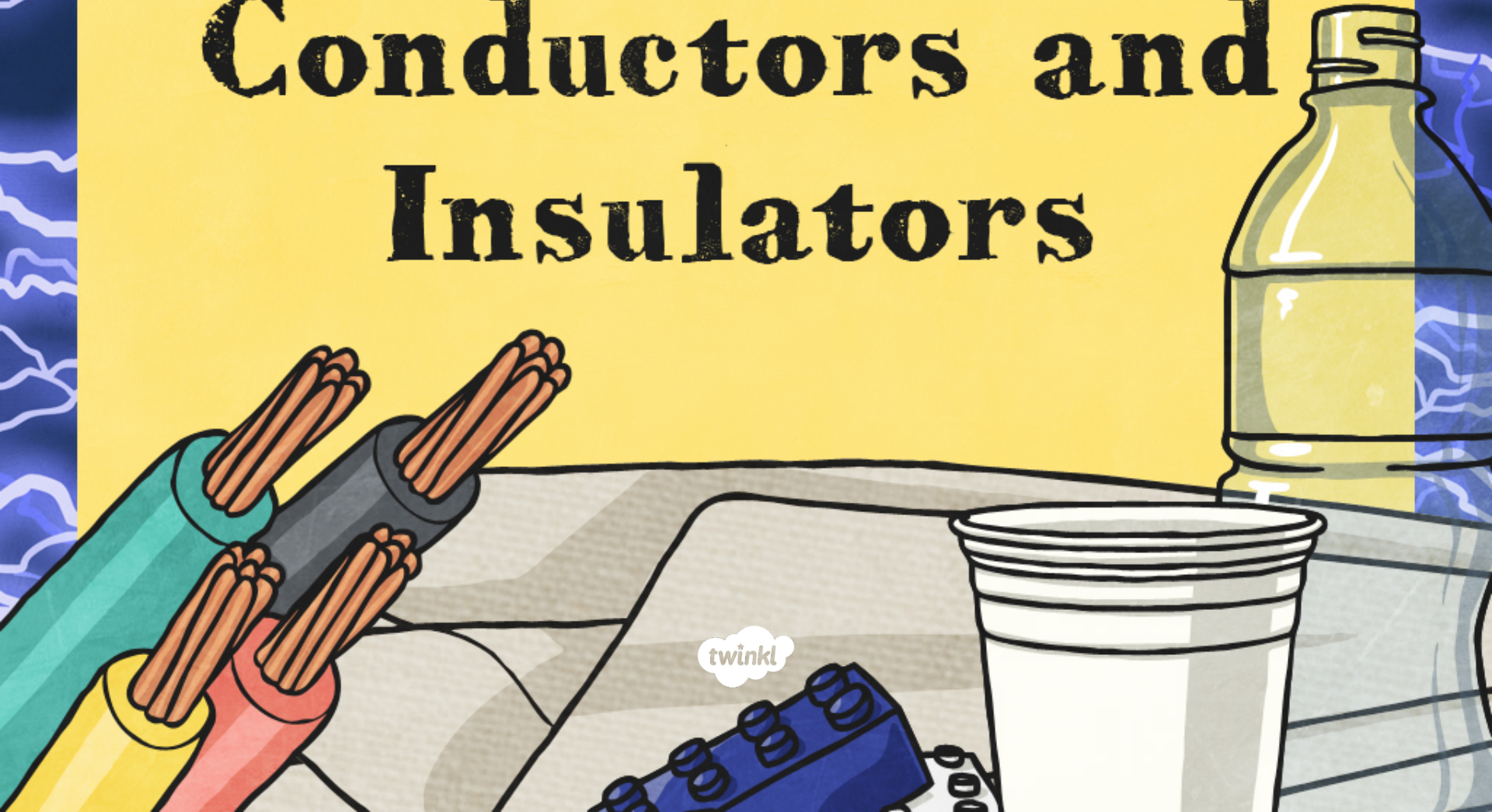
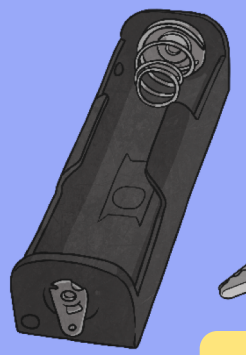
Electrical Conductors and Insulators

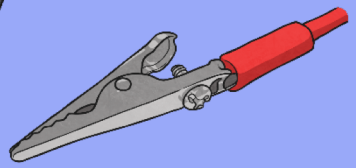


Thursday 28th January 2021

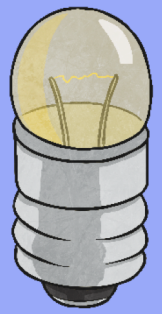
T: Can I identify and sort materials into electrical conductors or insulators?

Parts of a Circuit



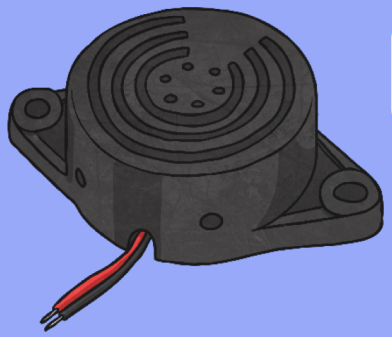


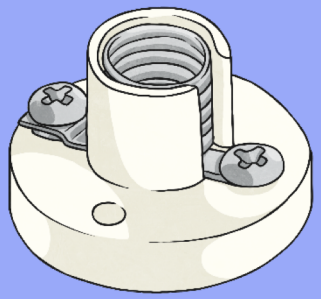
motor

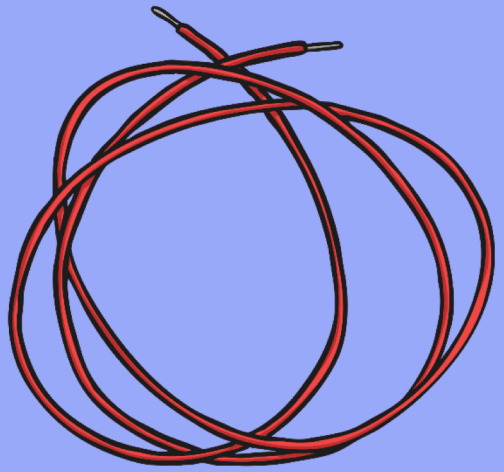


wires

bulb

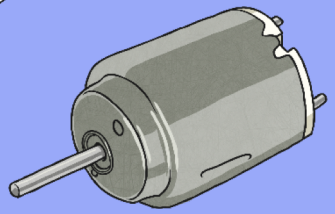






battery (cell)

crocodile clip



Conductors and Insulators

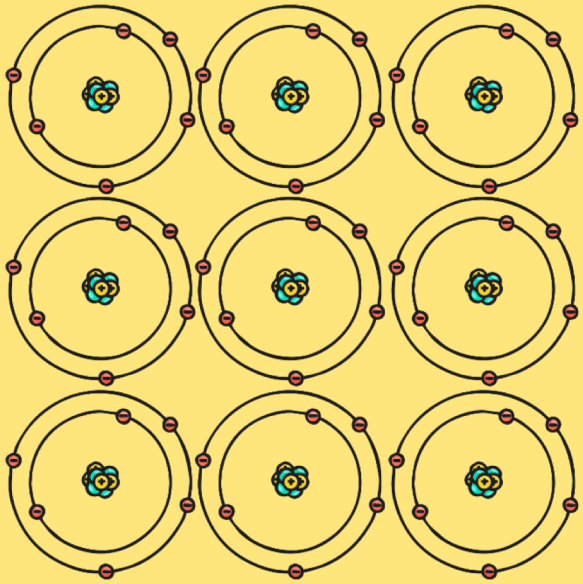
Copy and paste the link into your internet browser to watch the video about conductors and insulators.

There is also a quiz on this page for you to have a go at too.

https://www.bbc.co.uk/bitesize/topics/z2882hv/articles/zxv482p

Insulators and Conductors

In most materials, the atoms look like this:



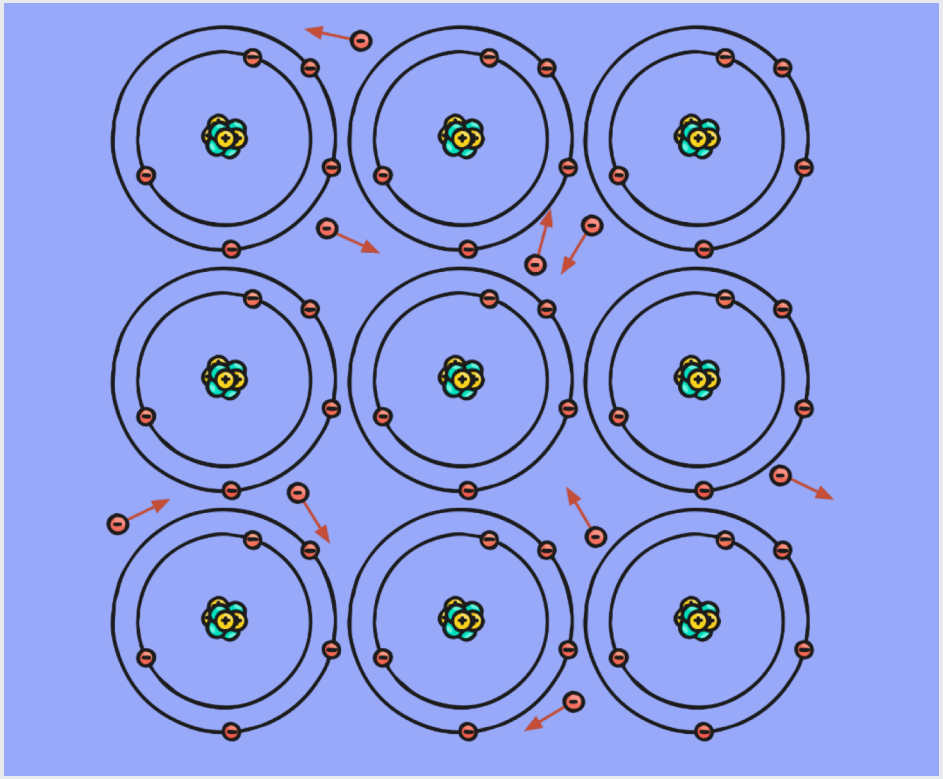
- The **protons** and **neutrons** are attracted to each other as a result of the **strong nuclear force**, and they form the nucleus.
- The **electrons** are attracted to **protons**, but this attraction is not as strong as the **strong nuclear force** which makes the **protons** and **neutrons** stick together.
- Instead, the attraction means that the **electrons** orbit the **protons** in the nucleus.
- The **electrons** **cannot move freely** in these materials and therefore no **electric current** can be produced.

These materials are called **electrical insulators.**

If you create a circuit which includes an **electrical insulator**, it will be **incomplete** (even if it looks complete!) as no **electrons** will flow through the material.

Insulators and Conductors

- In some materials, some of the **electrons** are ***free electrons*** and can move.
- If you create a circuit with these materials, the ***free electrons*** can be made to move in one direction, creating an electric current.
- These materials are called **electrical conductors.**



N.B. If the circuit has not been set up correctly, then the electric current cannot flow, even through a conductor. Ensure that you check that you have connected all parts of the circuit together.

Today's activity

We know that many electrical conductors are metals such as copper, iron and steel and many electrical insulators are made of plastic, wood, glass and rubber. Your task today is to complete your table with examples of items that are conductors and insulators. Your activity will be available as a word document and an example has been done for you.

Conductors	Insulators
E.g. silver spoon	E.g. wooden table