

Sets (s): Triple Award

YEAR 10

SUBJECT Physics

Knowledge Focus: Generating electricity and domestic electricity



Ysgol Uwchradd  
Prestatyn  
High School

**This half term : Skills, Knowledge and Understanding to be developed:**

This term continues with the generation of electrical power and the national grid. Domestic solar and wind energy also efficiency of energy transfers. Then students will learn about generating electricity using renewable and non renewable forms of energy. The students then go onto study domestic electricity looking at the ring main and the functions of the live and neutral wires.

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

Ring main, live, neutral and earth wire, appliance, switches, fuses, current, socket, parallel circuit, solar power, wind power, power station, boiler, turbine, generator, renewable, non-renewable.

<p><b>Week 1 and 2 Learning Objectives etc:</b></p> <p>Recap on the processes involved in generating electricity in a fuel based power station and advantages and disadvantages of renewable and non renewable energy technologies for generating electricity.</p> <p>Draw Sankey diagrams to show energy transfers in electrical power generation and transmission.</p> <p>Learn how electricity is distributed to the consumers through the national grid. How it responds to changes in demand, advantages and disadvantages of increasing and decreasing the voltage. Study the use of step up and step down transformers .</p> <p>Compare different types of power stations in the UK, their efficiency, reliability, carbon footprint and output.</p>	<p><b>Objective assessments:</b></p> <p>Be able to label and describe the parts of the power station.</p>	<p><b>Homework:</b></p> <p>Homework on efficiency and Sankey diagrams</p>
<p><b>Week 3 and 4 Learning Objectives etc:</b></p> <p>They will calculate the cost of electricity using the equation <math>\text{Cost} = \text{energy transferred} \times \text{cost per unit}</math></p> <p>Investigate the cost of using domestic appliances.</p> <p>Students will explore the difference between alternating current and direct current.</p> <p>Students will learn the function of fuses, miniature circuit breakers and residual current circuit breakers including calculations of fuse ratings.</p> <p>They will look at the ring main, including the function of the live, neutral and earth wires.</p>	<p><b>Objective assessments:</b></p> <p>Literacy task</p>	<p><b>Homework:</b></p> <p>Literacy task hw</p>
<p><b>Week 5 and 6 Learning Objectives etc:</b></p> <p>Students will explore the cost effectiveness of domestic and solar energy equipment fuel cost savings and payback times</p> <p>How to investigate energy transfers in a range of contexts eg. energy output from a renewable source and efficiency of energy transfer.</p> <p>Students will start to look at waves: Learn the difference between a transverse and longitudinal wave.</p>	<p><b>Objective assessments:</b></p> <p>SA energy, generating electricity and the national grid</p>	<p><b>Homework:</b></p> <p>Revise for SA</p>

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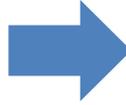
Learn the features of waves. Know what amplitude, frequency and wavelength are.

**Week 7 Learning Objectives etc:**

Look at the graphical representation of a transverse wave, including labelling the wavelength and amplitude.

Learn what happens to speed, frequency, wavelength, direction of water waves as they move from deep to shallow water (visa versa).

Practice calculating wave speed using wavelength and frequency also distance and time.



**Objective assessments:**

**Homework:**

Question on features of waves