

<p>Current, I</p>	<ul style="list-style-type: none"> •The flow of charge per second •Measured in Amperes, A •The charges that flow in a circuit are free electrons. •Electrons are pushed away from the negative terminal of the power supply and are pulled back towards the positive terminal.
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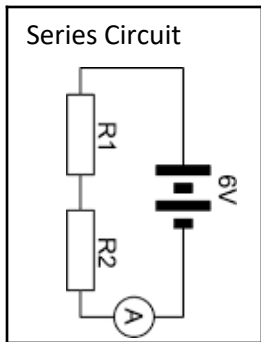
<p>Circuit Symbols <i>(You need to know what each of these components does as well as the symbol)</i></p>	
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<p>Potential Difference, V</p>	<ul style="list-style-type: none"> •The work done (or energy transferred) per unit of charge that passes through a component •Measured in Volts, V
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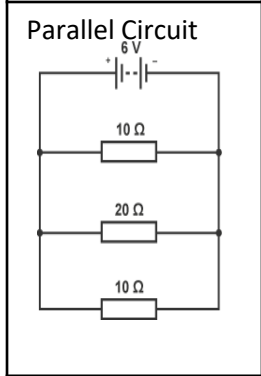
<p>Resistance, R</p>	<ul style="list-style-type: none"> •How easy or hard it is for electrons and therefore current to flow in a material. •Measured in Ohms, Ω •Filament lamp: higher temp, higher R •Diode: forward resistance low, reverse resistance high •Thermistor: R decreases as temp increases •LDR: R decreases as light intensity increases
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<p>Ohm's Law</p>	<ul style="list-style-type: none"> •The current through a resistor at a constant temperature is directly proportional to the p.d. across it. •An Ohmic conductor gives a I-V graph that has a straight line through the origin.
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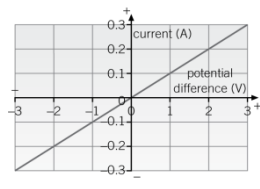
<p>I-V Graph / I-V Characteristic</p>	<p>A graph of current against p.d. for a component You need to know the I-V graphs for a resistor at constant temperature, a filament bulb and a diode (see right)</p>
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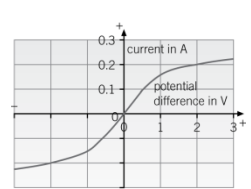
- A circuit where there is only one loop and one path for the current to take
- I is the same in each component
- Total p.d. is shared between components
- R is the sum of all the resistances of the components added together $\rightarrow R_{total} = R_1 + R_2$
- Adding more resistors in series increases the total R as there is less I flowing in each resistor and the total p.d. stays the same.



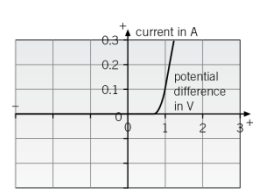
- A circuit where there are two or more loops and therefore multiple paths the current can take.
- Total I is equal to the current in each component
- p.d. across each component is the same
- Less current passes through resistors with bigger R
- The total R or two or more components in parallel is less than the resistor with the smallest R
- As we add more resistors in parallel, total R decreases as total I increases and total p.d. across them is doesn't change



Resistor at constant temp



Filament bulb



Diode

<p>Key Equations To Learn</p>	
<p>Current, I</p>	<p>Current = Charge \div Time $I = Q \div t$</p>
<p>Potential Difference, V</p>	<p>Potential difference = Energy \div Charge $V = E \div Q$</p>
<p>Potential Difference, V</p>	<p>Potential difference = Current x Resistance $V = I \times R$</p>

P4: Electric Circuits Knowledge Organiser (Physics)

Electrical charge	<ul style="list-style-type: none"> •Atoms are made up of a positively charged nucleus, surrounded by negatively charged electrons arranged in energy levels. •Normally an atom has the same number of protons and electrons so has no overall charge •If electrons are removed from an atom, it becomes positively charged •If electrons are added to an atom, it becomes negatively charged •A charged atom is called an ion.
Charging insulators	<ul style="list-style-type: none"> •Some insulating materials become charged when rubbed as electrons are transferred due to friction. •To become positively charged, an insulating material loses electrons when rubbed •To become negatively charged, an insulating material gains electrons when rubbed
Electric field	<ul style="list-style-type: none"> •A charged object has an electric field around itself. This is an area where the object will exert a force on another charged object. •The force is a non-contact force •Like charges repel •Unlike (opposite) charges attract

Key Equations To Learn	
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