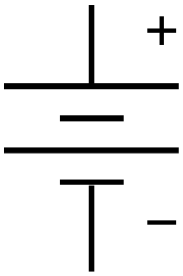
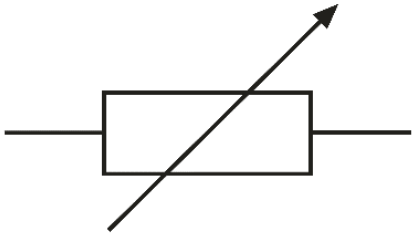
Definition of Specific Heat Capacity	**Definition of Power**
Conservation of energy	**Efficiency**
List of non-renewable energy resources (methods of generating electricity)	**Advantages and Disadvantages of Solar Power**
List of renewable energy resources	**Advantages and Disadvantages of Fossil Fuels**

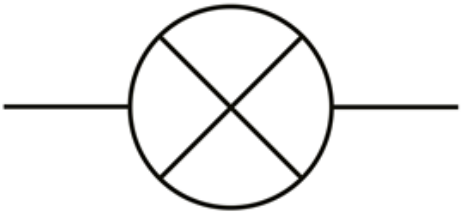
Rate of energy transfer or Rate at which work is done	The amount of energy required to raise the temperature of one kilogram of a substance by one degree Celsius
The proportion of energy usefully transferred (by an appliance or process)	Energy can be transferred usefully, stored or dissipated, but cannot be created or destroyed
Advantages: Renewable, no fuel cost, no release of carbon dioxide during use Disadvantages: Expensive to make solar cells, weather dependent, do not produce electricity at night time	Coal, Oil, Gas (the fossil fuels) and Nuclear
Advantages: Cheap, reliable Disadvantages: Release Carbon Dioxide during operation so contribute to global warming, non renewable	Solar, Wind, Tidal, Hydroelectric, Wave, Biomass, Geothermal.

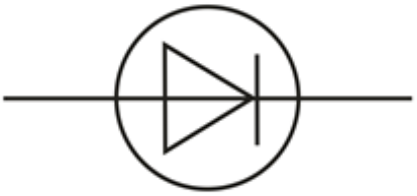
Advantages and disadvantages of wind power	**Advantages of Nuclear Power**
Disadvantages of Nuclear Power	**Advantages and Disadvantages of Hydroelectric Dams**
Advantages and Disadvantages of Biomass	**How and why are step-up transformers used in the national grid?**
How and why are step-down transformers used in the national grid?	**Circuit Symbol for a battery**

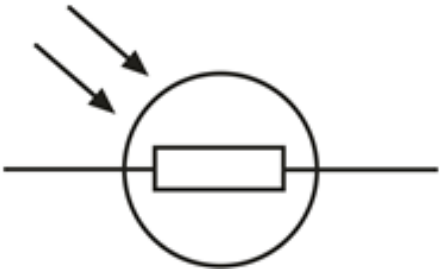
Advantages: Reliable energy source, Huge amounts of energy released per kilogram of fuel, No carbon dioxide released during operation so there is no contribution to global warming, The fuel will not run out for thousands of years	Advantages: Renewable energy source, no fuel cost, no release of carbon dioxide during use Disadvantages: Takes up lots of space, weather dependent, do not produce electricity when there is no wind or the wind is too strong
Advantages: reliable source of energy, renewable, No carbon dioxide released when in use Disadvantages: Can only be built in a few places, very expensive to construct, damages the local environment due to flooding	Disadvantages: High cost to construct and decommission nuclear power plants, Produces highly radioactive waste which remains dangerous for millions of years, have a very slow start up time, risk of accident / meltdown
At the power station step up transformers are used to increase the potential difference of the electricity. This reduces the size of the current in the wire. This means that less heat energy is lost so the process is more efficient.	Advantages: Carbon neutral, renewable, low fuel costs as they can use materials that are otherwise wasted Disadvantages: Releases polluting gases, Uses lands to grow fuel crops instead of food so food prices rise
	Close to where the electricity is used step-down transformers are used to reduce the potential difference to safe levels.

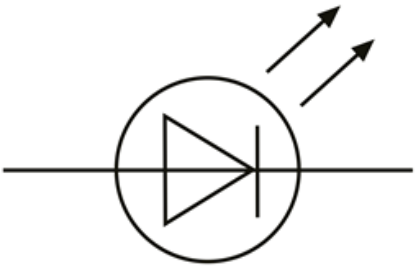
Circuit symbol for a lamp	**Circuit symbol for a variable resistor**
Circuit symbol for an LDR	**Circuit symbol for a diode**
Circuit symbol for a resistor	**Circuit symbol for an LED**
Circuit symbol for a thermistor	**Circuit symbol for an ammeter**

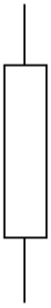


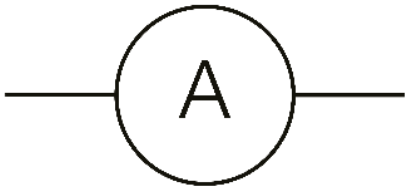








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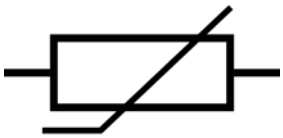
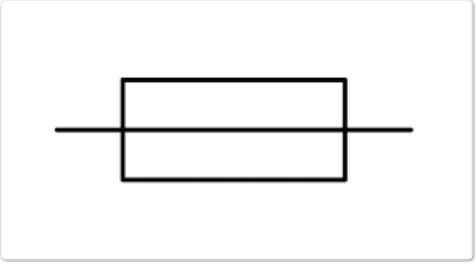
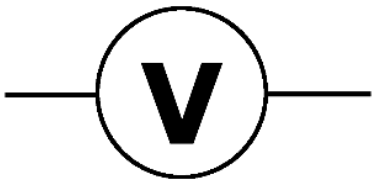
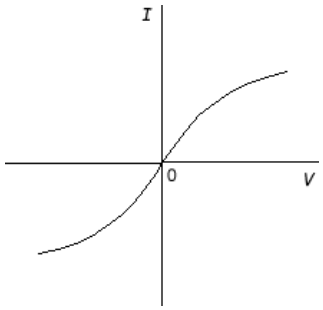
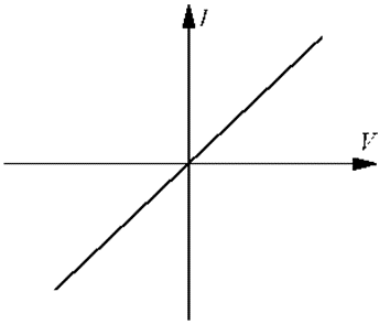
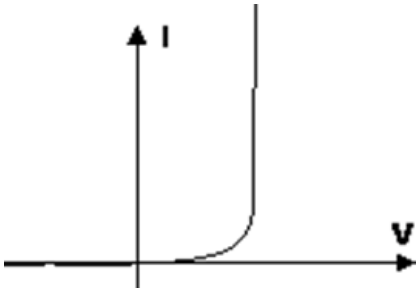


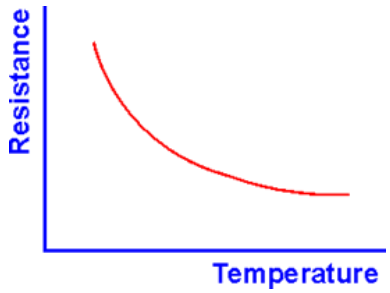
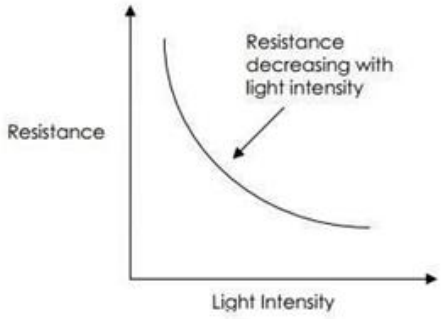
Circuit symbol for a voltmeter	**Circuit symbol for a fuse**
Why do ammeters have very low resistance?	**Why do voltmeters have very high resistance?**
Define electric current	**Define potential difference**
What happens to potential difference across two resistors in a series circuit?	**What is true of the current around a series circuit?**

	
So that no current flows through them when they are connected in parallel to a component	So that they do not affect the current flowing around the circuit
The energy transferred per unit charge	The rate of flow of charge
It is the same all the way around	The potential difference is shared across the resistors in ratio to their resistance

What is true of the potential difference across branches in a parallel circuit?	What happens to current in parallel circuits?
I-V graph shape for a fixed value resistor	I-V graph shape for a filament bulb
Why is the line on an I-V graph for a fixed value resistor straight?	Why does the line on an I-V graph for a filament bulb flatten out?
I-V graph for a diode	What does it mean about the resistance of a diode when the line on the I-V graph is horizontal?

The current splits up between the branches. The greater the resistance of a branch the smaller the current that flows along it.	Every branch has the same potential difference across it
	
As the current increases the wire/filament gets hotter. This makes the resistance increase and as the gradient is 1/R this makes the gradient smaller	The gradient is 1/R and as R is constant the gradient is constant too
The resistance is very large / infinite	

What happens to the resistance of a diode as the potential difference increases?	**What happens to the resistance of a thermistor as the temperature increases**
What sorts of devices use thermistors	**How does the resistance of an LDR vary with light intensity?**
What sorts of devices use LDRs	**How do you calculate the total resistance of components that have been connected in series?**
Name the colour of each wire in a 3 pin plug	**What are the potential differences on each wire in a 3 core mains cable?**

 It decreases, as above	The resistance remains infinite until the diode reaches a certain potential difference, after which the resistance decreases a lot. This can be seen on the graph when the line increases in gradient significantly.
	Anything that is controlling something based on temperature, for example thermostats in central heating, kettles switching off etc
Add the resistances of each component together	Anything that is controlling something based on light intensity, for example switching street lights or security lights on when it gets dark
Live = 230V Neutral = 0V Earth = 0V (unless there is a fault)	Live = brown Neutral = blue Earth = yellow & green striped

What role does each wire in a 3 core mains cable?	**Define density**
Define internal energy	**Define specific latent heat**
Between which two states of matter is the specific latent heat of fusion relevant?	**Between which two states of matter is the specific latent heat of vaporisation relevant?**
What causes air/gas pressure?	**What happens to gas pressure if the gas is heated up? Why?**

The mass per unit volume of a substance	Live wire = carries current to the appliance from the supply Neutral wire = completes the circuit Earth wire = attached to the outer case to protect against electrocution if the case becomes live
The energy required to completely change the state of one kilogram of a substance	The total kinetic and potential energy of all the particles in a system
Changes of state between liquid and gas	Changes of state between solid and liquid
The pressure rises because the molecules will move faster, therefore their collisions with objects/surfaces will be more frequent and harder	Collisions between gas molecules and an object / surface

What is the approximate radius of an atom?	**What is the approximate radius of a nucleus compared to the radius of an atom?**
Define an isotope	**How does radiation ionise atoms?**
Define the activity of a radioactive substance	**Define radioactive half-life**
Properties of Alpha Particles: **A) What they are made of** **B) Penetration through materials** **C) Range in air** **D) Ionising Power**	**Properties of Beta Particles:** **A) What they are made of** **B) Penetration through materials** **C) Range in air** **D) Ionising Power**

1/10000 (one ten thousandth)	$1x10^{-10}$m
Knocks one or more electrons out of the atom, turning them into positive ions	Atoms of the same element (so have the same number of protons) but with different numbers of neutrons
The time it takes for the number of unstable nuclei to half or The time it takes for the activity of a source to half	The rate at which unstable nuclei decay
A) A high speed electron B) Stopped by a few mm of aluminium C) Approximately one metre D) Weakly ionising	A) Two protons and two neutrons B) Stopped by paper or skin C) A few centimetres D) Highly Ionising

Properties of Gamma Rays: **A) What they are made of** **B) Penetration through materials** **C) Range in air** **D) Ionising Power**	**What is radioactive contamination?**
What is irradiation?	**What is background radiation?**
What unit is radioactive exposure or dose measured in?	**Name 6 sources of background radiation**

This is when an area or object contains/is covered by atoms of a radioactive substance. This makes the areas radioactive.	A) Electromagnetic Wave B) Reduced by thick lead C) Extremely long range (many kilometres / theoretically infinite) D) Very weakly ionising
Radiation that is around us all the time.	Exposure to radiation, this does not make an area or object radioactive
Rocks Radon gas (released from some rocks) Cosmic Rays Medical sources Nuclear Weapons testing Food	Sieverts or millisieverts

