Circuits and Conductors

Learning Objective:

To understand how to keep safe around electrical appliances.

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Think, pair, share...
What electrical devices can you think of that you would find in your home?

How many can you think of that use mains electricity to power them?

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Think, pair, share...
What electrical devices can you think of that you would find in your school?

What's the biggest one you can think of?
What's the smallest one you can think of?

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Have you ever been told not to touch a plug socket before?

Why do you think you were told this?

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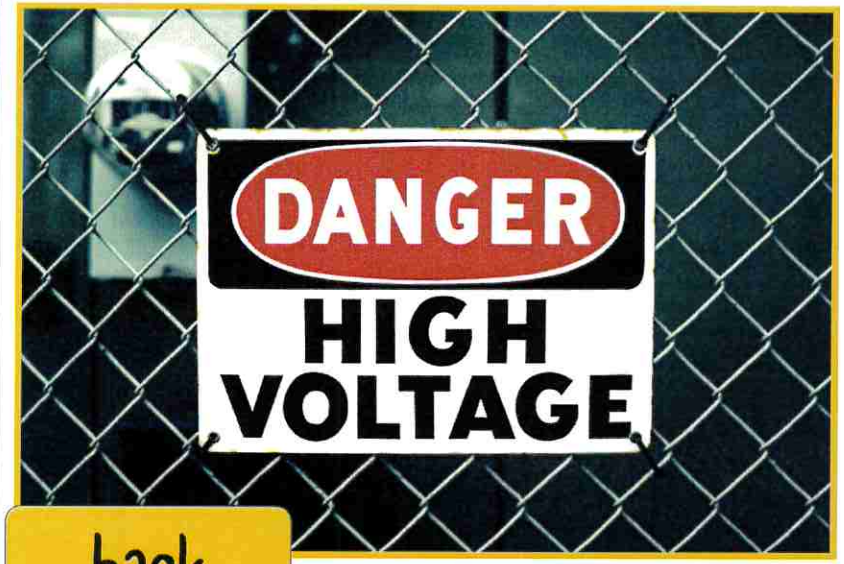
Being shocked by electricity can be really dangerous. The electrical current will pass quickly from the socket, through our body, which can harm our muscles and other important organs.



Being shocked caused your muscles to jerk and spasm. In bad cases, being shocked can lead to hearing or vision loss, heart attacks and sometimes even death!

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In our homes, the plug sockets are powered by what we call mains electricity. This has a relatively high voltage which is dangerous and we must make sure we use it sensibly.

Most appliances and plugs have a protective layer that electricity can't pass through to keep us safe. The socket also has switches to turn off the electrical current for that plug.

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Can you remember another way we can power our devices without plugging them in the whole time?

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Batteries are a way we can store electricity to power devices we don't want to be plugged in the whole time.

Batteries have a lower voltage than mains electricity. There are fewer risks when using batteries, but we still need to use them sensibly.

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If a battery's casing is damaged or has changed shape (such as swelling) you must tell an adult who will dispose of it carefully. The liquid inside a battery can be extremely harmful to our skin. NEVER put a battery in or around your mouth.

When charging, batteries can also become quite warm. It's important to disconnect them when they're done charging to prevent them overheating.

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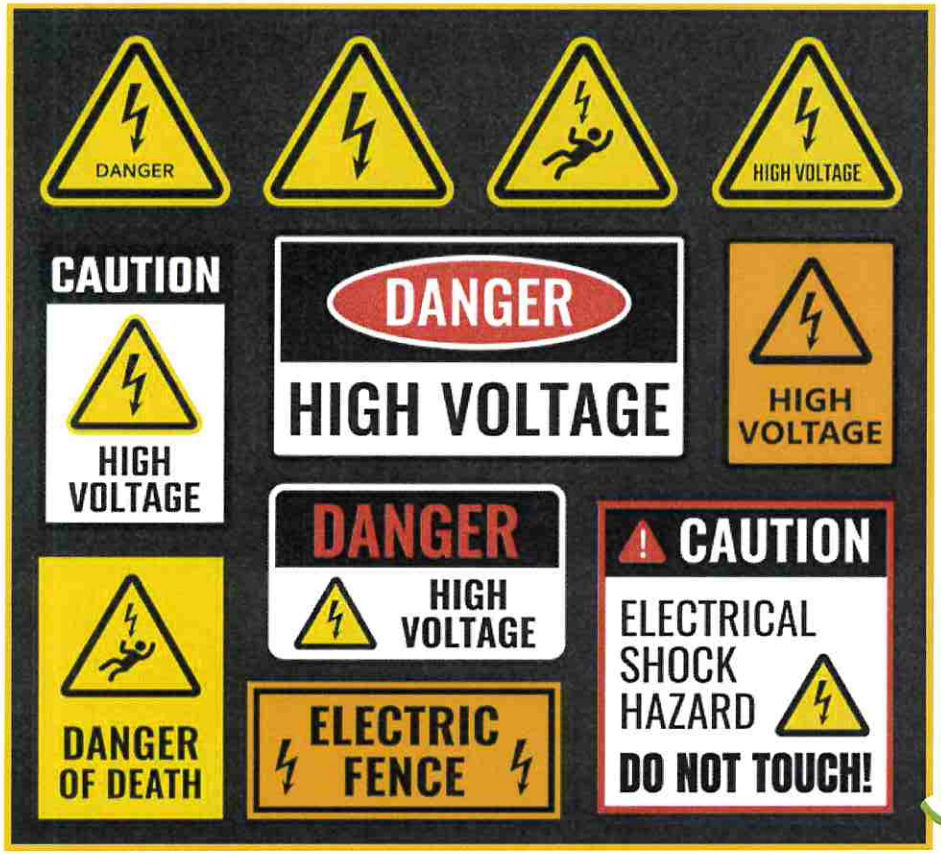

Signs like this warn us of areas that have high voltage electricity.

Whenever you see a sign like this, stay safe by staying away from the area.

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Think, pair, share...

Do you know of any other electrical hazards we need to avoid, or ways we can use electricity safely?

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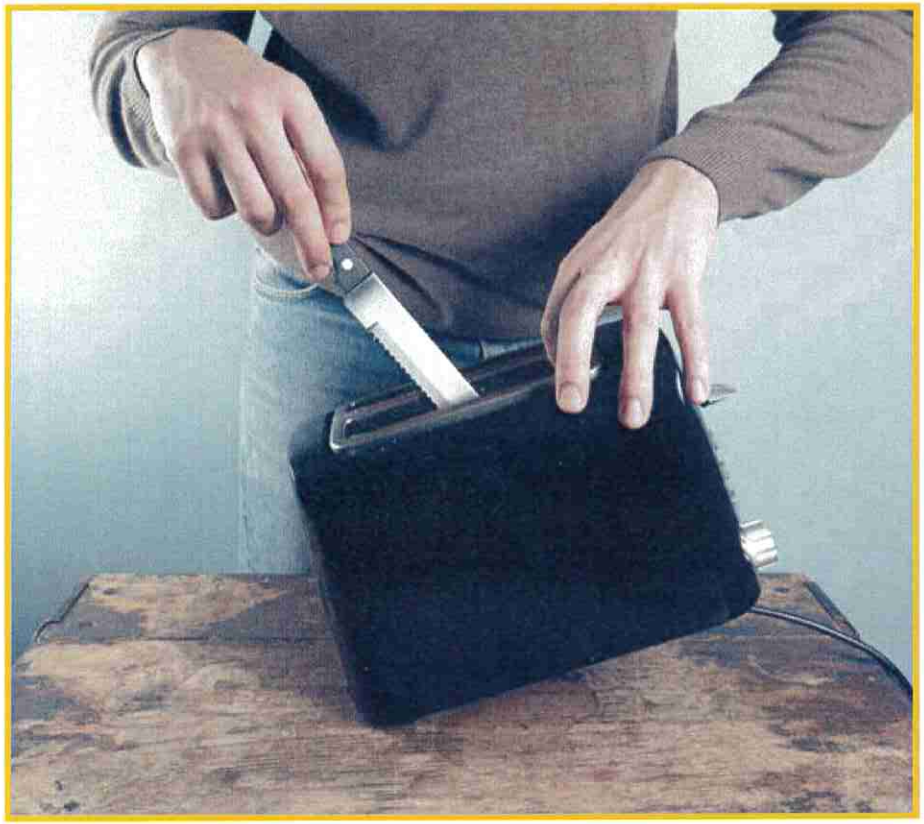

We already know we shouldn't put our fingers near the holes in sockets, but we also mustn't put anything metal into sockets or into electrical devices.

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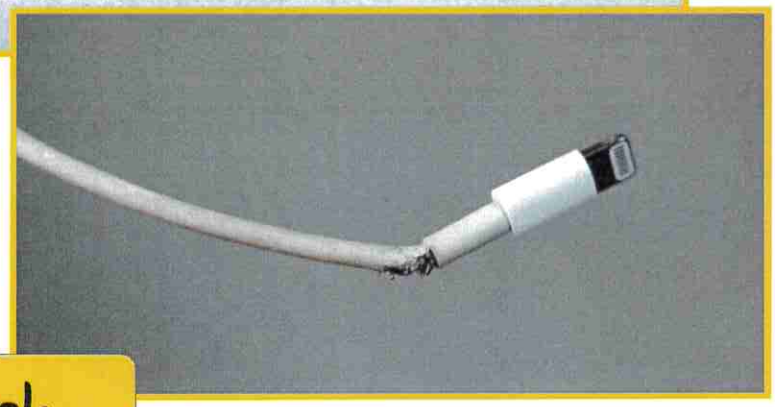

Having lots of wires around on the floor can be a trip hazard. Jerking or pulling on a wire (like tripping over it, or pulling the plug out by the cord) can damage the wire, exposing the metal inside. This is unsafe and can even cause fires!

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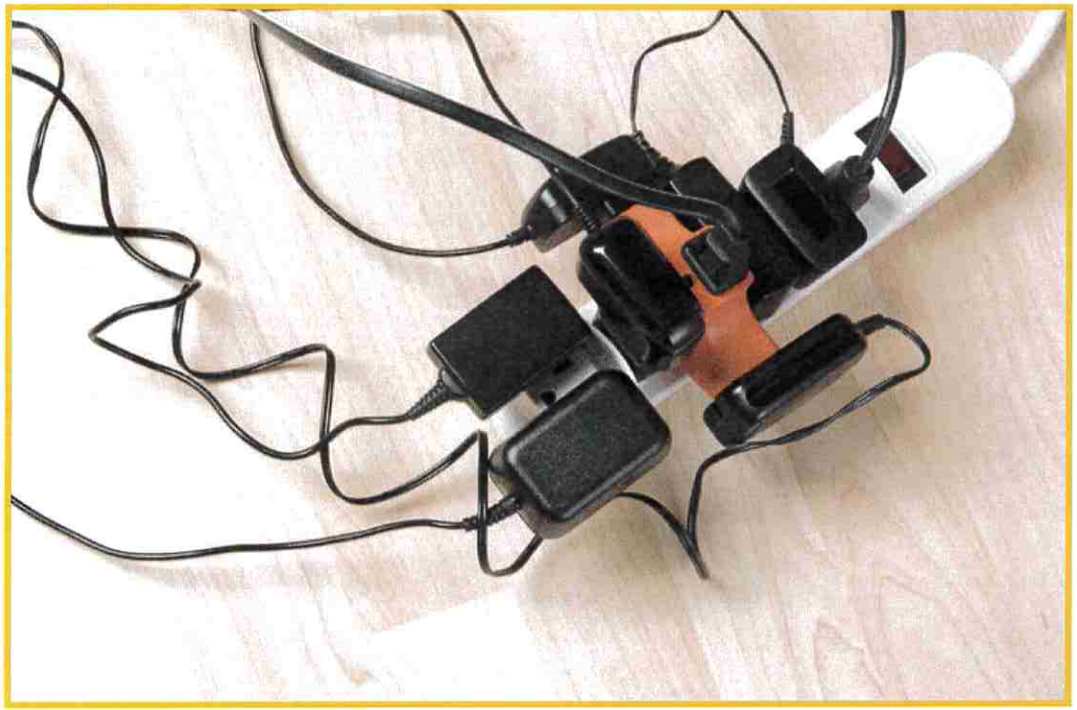

Plugging too many devices into one power socket can create a fire hazard. Sparking plugs are also dangerous and need to be fixed before using again.

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Water and electricity make a dangerous mix! Water travels very quickly through water, so unless a device is specifically designed to be used near water (like an electric toothbrush) it is important to never mix electricity and water.

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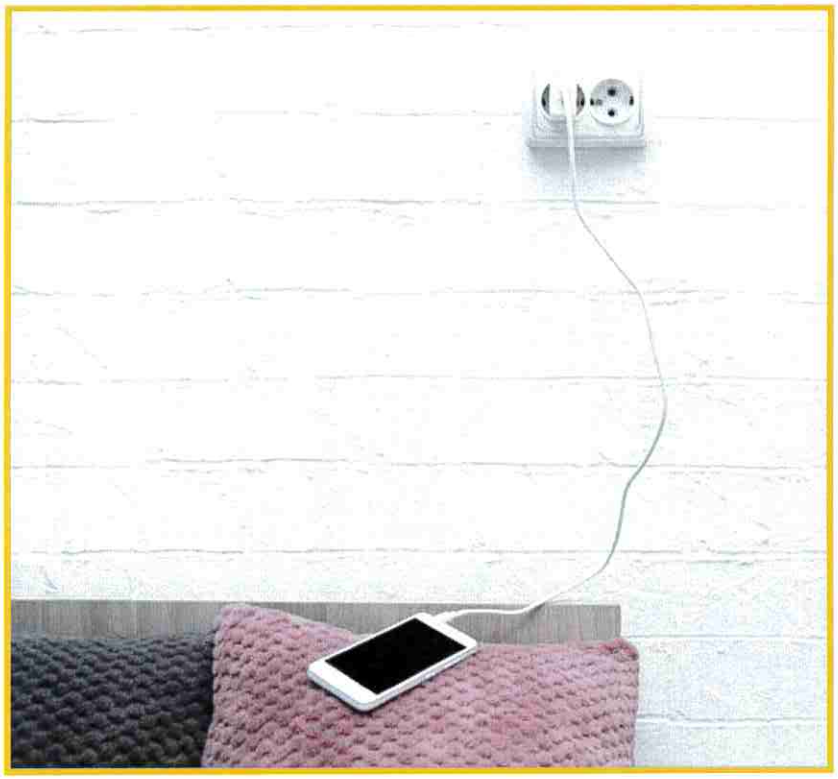

We should be sensible about where we charge our devices. When charging they can get hot, and there have been cases where the cable (being damaged) has caused sparks. If the device was on a flammable surface, it can start a fire.

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Are you ready to show what you've learnt about staying safe when around electricity?

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Plenary

In the UK you won't find a normal mains plug socket in the bathroom. Why do you think this is?

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Plenary

It's because the electricity from a normal mains socket is too powerful and bathrooms have lots of water in them. This increases the risk of getting electrocuted.

There are special low power plugs for things like toothbrushes and shavers. This is also the reason many light switches are outside the bathroom too!

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