

Sets (s): Double 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: The students will study how electricity is generated. The advantages and disadvantages of renewable and non renewable forms of energy. They will go on to calculate the amount of energy an appliance transfers and the cost to run them. This topic also covers the functions of fuses and other devices. It introduces the concept of the ring main function of the live, neutral and earth wires.

Key Terms to be learned this half term:

power, watts ,joules, alternating current, direct current, circuit breakers, fuse, ring main, live neutral, earth wire, solar and wind energy, energy transfer.

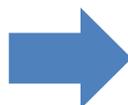
Week 1 and 2 Learning Objectives etc:

Recap on the processes involved in generating electricity in a fuel based power station and the advantages of renewable and non renewable forms of energy.

Draw Sankey diagrams to show energy transfers in electrical power generation and transmission.

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 .

Compare different types of power stations in the UK, their efficiency, reliability, carbon footprint and output.



Objective assessments:

Be able to label and describe the parts of the power station

Homework
2017 F Q4

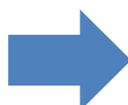
Week 3 and 4 Learning Objectives etc:

They will calculate the cost of electricity using the equation $\text{Cost} = \text{energy transferred} \times \text{cost per unit}$

Investigate the cost of using domestic appliances.

Students will explore the difference between alternating current and direct current.

APP on generating electricity



Objective assessments:

Complete calculations using the given formula.
Higher tier will complete calculations and rearrange given formulas.

Homework:
Revise for APP generating electricity

Week 5 and 6 Learning Objectives etc:

Students will learn the function of fuses, miniature circuit breakers and residual current circuit breakers including calculations of fuse ratings.

They will look at the ring main, including the function of the live, neutral and earth wires.

Students will explore the cost effectiveness of domestic and solar energy equipment fuel cost savings and payback times

How to investigate energy transfers in a range of contexts eg. energy output from a renewable source and efficiency of energy transfer.



Objective assessments:

Summative assessment question on electric circuits and generating electricity

Homework:
Revise for SA

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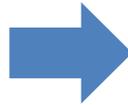
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Week 7 Learning Objectives etc:

The advantages and disadvantages of non-renewable energy technologies considering economic, environmental and sustainability issues as well as generating capacity and start up time.



Objective assessments:

Be able to label and describe the parts of the power station.

Homework:

Q6 2017 F