

Electricity and safety

Outstanding Science Year 4 - Electricity - OS4E008

National Curriculum Statutory Requirements

4E5 - recognise some common conductors and insulators, and associate metals with being good conductors.

Learning Objective



I can identify situations when electricity can be dangerous.

Me:   

Teacher:   

Mains electricity

The electricity that we use in our school Science lessons comes from **cells** and **batteries**. However, homes, schools and other buildings run on a more powerful type of electricity called **mains electricity**.



Mains electricity is generated in a **power station**. The electricity travels down thick wires called **cables** until it reaches a building called a **substation**. From the substation, wires travel to all of the different homes and buildings to provide them with mains electricity.

We use mains electricity by placing a plug into a socket and turning the switch on. This powers our devices, such as washing machines, televisions and computers.

Mains electricity can be very dangerous because it is extremely powerful. If mains electricity travels into your body, it can easily hurt or kill you.

The dangers of mains electricity

Mains electricity can be dangerous in three main ways:

1. Your body conducts electricity.

The electricity will travel into your body and electrocute you. This is why all of the wires and electrical components in a mains electricity device are covered in **insulation** - to stop the electricity travelling into your body. If you touch a wire which has damaged or missing insulation, the electricity is free to flow into you.

2. Metal conducts electricity.

If you are touching a metal object which is also touching an electrical circuit connected to mains electricity, electricity can flow through the metal object and into your body.

3. Water conducts electricity.

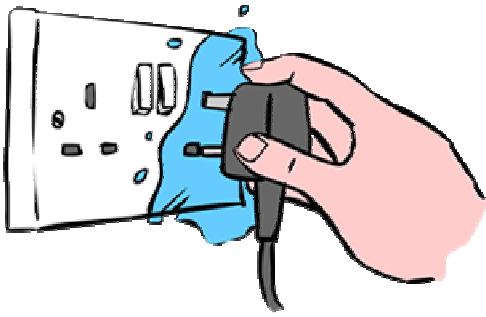
Water can create an electrical '**short circuit**' between an electrical device and your body. This allows the electricity to travel into your body and kill you.

How to be safe around mains electricity

If you ever see a mains electrical device being used unsafely, stop using it immediately and tell an adult. Never use damaged electrical equipment.

Activity

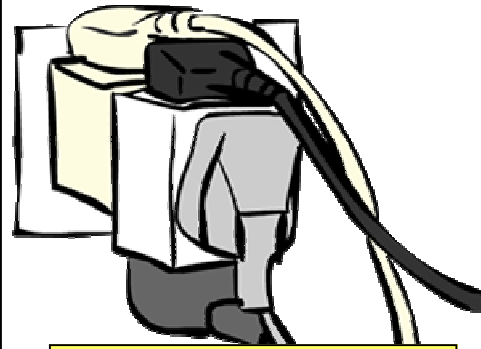
On the following pages, you will see pictures of electrical dangers. Explain what the danger is in your own words.



Wet plug socket

What is happening and why is it dangerous?

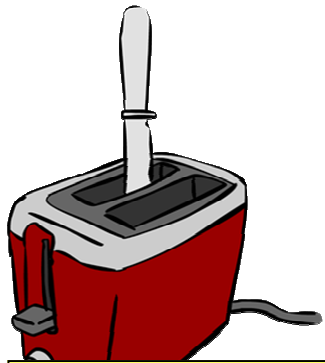
How can this situation be made safe?



Too many plugs in a socket

What is happening and why is it dangerous?

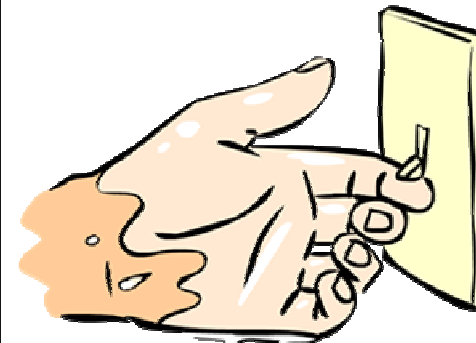
How can this situation be made safe?



Metal knife in toaster

What is happening and why is it dangerous?

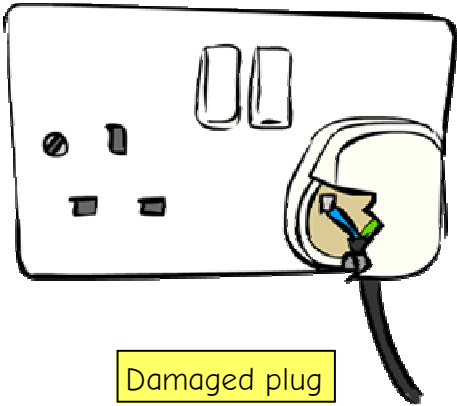
How can this situation be made safe?



Wet hands turning on light

What is happening and why is it dangerous?

How can this situation be made safe?



Damaged plug

What is happening and why is it dangerous?

How can this situation be made safe?



Flex in front of lawnmower

What is happening and why is it dangerous?

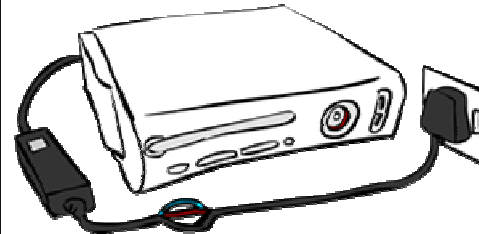
How can this situation be made safe?



Using hairdryer in bath

What is happening and why is it dangerous?

How can this situation be made safe?



Damaged electrical flex

What is happening and why is it dangerous?

How can this situation be made safe?
