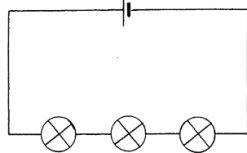


Week 1

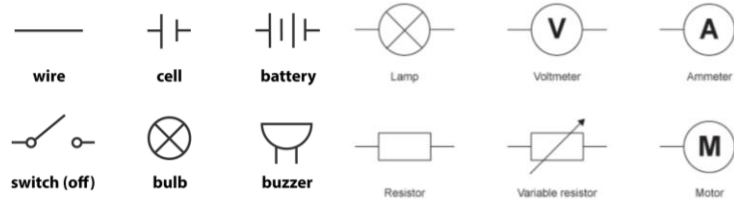
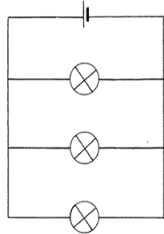
Circuits

A **series circuit** has only one loop this means the current and potential difference (voltage) can only flow that one way

This means that if one of the components breaks then the current cannot flow and all the components stop working



A **parallel circuit** has more than one loop this means that there is more than one path for the current to flow so that if one component breaks the others can still work. The potential difference stays the same but the current is shared.



Week 2

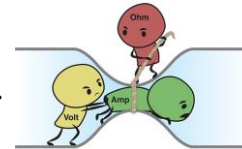
Resistance

Resistance is anything that can **decrease** the **current** in a circuit.

Materials that don't let current flow easily are called electrical **insulators**. Insulators have a **high resistance**

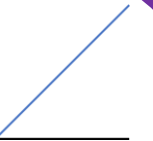
Materials that let current flow easily are called electrical **conductors**. Conductors have a **low resistance**.

The longer a wire is the more resistance it will. The wider a wire is the less resistance it will have. The lower the resistance the more efficiently the current will flow.



Week 3

Resistance of a wire



The relationship between the length of a wire and resistance is **directly proportional**. That means if wire length is halved, resistance will also halve. If the length of wire is doubled, resistance will also double.

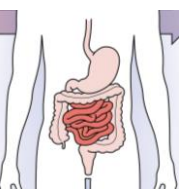
Increasing the length of the wire has the same effect as adding a component. Adding components **increases** the **resistance**, making it more difficult for the current to flow. To measure resistance you use:

$$\text{Resistance} = \frac{\text{Potential difference}}{\text{Current}}$$

Year 8 Science: Term 5 Electric Circuits – Resistance, Nutrition



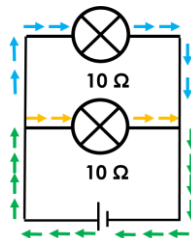
Amount Per Serving	Calories	% Daily Value*
100g	100	20%
50g	50	10%
25g	25	5%
10g	10	2%
5g	5	1%
2g	2	0.5%
1g	1	0.2%
0.5g	0.5	0.1%
0.2g	0.2	0.05%
0.1g	0.1	0.02%
0.05g	0.05	0.01%
0.02g	0.02	0.005%
0.01g	0.01	0.002%
0.005g	0.005	0.001%
0.002g	0.002	0.0005%
0.001g	0.001	0.0002%



Week 4

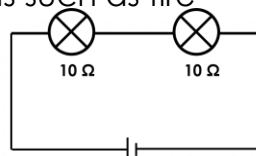
Resistance in parallel

It is easier for current to flow in two paths instead of one, so the overall resistance is **lower**.



in parallel, the total resistance is **less than the smallest** individual resistor.

Parallel circuits are used in items such as fire alarms.



Resistance in series

In series circuits the total resistance is calculated by adding up the resistance of each individual component.

Week 5

Balanced Diet

Your body needs a balanced diet to be healthy it is important to eat a mixture of the following food groups.

- Carbohydrates - Provides energy
- Lipids (fats and oils) - Provides energy
- Protein - Growth and repair
- Vitamins - lots of uses in the human body
- Minerals - **16 essential minerals**. These include iron, used to transport oxygen in the blood, and calcium, used in making bones and teeth.
- Dietary fibre – Keeps the digestive system moving
- Water - Allows chemical reactions to happen.

Key words:

Ammeter - A component used to measure current in electrical circuits, connected in series.

Electrical Conductor - A material that has a low resistance and allows current to flow through it easily.

Electrical Insulator - A material that has a high resistance and does not allow current to flow through it easily.

Carbohydrate - A nutrient found in pasta, bread, rice and potatoes that provides energy for the body.

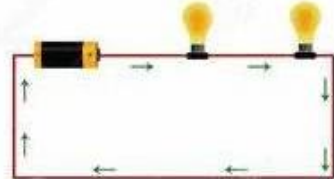
Respiration - A chemical reaction that releases energy.

Week 1

Questions	Answers
Describe a series circuit	has only one loop this means the current and potential difference (voltage) can only flow that one way
Why are parallel circuits better than series?	There is more than one path for the current to flow so that if one component breaks the others can still work.
Describe a parallel circuit	A circuit which has two or more branches in it.
What happens to current in a series circuit?	The current stays the same as it has only one path.
What happens to potential difference in a parallel circuit	The potential difference stays the same.



Series Circuit



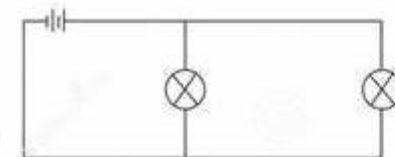
Series Circuit

Week 2

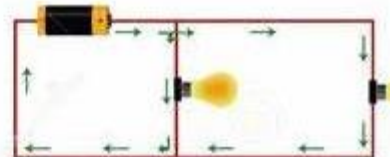
Questions	Answers
Describe the relationship between current and resistance	As resistance increases, current decreases (they are inversely proportional).
Define an insulator	Materials that don't let current flow easily are called electrical insulators .
Describe resistance	Resistance is anything that can decrease the current in a circuit.
What factors affect resistance	The length of the wire and the resistance.

Week 3

Questions	Answers
What does directly proportional means?	This means if you double one value you double the other.
What is the relationship between wire length and resistance	As you increase the length of the wire you increase the resistance of the wire.
How can you increase resistance?	Make the wire longer, narrower or add components.
What is potential difference measured in?	Volts
How to calculate resistance	$Resistance = \frac{Potential\ difference}{Current}$



Parallel Circuit



Parallel Circuit

Year 8 Science: Term 5 Electric Circuits – Resistance, Nutrition

Week 4

Questions	Answers
What happens to resistance in parallel?	in parallel, the total resistance is less than the smallest individual resistor.
What happens to resistance in series?	In series circuits the total resistance is calculated by adding up the resistance of each individual component.
Describe resistance	Resistance is anything that can decrease the current in a circuit.
In a parallel circuit you have a 10 ohm and a 20 ohm resistor. What is its resistance?	Less than 10 ohms
In series you have a 10, 20 and 20 ohm resistor what is the resistance?	10+20+20 = 50 ohms

Week

Questions	Answers
What are carbohydrates used for?	To provide you with energy
What is iron used for?	To transport oxygen around the body.
Chemical reactions require?	Water
Where do we find lipids?	Lipids are found in fats and oils
What food group helps with growth and repair	Protein

Key words:

Ammeter - A component used to measure current in electrical circuits, connected in series.

Electrical Conductor - A material that has a low resistance and allows current to flow through it easily.

Electrical Insulator - A material that has a high resistance and does not allow current to flow through it easily.

Carbohydrate - A nutrient found in pasta, bread, rice and potatoes that provides energy for the body.

Respiration - A chemical reaction that releases energy.