan and investigation into terminal velocity or friction
6	8. Pressure and moments 8.1 Revision of forces and introduction to the concept of pressure a. to explain the relationship between force and area b. to apply the quantitative relation between pressure, force and area 8.2 The relationship between pressure, force and area a. to show that they have grasped the key ideas of pressure
7	Holiday
8	**8.3 Pressure of liquids** a. to learn the concept of transmission of pressure to predict the resulting force b. to know the effects and uses of liquids under pressure eg hydraulic systems c. to describe an effect of atmospheric pressure eg 'bends' for divers 8.4 Pneumatic systems a. to describe how a vacuum can be set up b. to explain the effects of vacuum
9	8.5 Measuring gas pressure a. to explain how a manometer works b. to explain how air pressure decreases with height 8.6 The turning effect of a force a. to describe how to make a task easier by using a pivot b. to know how an antagonistic muscle pair works c. to apply the turning effect of a force to everyday situations
10	8.7 Review of forces, pressure and moments 9. Using chemistry 9.1 What do you know? a. review combustion of fuels b. recall conditions required for complete and incomplete combustion c. to explain the difference between compounds and mixtures
11	**9.2 Burning fuels** a. to describe fuels as substances that release energy when burnt b. to balance advantages of hydrogen and methane as fuels against their disadvantage c. to describe the role of sulphur and potassium chlorate in the match head
12	9.3 Burning ideas

	a. to use experimental models to find out whether the oxygen or phlogiston model best explains how magnesium burns b. to state that the mass of magnesium oxide is greater than that of the magnesium, explaining in terms of combination with oxygen
13	9.4 How chemical reactions are used to supply energy a. to describe chemical reactons that are used to produce energy b. to investigate which combinaton of calcium chloride and water produces the best handwarmer pack
14	9.5 Generating electricity using metals a. to find out about the chemical reactions in some cells b. to find out how electrical energy is produced from certain reactions
15	Revision