Today we are...

MILLBROOK PRIMARY SCHOOL
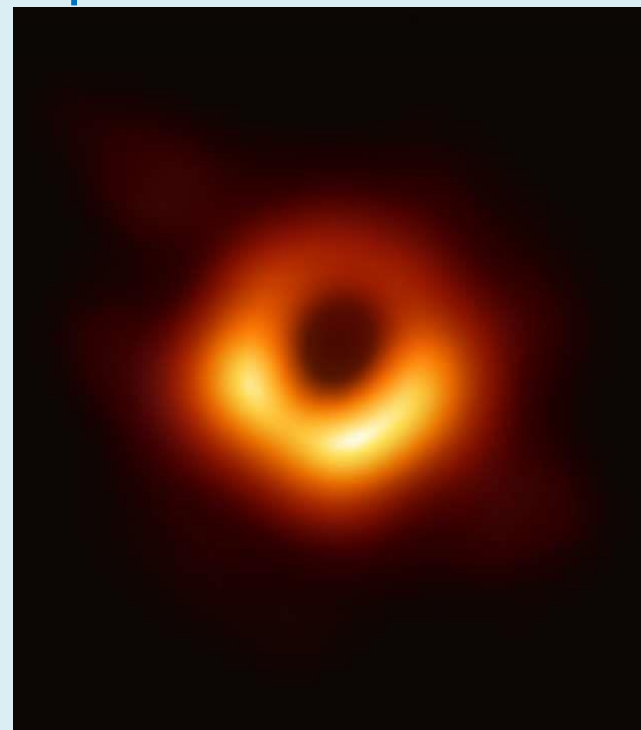
BELIEVE | ACHIEVE | SUCCEED

# Scientists!

Science is the study of the natural world and everything in it. It is understanding how things work, using observation and experimentation.

## Scientists can:

- Discover new things
- Answer questions about our world
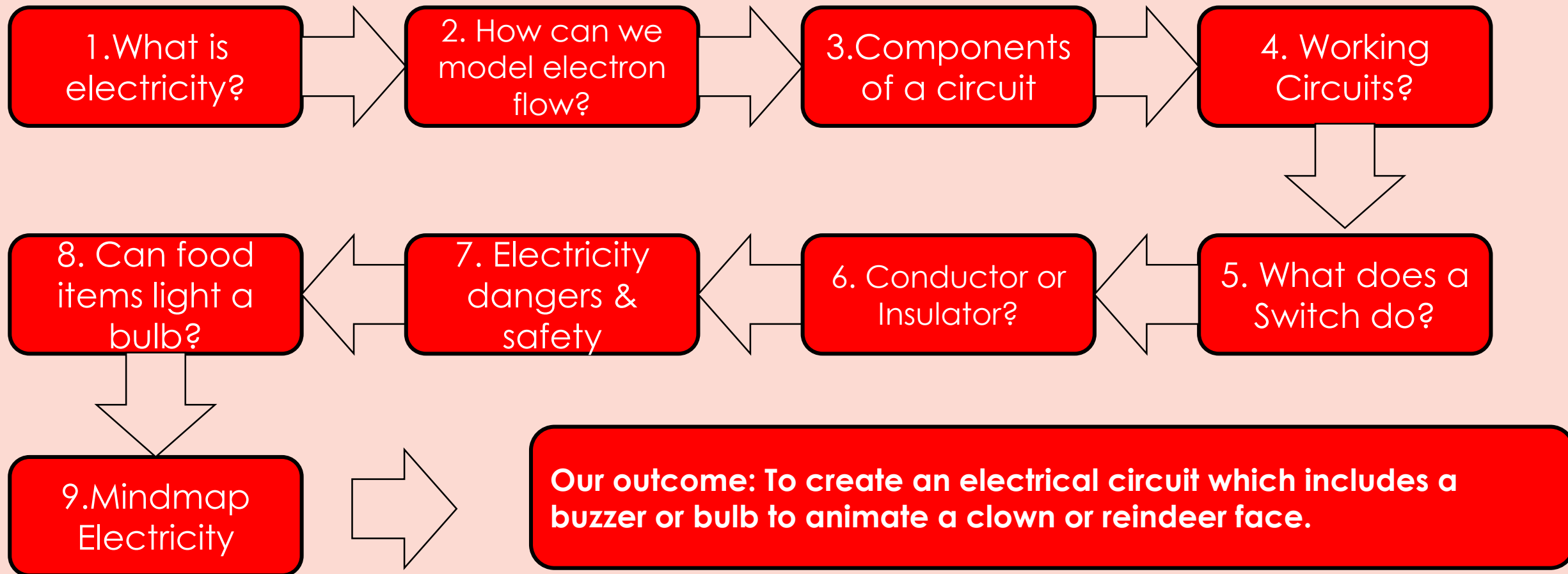- Improve people's health and make life easier for others

Electricity

# Science

## Our Big Question:

1. What is electricity? → 2. How can we model electron flow? → 3. Components of a circuit → 4. Working Circuits? ↓

8. Can food items light a bulb? ← 7. Electricity dangers & safety ← 6. Conductor or Insulator? ← 5. What does a Switch do?

↓

9. Mindmap Electricity →

**Our outcome: To create an electrical circuit which includes a buzzer or bulb to animate a clown or reindeer face.**
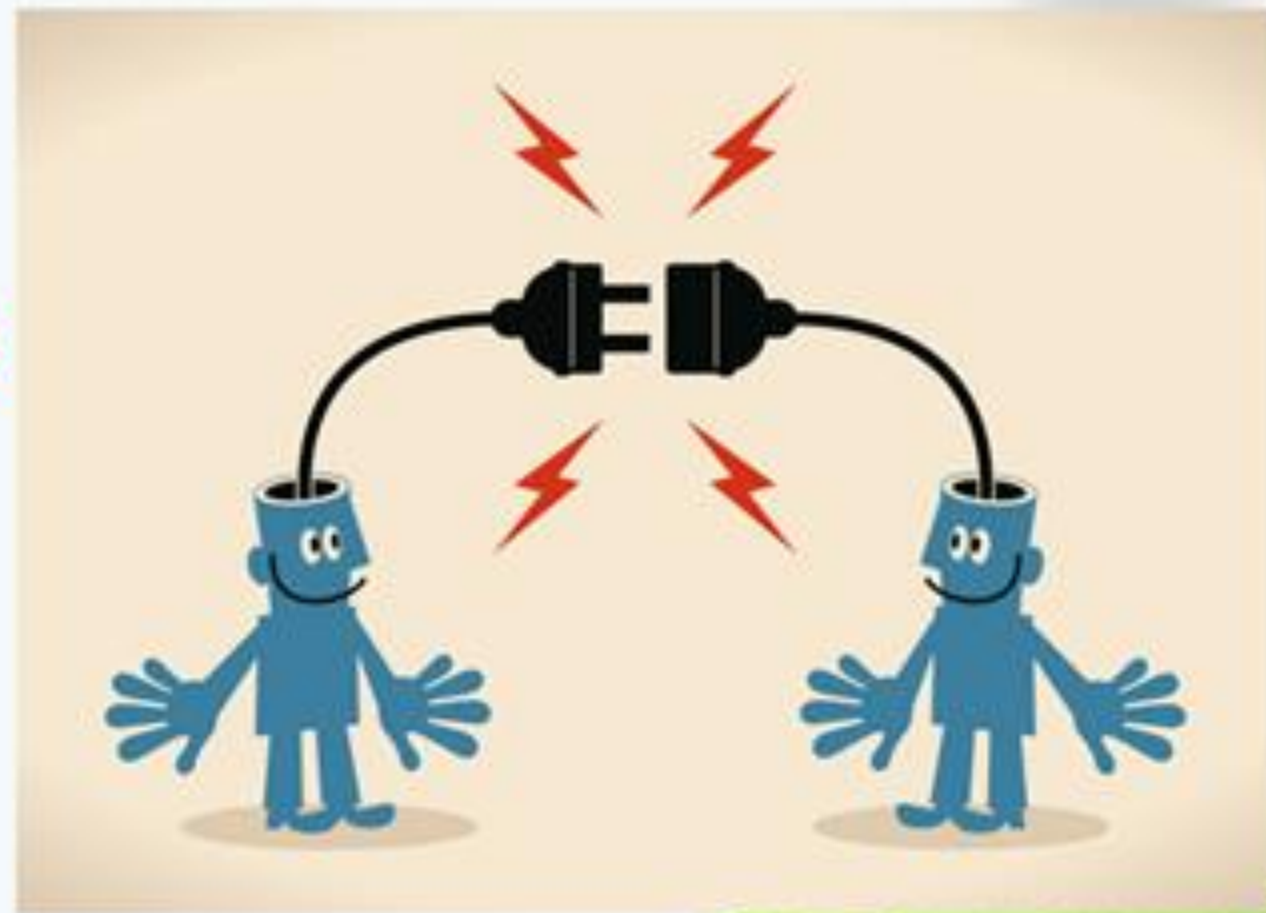
# Why are we learning this?

What connections does this have with other lessons and previous lessons?
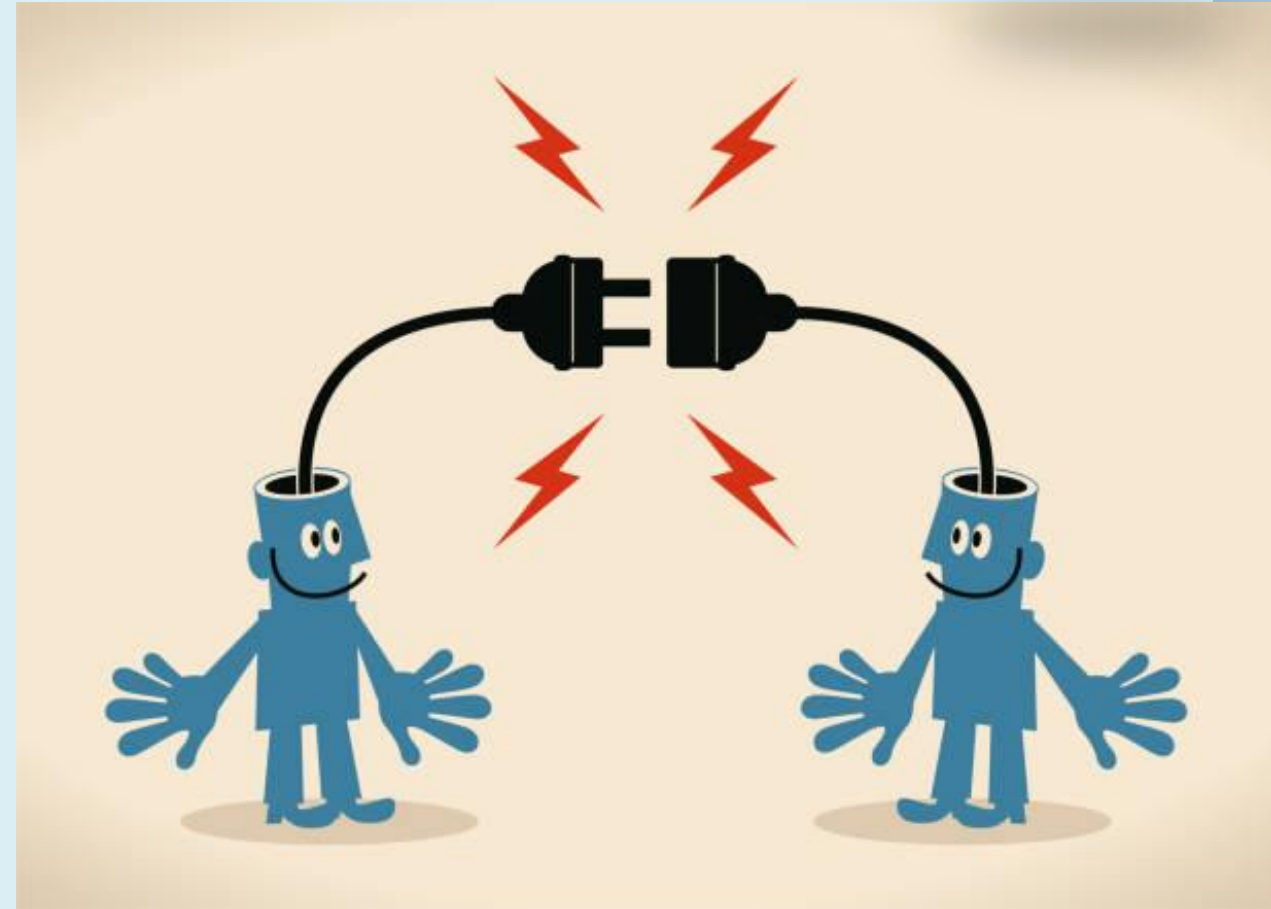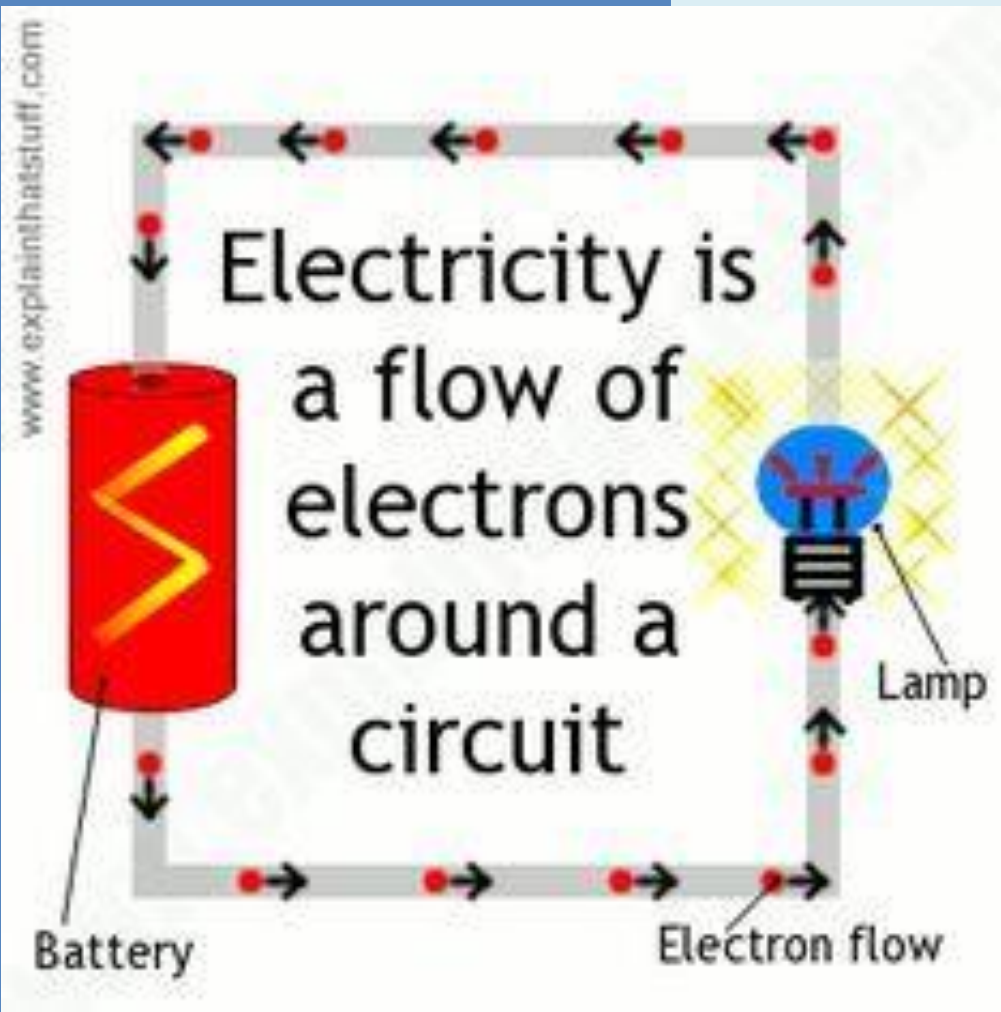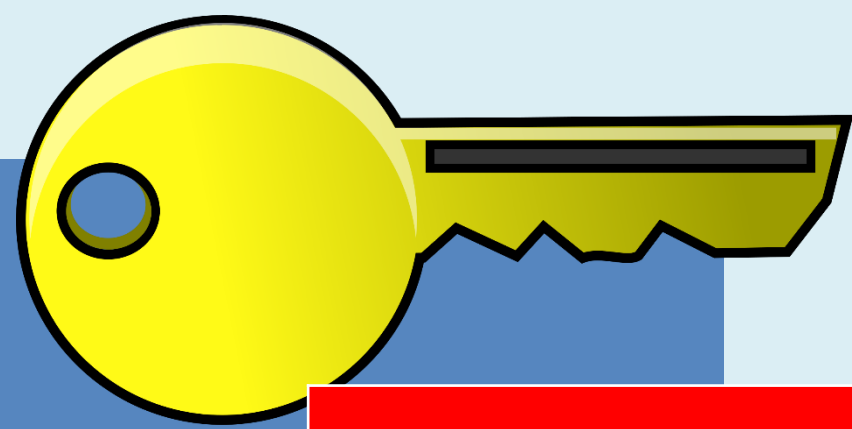
# Why are we learning this?

What connections does this have with other lessons and previous lessons?

1. Electricity is a form of energy.
2. The flow of electrons (tiny particles) is called the current
3. Electricity can only flow when a power supply is able to "push" the electrons around a complete circuit.
4. Simplest circuit is a series circuit.

# Vocabulary

| Electricity | Switch |
| --- | --- |
| Electrons | Circuit |
| Current | Components |

**Recap: What resources can you build into a circuit?**

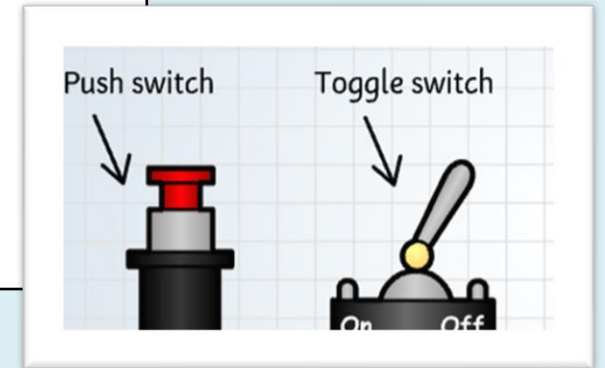| Examples of Switch types | | | |
| --- | --- | --- | --- |
| Slide | Push | Turn | Toggle |
| | | | |

Push switch    Toggle switch

On    Off

- Think  things in your home or at school which use different types of switches. *(Can you think of any other types?)*
- Consider why these objects have switches… what does it allow them to do?

A switch allows you to turn an appliance on or off or to select a different function.

A simple circuit with a cell and a bulb is not very useful because to turn the lamp on and off you would have to remove one of the wires.

Switches are useful because they give you control over the circuit.

Switches allow you to 'make' or 'break' a circuit.

When a switch is in the ON position, the circuit is complete. When the switch is in the OFF position, we say the circuit is broken.
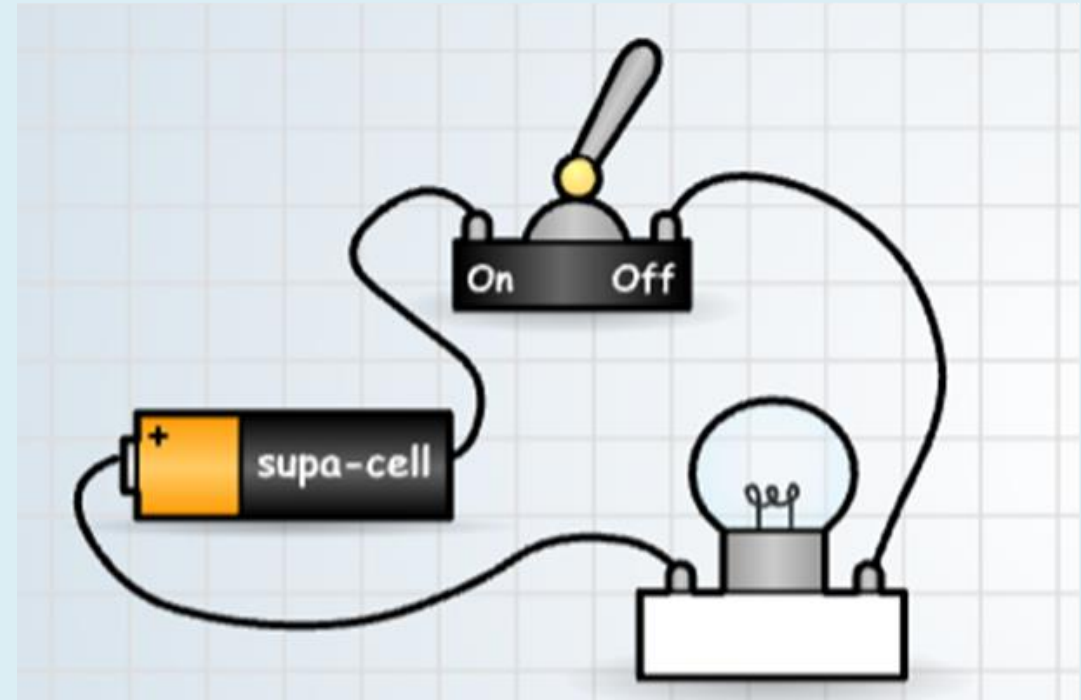
# Demonstration:

## Switch 1:

Cut a small piece of rectangular paper and attach two paperclips
Set up your circuit like the one below.

Consider

- Why do paperclips work to form a switch?

- What happens when you move the paperclip away?

**The circuit is broken and it must be complete for the electrical current to flow around the circuit and the bulb to light.**
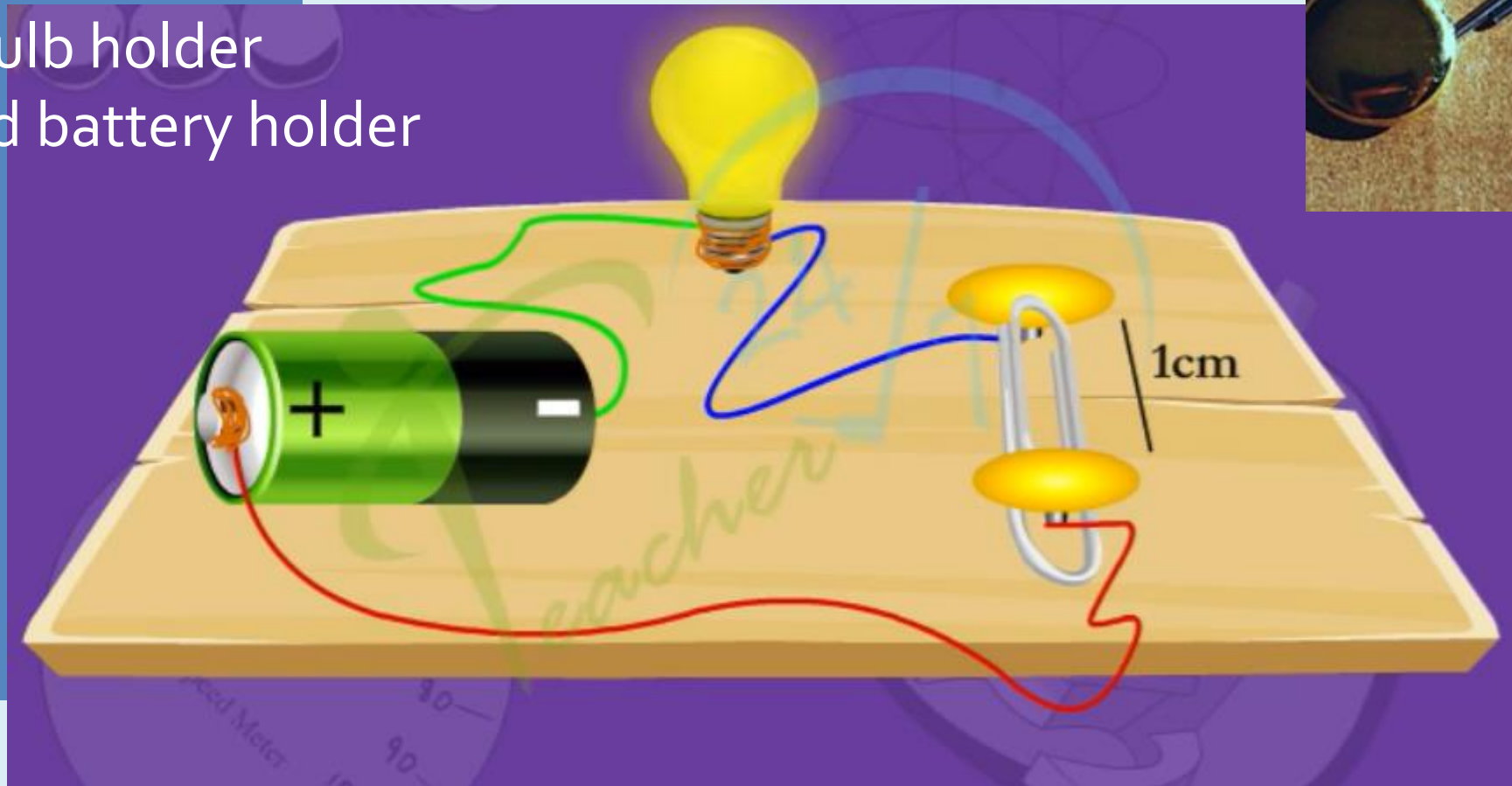
https://www.youtube.com/watch?v=lRo5BGclgbo&t=46s
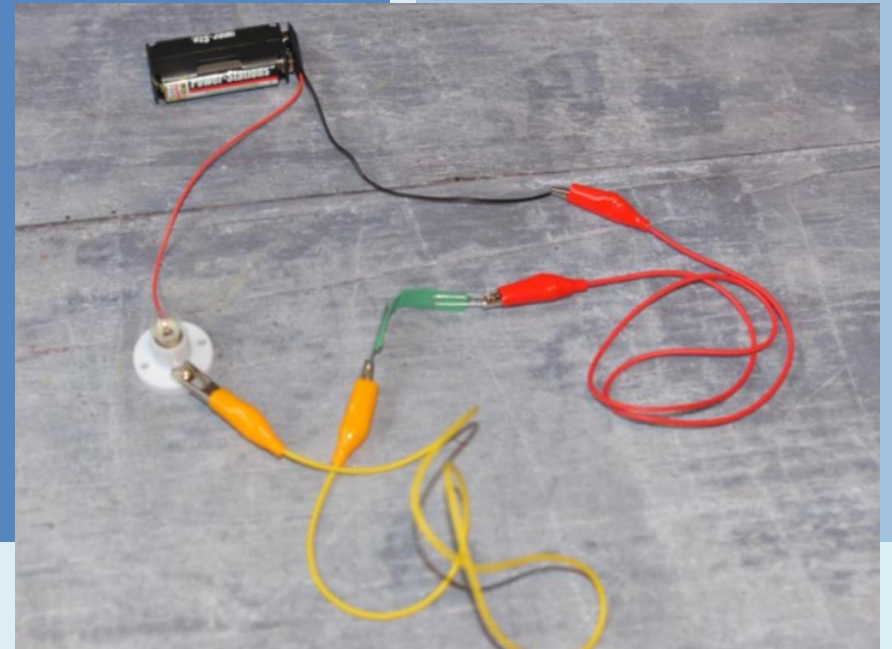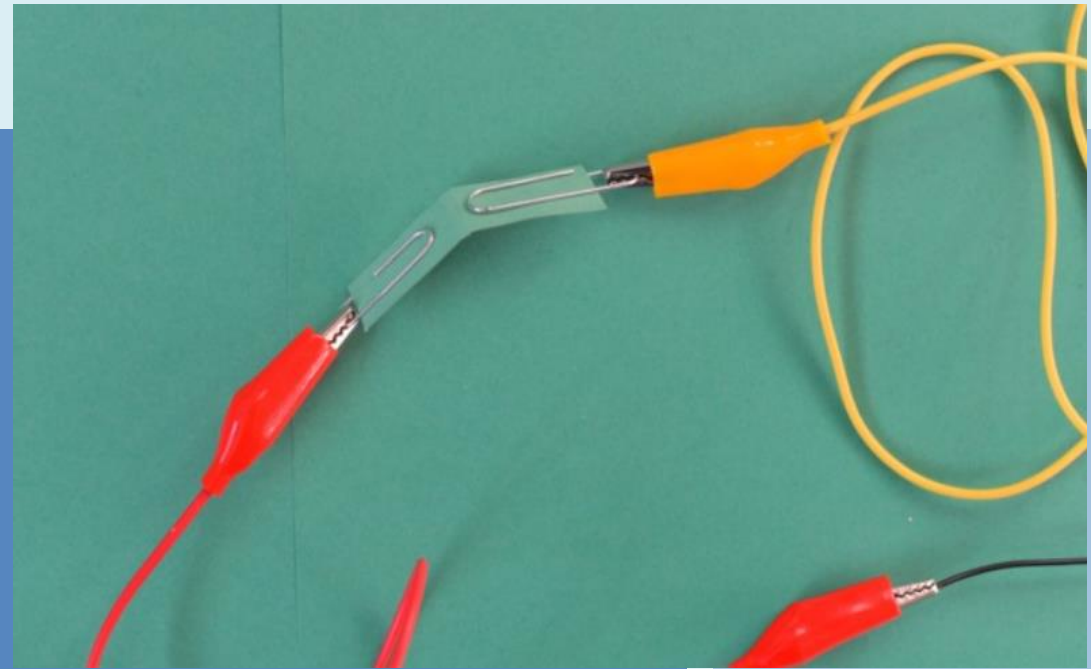
HOW TO MAKE
A SIMPLE SWITCH

Switch 2: We are using cardboard, a bulb and holder and split pins instead

# Switch 2:

Small piece of cardboard
two metal drawing pins
large metal paperclip
three pieces of wire
bulb and bulb holder
battery and battery holder

1cm

# Switch 3

# Switch 4

# Other different switches to test in the circuit

# Title : Testing switches
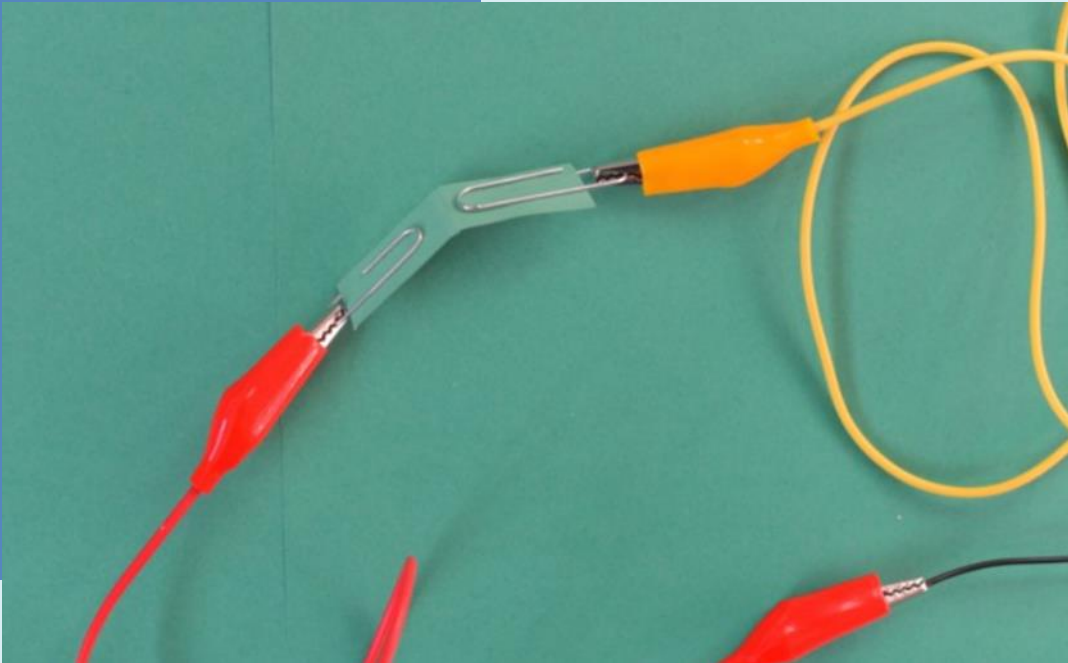
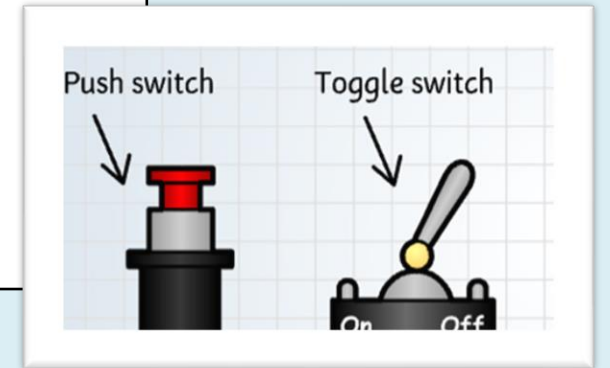| Examples of Switch types | | | |
| --- | --- | --- | --- |
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| | | | |



Push switch        Toggle switch

On        Off

- Think things in your home or at school which use different types of switches. *(Can you think of any other types?)*
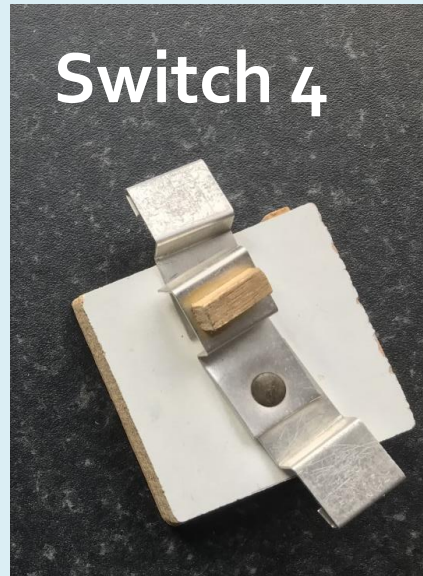- Consider why these objects have switches… what does it allow them to do?



A switch allows you to turn an appliance on or off or to select a different function.

Switch 1


Switch 2


Switch 3


Switch 4

# Testing which switch is most effective
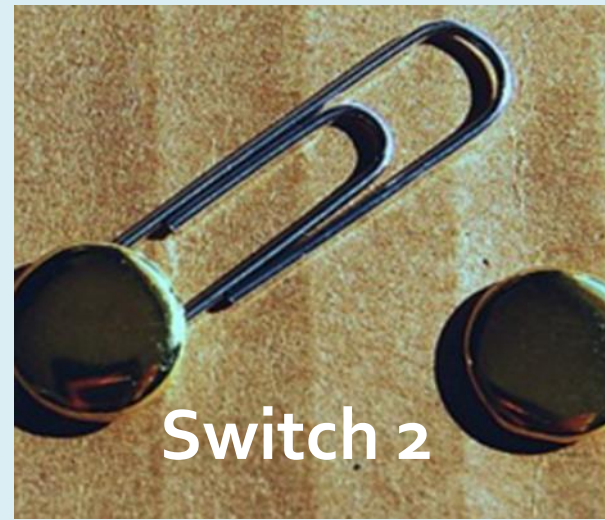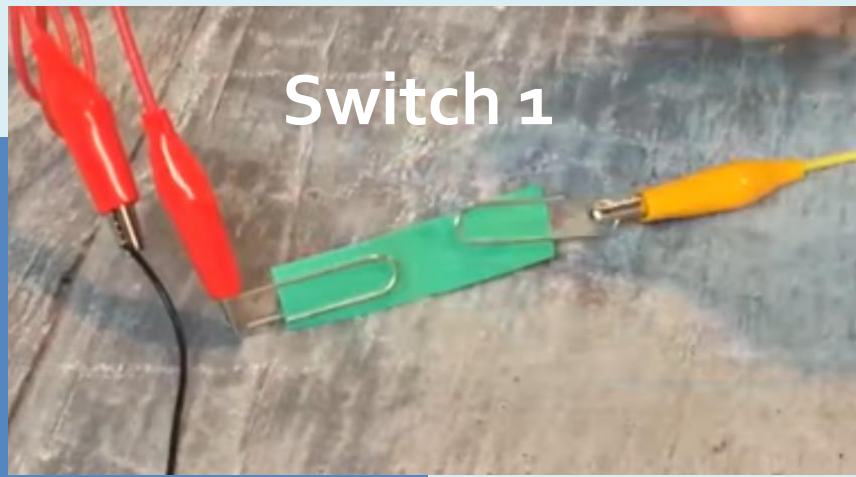


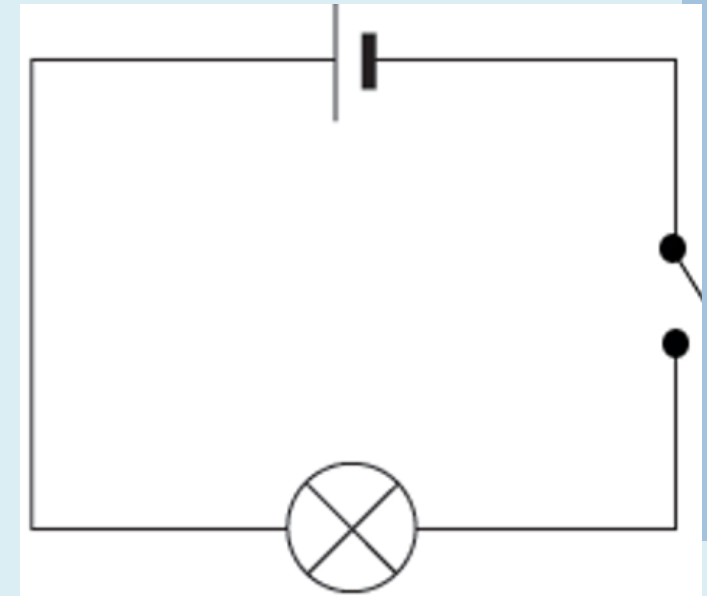**Task**:
In your books draw and label your circuit *scientifically* with the switch added.
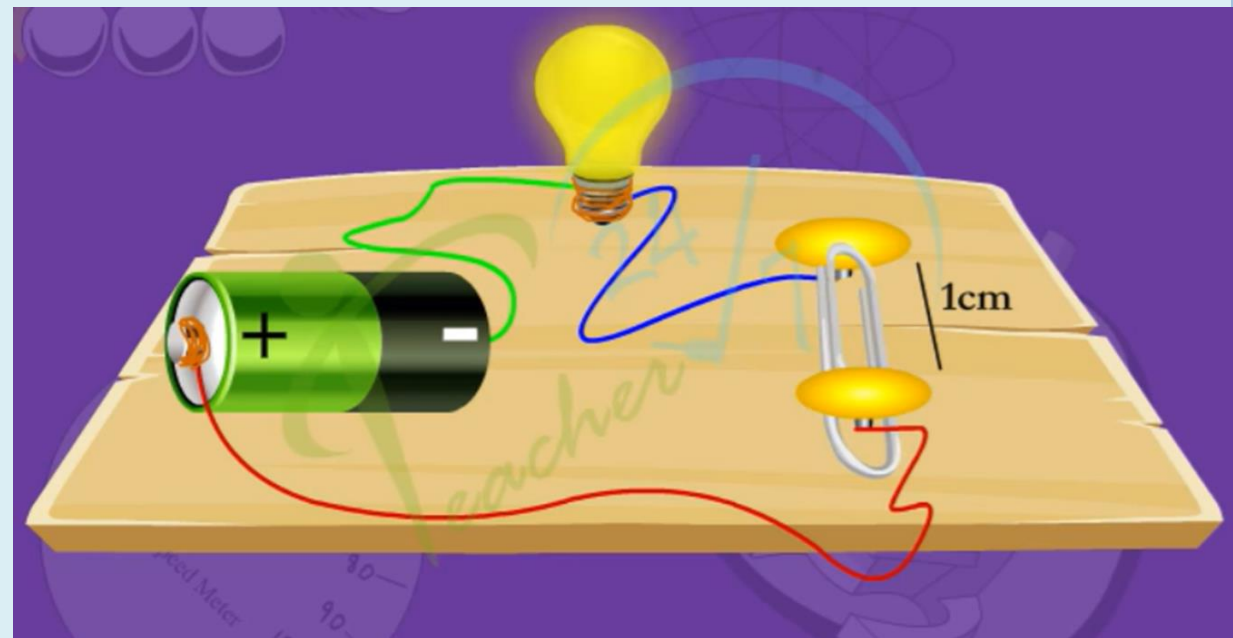Then draw and label a *sketch* two different switches

The most effective switch was……………………………………because ……………………..

The least effective switch was ………………….. because………..

Possible reasons:
- It was easy/quick to use/attach
- It was difficult to use/attach
- It did not work and complete the circuit

# What have we learned?

- Which switch was most effective? Score it out of 5. Explain. *(Was it easier to use?)*
- Complete the sentences:
- When a switch is ON the bulb…………light because the circuit is………………………………………….
- When a switch is OFF the bulb……….light because the circuit is…………………

Word bank:

will        will not        broken        complete