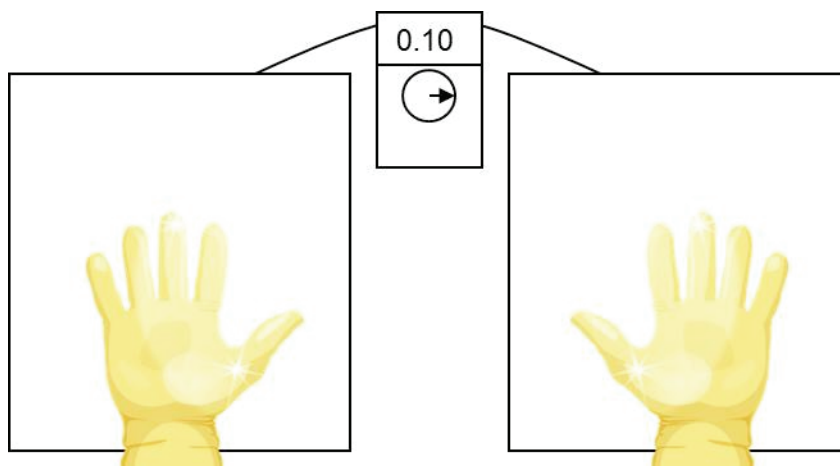


**Hand Battery** : Use two metal plates and a person to complete an electrical circuit.

# Hand Battery

**Complete the circuit!** Place your hands on the metal plates to complete the circuit!



A solar cell has two **electrodes**. These have to be connected up to make a circle which we call an **electrical circuit**.

One side is connected using wires and the other side is connected up with something called an **electrolyte**.

When you put your hands on the metal plate electrodes, you become the **electrolyte**. The **current** can flow through your sweat and your body fluids so a reading is seen on the meter.

## **Activities**

1. What happens if you swap hands?
2. Try holding hands with someone else and put your free hand on one of the plates and get your partner to put their free hand on the other one. Do you still complete the circuit? Does the number on the meter get bigger or smaller?
3. Try again with your hands a little wet and have a look at the number on the meter. Is it bigger or smaller than when you had dry hands?

# Hand Battery

## Equipment

- 2 A4 sized metal plates, e.g. copper and aluminium
- 2 wires with crocodile clips
- Multimeter/ammeter

## Instructions

- Connect the metal plates to the multimeter using the wires.
- Put a hand on each plate. You should see a reading of current and voltage on the multimeter whilst you are touching both of them.

## What is going on?

- When you touch the metal plates, the thin film of sweat on your hands acts like the acid in a battery – the **electrolyte**
- A **chemical reaction occurs**; your hand takes tiny particles called **electrons** away from the copper plate, and they can flow through your body to the aluminium plate
- The extra electrons in the aluminium plate then flow through the wires back to the copper plate
- We've completed the **circuit**, a circle around which the electrons can flow! This flow is called an **electrical current**, or **electricity**!
- The metals have to be different because it is the difference in charge between the two metals which creates a flow of electrical current.

## Activities

1. If you swap your hands, the current still flows but in the **opposite direction** round the circle. The value on the multimeter will switch from a positive to a negative number.
2. Your body resists the flow of current, so if two people are joined together in a circuit, the current is lower as there is more **resistance** in the circuit.
3. Having water on your hands **decreases** the resistance and the electrical current can flow more easily – the number on the multimeter will be bigger. This is why you should **never** switch on lights or handle electrical appliances when your hands are wet! It's okay to do it here because the current is very small, but it can be very dangerous when there is a large current flow!

