Year Group: 4 Term: Autumn	Unit Title: Circuits and Sounds
Enquiry: Which is the best material to block the sound of an alarm clock?	Driver Subject/s: Science

Sound

How do sounds **travel**?

- A thing that can be heard.
- The object that makes the sound is called the **source**.

How are sounds made?

- When objects **vibrate**, a sound is made.
- The **vibration** makes the air around the object **vibrate** and the air **vibrations** enter your ear. These are called **sound waves.**
- If an object is making a sound, a part of it is **vibrating**, even if you cannot see the v**ibrations**.

How do sounds travel?

- **Sound waves** travel through a **medium** (such as air, water, glass, stone, and brick).
- For example, if somebody is playing music in the room next door, the sound can travel through the bricks in the wall.

How do we hear sounds?

- When an object **vibrates**, the air around it **vibrates** too. This **vibrating** air can also be known as **sound waves**.
- The **sound waves** travel to the ear and make the **eardrums vibrate**.
- Messages are sent to the brain which recognises the **vibrations** as sounds.

How do sounds change?

Pitch:

- The **pitch** of a sound is how **high** or **low** it is.
- A squeak of mouse has a **high pitch**.
- A roar of a lion has a **low pitch**.
- **High pitch** sounds are created by short **sound waves**.
  Low pitched sounds are created by long **sound waves**.

Volume:

- The **volume** of a sound is how **loud** or **quiet** it is.
- When a sound is created by a little amount of **energy,** a weak **sound wave** is created which doesn't **travel** far. This makes a **quiet** sound.
- A small tap of a hammer is used with small amounts of **energy** and so creates a **quiet** noise.
- A **vibration** with lots of **energy** makes a powerful **sound wave** and therefore a **loud** sound.
- A powerful, smashing tap of a hammer is used with lots of **energy** and so creates a **loud** noise.
- The closer you are to the **source** of the sound, the **louder** the sound will be.
- The further away you are from the **source** of the sound, the **quieter** the sound will be.

How do we measure sound?

- **Decibels** measure how **loud** a sound is.
- **Frequency** measures the number of times per second that the **sound wave** cycles.

Electricity

Where does electricity come from?

- **Electricity** is **generated** using **energy** from natural **sources** such as the Sun, oil, water and wind.
- These can also be called **fuel sources.**

Which appliances run on electricity?

- Some appliances use batteries and some use mains electricity.
- Batteries come in different sizes depending on how much and how long the appliance is used for.
- Children identify common appliances that use electricity.

How does a circuit work?

- A complete **circuit** is a loop that allows **electrical current** to flow through **wires**.
- A **circuit** contains a **battery (cell)**, **wires** and an **appliance** that requires **electricity** to work (such as a **bulb**, **motor** or **buzzer**).
- The **electrical current** flows through the wires from the **battery (cell)** to the **bulb, motor** or **buzzer**).
- A **switch** can break or reconnect a **circuit**.
- A **switch** controls the flow of the **electrical current** around the **circuit**. When the **switch** is off, the **current** cannot flow. This is not the same as an incomplete **circuit**.

What are electrical conductors and insulators?

- When objects are placed in the **circuits**, they may or may not allow **electricity** to pass through.
- Objects that are made from materials that allow **electricity** to pass through to create a complete **circuit** are called **electrical conductors**.
- Objects that are made from materials that do not allow **electricity** to pass through and do not complete a **circuit** are called **electrical insulators**.

Key Vocabulary: Sound	Key Vocabulary: Electricity
decibel - a measure of how loud a sound is **electricity** - a form of energy that can be carried by wires and in used for heating and lighting, and to provide power for devices **energy** - the power from sources such as electricity that makes machines work or provides heat **pitch** - how high or low a sound is **power** - power is energy, especially electricity, that is obtained in large quantities from a fuel source and used to operate lights, heating, and machinery **sound waves** - invisible waves that travel through air, water, and solid objects as vibrations **source** - where something comes from **travel** - how something moves around **vibrations** - invisible waves that move quickly **volume** - how loud or quiet a sound is	**appliances** - a device or machine in your home that you use to do a job such as cleaning or cooking. Appliances are often electrical. **battery** - small devices that provide the power for electrical items such as torches **bulb** - the glass part of an electric lamp, which gives out light when electricity passes through it. **buzzer** - an electrical device that is used to make a buzzing sound **cell** - a synonym for battery **circuit** - a complete route which an electric current can flow around **component** - the parts that something is made of **conductor** - a substance that heat or electricity can pass through or along **current** - a flow of electricity through a wire or circuit device - an object that has been invented for a particular purpose **electricity** - a form of energy that can be carried by wires and in used for heating and lighting, and to provide power for devices **energy** - the power from sources such as electricity that makes machines work or provides heat insulator - a non-conductor of electricity or heat **mains** - where the supply of water, electricity, or gas enters a building **motor** - a device that uses electricity or fuel to produce movement **power** - Power is energy, especially electricity, that is obtained in large quantities from a fuel source and used to operate lights, heating, and machinery **source** - where something comes from **renewable –** does not run out when used **switch** - a small control for an electrical device which you use to turn the device on or off **wires** - a long thin piece of metal that is used to fasten things or to carry electric current