

### Unit 3 Physics - Section 3.9 - The Transformer

What type of power source must be used with a transformer?	AC - alternating current/potential
What does a transformer do?	Alter how the electrical power is formed... Power = current x voltage - one goes up the other down so that the product remains constant.
What does a step-up transformer do?	Increase the voltage and decrease the current.
What does a step-down transformer do?	Decrease the voltage and increase the current.
What is mains voltage?	230V
What type of transformer is used with a laptop computer that has a power of 9V and needs to be plugged into the mains?	A step-down transformer (steps the mains voltage down from 230V to 9V).
What is the basic structure of a transformer?	A soft iron core linking two coils - a primary coil and a secondary coil.
What is the structure of a step-up transformer?	The secondary coil (output) has more turns than the primary (input). The voltage input/output = turns primary/secondary.
What is the structure of a step-down transformer?	The secondary coil (output) has less turns than the primary (input). The voltage input/output = turns primary/secondary.
How does a transformer work?	An alternating current in the primary coil produces a changing magnetic field in a soft iron core. This is linked to the secondary coil inducing an alternating potential difference across the ends of the secondary coil.
What is the National Grid?	The way in which power is transmitted throughout the country, power stations are linked into it and their voltage is stepped up - lower energy loss at high voltage. The voltage is then stepped down to a safe level in the towns. (see handout)