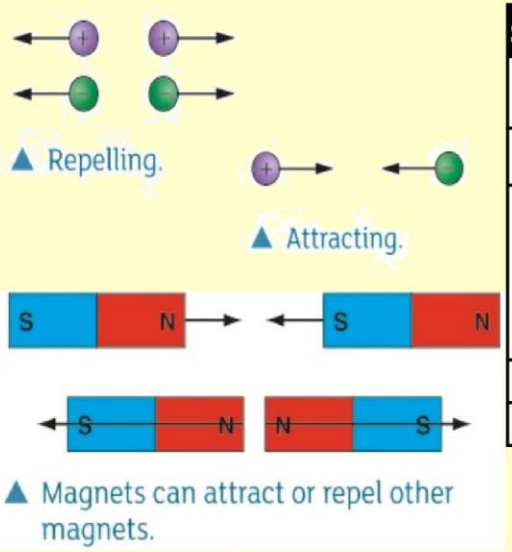
Physics 2.1: Electricity and Magnetism

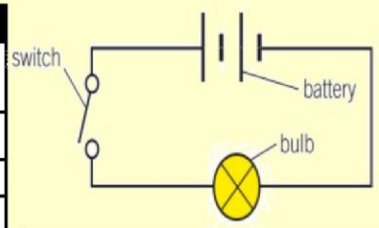
Section 1: Charging Up

1	**Charges**	There are ***positive*** and ***negative*** charges
2	Two of the same charge **repel**, opposite charges **attract**	
3	**Atoms**	The smallest particle that everything is made up of
4	**Electrons**	Negatively charged
5	**Protons**	Positively charged
6	**Neutrons**	Neutrally charged



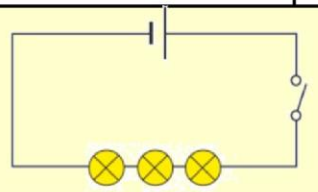
Section 2: Circuits and Current

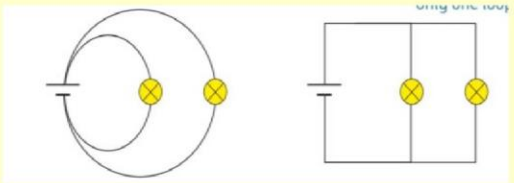
7	**Current**	The flow of **electrical charge** around a **circuit** per seconds
8	**Amps**	Units of measure for an **electrical current** (A)
9	**Ammeter**	Measures an electrical current
10	**Cell**	Provides the push that moves charge around a circuit



Section 3: Potential Difference

11	**Potential Difference**	The measure of the push that a **cell/battery** can supply
12	**Volts**	The measurement of potential difference
13	**Voltmeter**	Measures the potential difference.





Section 4: Series and Parallel

14	**Series** circuits	**Series** circuits are joined in one big loop
15	**Parallel** circuits	**Parallel** circuits have two or more paths for the current to travel

Section 5: Resistance

16	**Resistance**	How difficult it is for **current** to flow through a **component** in a **circuit**
17	**Ohms**	The unit of measurement for **resistance**
18	**Resistance** can be measured using this equation	$\text{resistance } (\Omega) = \frac{\text{potential difference (V)}}{\text{current (A)}}$
19	**Conductors**	Materials that have a **very low** resistance, such as metal
20	**Insulators**	Materials that have a **very high** resistance such as plastic

Section 6: Magnets and Magnetic Fields

21	**Magnetic Field**	A region where there is a **force** that acts on a **magnet**
22	**Magnetic Material**	A **material** that is attracted to magnets such as **iron** or **steel**
23	**Magnetic Field Lines**	Imaginary lines that show the direction of **force** on **magnetic materials**

Section 7: Electromagnets

24	**Electromagnet**	A **temporary** magnet produced using an **electric** A wire with an **electric current** flowing through it has a **magnetic field** around it
25	**Magnetise**	To make a **material** into a **magnet**
26	**Core**	A rod of **magnetic material** placed inside a coil to make the **magnetic field** of an electromagnet **stronger**

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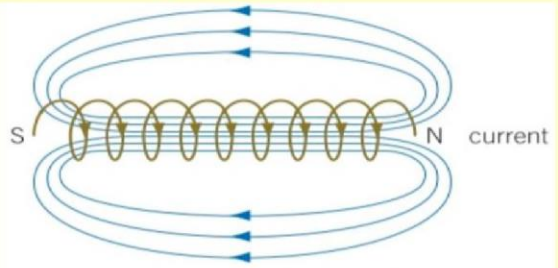

▲ The magnetic field around a coil of wire.

Section 8: Using Electromagnets

27	**Uses of Electromagnets**	Can be used to **lift iron cars** in a scrap yard and in **MRI scanners** found in hospitals
28	**Relay**	Electrical device that uses **current** flowing through it in one circuit to switch **on** and **off** a current in a second circuit
29	**Motor**	A **component** or **machine** that **spins** when a **current** flows through it

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