



Circuits and Conductors

Learning Objective:

To investigate the difference between mains and battery-powered electricity.





**What is mains
electricity?**

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Mains electricity is electricity that comes from a power station and is sent to your home, school or any other place to be used for appliances. When you put a plug into a socket you are completing the circuit that leads from the plug, along wires and pylons and back to the power station.

The electricity from power stations is much more powerful than the electricity from batteries. Even though the mains electricity can be used to power more appliances than batteries, it is also much more dangerous.



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It is important to remember that mains electricity is dangerous. Getting an electric shock from mains electricity can cause severe injury and even death.



We are surrounded by electricity every day. What can we do to make sure we stay safe around electricity?

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CAUTION
Risk of
electric
shock

Whenever you see this sign you need to stay away. You might get an electric shock.

- ▶ Never insert anything other than a plug into a plug socket.
- ▶ Never mix electricity with water. No electrical appliances in the bathroom. Never touch an electrical appliance with wet hands.
- ▶ Don't leave electrical wires trailing on the floor.
- ▶ Never overload a plug socket. It could cause a fire.

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Which of these appliances use mains electricity and which are powered by batteries?



washing machine



mobile phone



television



lamp



TV remote



toaster



torch



watch

BACK



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Mains



washing machine



television



lamp



toaster

Battery



TV remote



mobile phone



torch



watch

What do you think is the main difference between appliances that use mains electricity and appliances that use batteries?

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The main advantage of powering objects using a battery is that they become portable. When you use mains electricity you are limited to where the plug sockets are. However, a battery's power does not last forever. Batteries need to be replaced or recharged when they run down but mains electricity has a constant flow of power.

This girl is able to use her mobile phone anywhere she wants because it is powered by a battery.



The TV has to stay in the same place because it needs to be powered by the plug socket which can't move.

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