

The background of the page is a stylized illustration of a night camp. It features a dark blue sky with a crescent moon and a few stars. In the foreground, a hand holds a glowing orange mini torch, with white lines radiating from it to represent light. The background also shows a green tent, a campfire with orange flames, and silhouettes of evergreen trees. The overall scene is reflected in a dark blue surface below, creating a symmetrical effect.

Shine on!

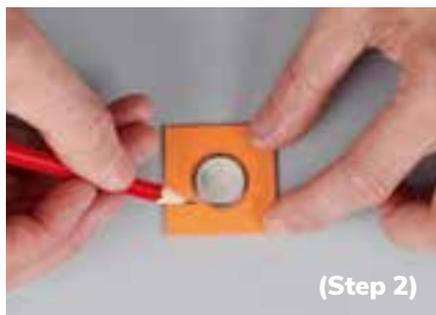
Make a mini torch to take on your next camp

**Suitable for
Cubs, Scouts
and Explorers**

Before the invention of electricity and battery-powered torches, candles and oil lamps were used and were not very safe. For the modern torch to be developed, the early battery first needed to be improved, as previous designs spilt or broke easily. The first dry cell battery was invented in 1896 and three years later the English inventor, David Misell, invented a patent for the first-ever torch. It was in the shape of a tube, which held the batteries, similar to the ones we still use today.



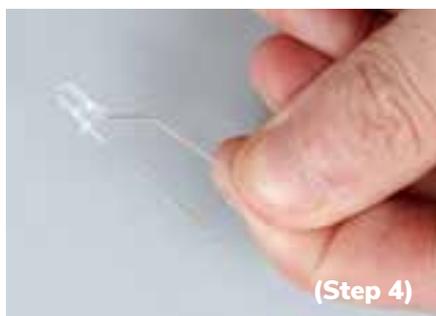
(Step 1)



(Step 2)



(Step 3)



(Step 4)



(Step 5)



(Step 6)

Time needed 30 minutes

Badge



The Institution of Engineering and Technology (IET) partners the Scout Electronics Activity Badge

Partner



Outcomes

Your section will discover how to build a simple torch and learn about circuits: how they work and how to construct one. The bent leg of the LED acts as the 'switch'; when pressed, the two contact strips of the LED light connect to complete the circuit. This allows the electricity to flow and power the LED.

Taking it further

Ask the young people to construct a further two simple circuits. They can design the circuits themselves, or they can be from a book or magazine. They should also explain the possible uses of the circuits they build.

More information

Visit scouts.org.uk/iet for more information on the Institution of Engineering and Technology, one of the world's largest professional engineering institutions, which aims to encourage young people to consider further learning and careers in the engineering and technology sector.

You will need (per torch)

- an LED light
- 3V button cell battery
- foam in different colours
- double-sided sticky tape
- sharp scissors
- pen/pencil

Instructions

1 Encourage the young people to think about what shape they want their torch to be, then ask them to cut the foam to size carefully using the scissors.

2 To mark out where they want the battery to go, ask them to place the battery onto the foam, draw around it, then cut a hole that's snug enough to fit and hold the battery securely. (Note: button cell batteries can be very harmful if swallowed, so ensure the young people handle them sensibly.)

3 The next step is to cut two more pieces of foam the same size and shape as the one they've already cut. They can use different colours for the torches if they wish.

4 Show your section how to bend one of the legs of the LED (bend the positive leg, the longer one), then layer the three pieces of foam together and cut an indent into the top of them, big enough for the LED.

5 The LED is then slid into the middle, with the legs either side of the battery and the bent leg against the 'positive' side. The layers should then be stuck together using the double-sided tape.

6 Ask the young people to cut two more pieces of foam to

create the outer casing of their torch, and then attach these using the tape.

7 To turn the torch on, squeeze the point where the two LED legs touch the battery to complete the circuit. You can test them by switching off the lights in your meeting place (don't forget to warn everyone first), or take them on your next camp.