



# Year 4 Knowledge Organiser: Electricity

## What should I already know?

Appliances need electricity to make them work.

### Key vocabulary

<b>electricity</b>	The flow of an electric current through a material, e.g. from a power source through wires to an <b>appliance</b> .
<b>appliances</b>	A piece of equipment or a device designed to perform a particular job, such as a washing machine or mobile phone.
<b>battery</b>	A device that stores electrical energy as a chemical. Two or more cells joined together form a <b>battery</b> .
<b>circuit</b>	A pathway that <b>electricity</b> can flow around. It is based around wires and a power supply. Examples of components (parts) you can add in to a <b>circuit</b> are bulbs, switches, buzzers and motors.

**cell:** Normally, we would call this a **battery** but scientifically, this is a cell. Two or more cells joined together form a **battery**.



**switch:** Used to turn other components in the **circuit** on or off.



**motor:** Produces movement in a complete **circuit**.



**bulb:** Lights up in a complete **circuit**.



**wires:** Used to connect the different components in the **circuit** together.

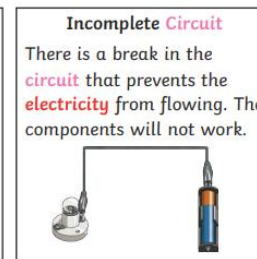
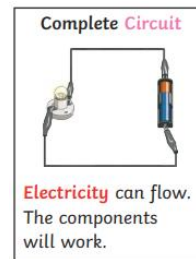
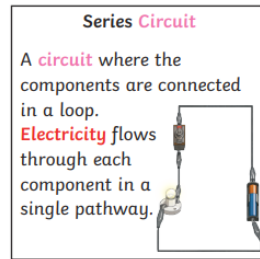


**buzzer:** Makes a noise in a complete **circuit**.

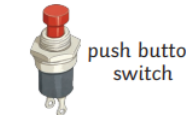


### What will I know by the end of the unit?

- I can identify common appliances that run on electricity (mains or battery operated) and know some dangers of electricity
- I can construct a simple series electrical circuit, identifying and naming basic parts.
- I can identify if a circuit is complete or incomplete
- I can use a switch to open and close a simple circuit



Switches can be used to open or close a **circuit**. When off, a switch 'breaks' the **circuit** to stop the flow of **electricity**. When on, a switch 'completes' the **circuit** and allows the **electricity** to flow.



- I can classify and recognise electrical conductors and insulators and know that metals are good conductors

An **electrical conductor** is a material that will allow electricity to flow through it.

An **electrical insulator** - Materials that are electrical insulators do not allow electricity to flow through them.

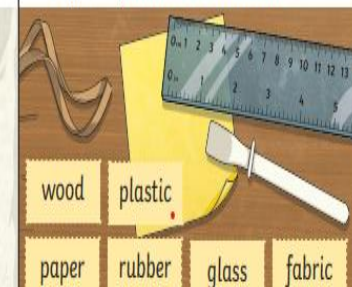
### How will I work Scientifically?

- Plan and conduct comparative and fair tests to answer the question: 'which materials are good conductor of electricity?'
- Classify materials based on conductivity
- I can research famous scientists in the field of electricity
- I can ask and answer questions
- I can construct simple circuits, observing patterns, such as bulbs get brighter is another cell is added.

#### Examples of Electrical Conductors



#### Examples of Electrical Insulators





# Year 4 Knowledge Organiser: Sound

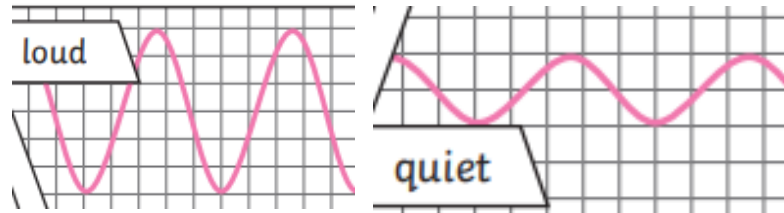
## Key vocabulary

<b>vibration</b>	A quick movement back and forth.
<b>sound wave</b>	<b>Vibrations</b> travelling from a sound source.
<b>volume</b>	The loudness of a sound.
<b>amplitude</b>	The size of a <b>vibration</b> . A larger <b>amplitude</b> = a louder sound.
<b>pitch</b>	How low or high a sound is.

<b>ear</b>	An organ used for hearing.
<b>particles</b>	Solids, liquids and gases are made of <b>particles</b> . They are so small we are unable to see them.
<b>distance</b>	A measurement of length between two points.
<b>soundproof</b>	To prevent sound from passing through.
<b>absorb sound</b>	To take in sound energy. Absorbent materials have the effect of muffling sound.
<b>vacuum</b>	A space where there is nothing. There are no <b>particles</b> in a vacuum.
<b>eardrum</b>	A part of the <b>ear</b> which is a thin, tough layer of tissue that is stretched out like a drum skin. It separates the outer <b>ear</b> from the middle and inner <b>ear</b> . <b>Sound waves</b> make the <b>eardrum vibrate</b> .

## What should I already know?

We hearing is one of our sense and we hear sounds through our ears.



## How will I work Scientifically?

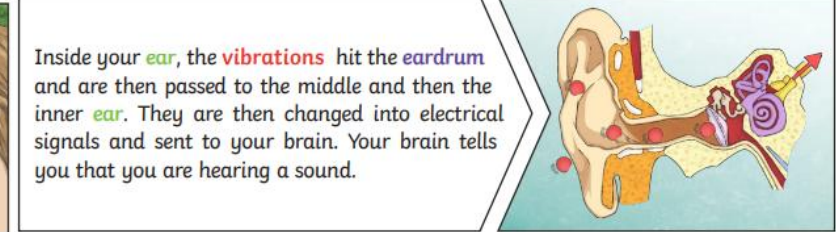
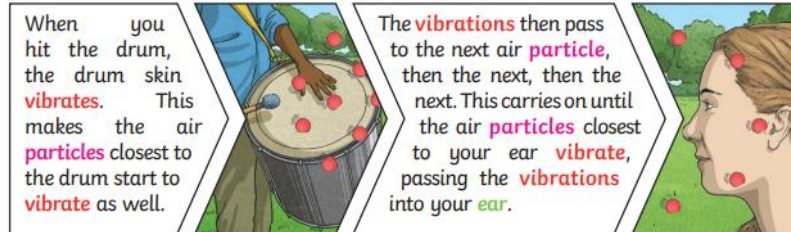
- Find patterns in sound by playing different instruments
- Measure sounds using data loggers and decibel meters
- Present findings in different ways, including labelled diagrams, graphs and charts
- Make predictions and gather results to draw conclusions
- Set up own investigations and ensure tests are fair

## What will I know by the end of the unit?

- **What is sound and how do we hear it?**

Sound is a type of energy. Sounds are created by vibrations. The louder the sound, the bigger the vibration. Vibrations from sound travel through a medium into our ear so we can hear them. Sound can travel through solids, liquids and gases. Sound travels as a wave, vibrating the particles in the medium it is travelling in. Sound cannot travel through a vacuum.

- Sound energy can travel from particle to particle far easier in a solid because the vibrating particles are closer together than in other states of matter.



- sounds get fainter as the distance from the sound source increases

## What is amplitude, volume and pitch?

- The size of the vibration is called the **amplitude**. Louder sounds have a larger amplitude, and quieter sounds have a smaller amplitude. The stronger the vibration (amplitude) the louder the **volume**.
- Pitch is a measure of how high or low a sound is. The **faster** the **vibration** the **higher** the pitch, the **slower** the **vibration** the **lower** the **pitch**.