

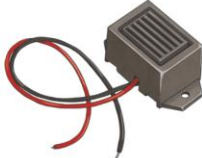



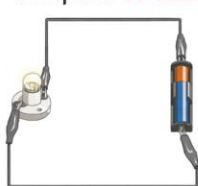


Key Vocabulary

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

Components (Parts) Vocabulary

cell: Normally we'd call this a battery but scientifically this is a cell. Two or more cells joined together form a battery .	bulb: Lights up in a complete circuit .	buzzer: Makes a noise in a complete circuit .
		
wires: Used to connect the different component in the circuit together.	motor: Produces movement in a complete circuit .	switch: Used to turn other components in the circuit on or off.
		

Complete **Circuit**

Electricity can flow.
Components will work.

Incomplete **Circuit**

There is a break in the **circuit** that prevents the **electricity** from flowing.
The components will not work.

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.



toggle switch



push button switch



slide switch

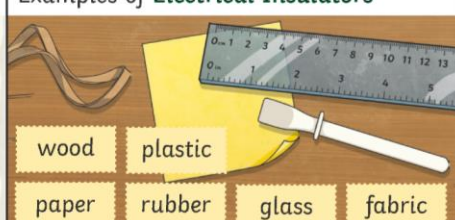
Key Vocabulary

mains electricity	Electricity supplied through wires to a building.
electrical conductor	A conductor of electricity is a material that will allow electricity to flow through it.
electrical insulator	Materials that are electrical insulators do not allow electricity to flow through them.

Key Knowledge

Examples of **Electrical Conductors**

water metal

Examples of **Electrical Insulators**wood plastic
paper rubber glass fabric

Appliances

Many everyday **appliances** rely on **electricity** for them to work. Some **appliances** use **mains electricity** (are plugged into a socket) and others have a **battery** to make them work. Examples of **mains**-powered **appliances** include toasters and televisions. **Battery**-powered **appliances** can include mobile phones and torches.

mains-powered**battery**-powered

To work **safely** with **circuit** components in the classroom:

- None of the equipment needs to use mains power, so do not put any of it in or near plugs.
- Report any damaged or broken equipment to your teacher. Do not use it.
- Only use equipment as instructed.
- Connect equipment correctly.
- Disconnect equipment after use and put it away neatly.

Materials can be tested in a **circuit** to see if they are **electrical conductors** or **electrical insulators**.

10p = metal =
electrical conductorstest **circuit**ruler = plastic =
electrical insulators

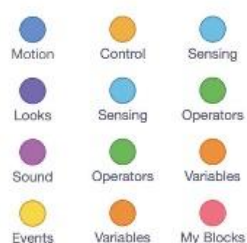
Key Vocabulary

algorithm	A sequence of ordered instructions. In Scratch, algorithms are referred to as scripts.
block	A puzzle-shaped piece of code. They can connect to other blocks to create algorithms .
code	A set of instructions written in a programming language that a computer can understand.
debugging	Debugging is where you find, remove or correct errors in computer code .
repetition	When a command or process is repeated.
sequence	A sequence is a set of instructions carried out in a particular order, in an algorithm .
variable	A value that can be recorded in the memory of Scratch. A variable can be edited.

Scratch Interface



Block Categories



Control Blocks

Use the **if...then...else...** blocks to determine the outcome of a condition.



An **Operators** block can be placed inside the hexagonal space.

Duplication

To avoid creating each question **block** by **block**, you can make an exact copy of the **sequence** of **blocks**. This is called duplication. Right-click on a section of **code** and then select 'duplicate'.



Operators and Variables

In Scratch, we can use the green, hexagonal **Operators** **blocks** to compare **variables** and values as well as work out calculations.



Here you can insert an **answer** sensing block to make this statement true.

answer



Use this block to multiply two numbers together.

Scores and timers can be made by creating a new variable.

Timer Score

Adding Effects to Sprites and Backdrops

switch costume to costume2	Use this block to switch a sprite's Costumes .
switch backdrop to backdrop1	Use this block to switch between different backdrops.
change color effect by 25 change color effect to 0 color fisheye whirl pixelate mosaic brightness ghost	Use these blocks to alter the size, colour or other effects of a sprite. These types of effects could be used when a sprite successfully answers a question or when they win in the quiz.
change size by 10 change size to 100%	Use these blocks to increase and decrease the size of a sprite.
clear graphic effects	Use this block to clear any changes made to the sprite or backdrop.

Key Vocabulary

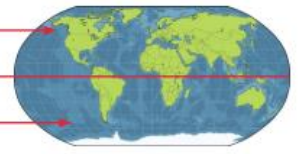
co-ordinates	A set of numbers and/or letters that show you a specific position on a map.
hemisphere	A half of the earth, usually divided by the equator into the northern and southern hemisphere .
observatory	A place for observing and studying natural events on Earth or in space.
polar	The area around the North or South Pole.
precipitation	Water particles that reach the ground including rain, hail and snow.



northern **hemisphere**

equator

southern **hemisphere**



Longitude and Latitude

Latitude lines run around the earth east to west.

These lines are the same distance apart from each other.



Longitude lines run over the top of the earth north to south.

These lines are not equally distant from each other.



These lines are used to give the specific location of anywhere in the world using **co-ordinates**.

Time Zones

- The Prime Meridian (PM) line divides the earth into the eastern and western **hemisphere**.
- It passes through the Royal **Observatory** in Greenwich, England.
- All time zones start here - Greenwich Mean Time (GMT).
- There are 24 different time zones – one for each hour in the day.
- From GMT to the east = +1 hour for every time zone.
- From GMT to the west = -1 hour for every time zone.
- The International Date Line is on the opposite side of the world from the PM. When it is noon at the Prime Meridian, it is midnight along the International Date Line. This is where midnight occurs first across the globe.

Prime Meridian



Polar Regions

North Pole

Arctic Circle

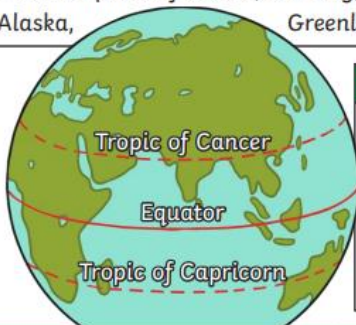
Includes parts of Russia, Norway, Sweden, Finland, Canada, Alaska, Greenland and Iceland.



South Pole

Antarctic Circle

Has no countries and has no one living there permanently. It is a protected place of scientific and environmental research.



The Tropics

- The Tropic of Cancer (northern tropic) and the Tropic of Capricorn (southern tropic) mark the most northerly and southerly positions that the sun can be overhead.
- Between the tropics the weather is hot all year round.
- Rainfall can vary here. In some places, there is very little rain, some areas have a rainy season and some places have lots of rain all year round.

Tropical Rainforest

- South America, Africa and Southeast Asia
- Constantly warm
- No dry season
- Average 60mm rain per month



Tropical Coniferous Rainforest

- North & Central America and Asia
- Steady temperatures all year round
- Low **precipitation**



Tropical Dry Forest

- Mexico, Brazil, Southeast Asia and India
- Warm all year round
- Long dry seasons



Tropical Grasslands (Savannahs)

- Africa, Asia, India and Australia
- Hot
- Dry season lasts up to 9 months
- 900mm – 1500mm rain per year



