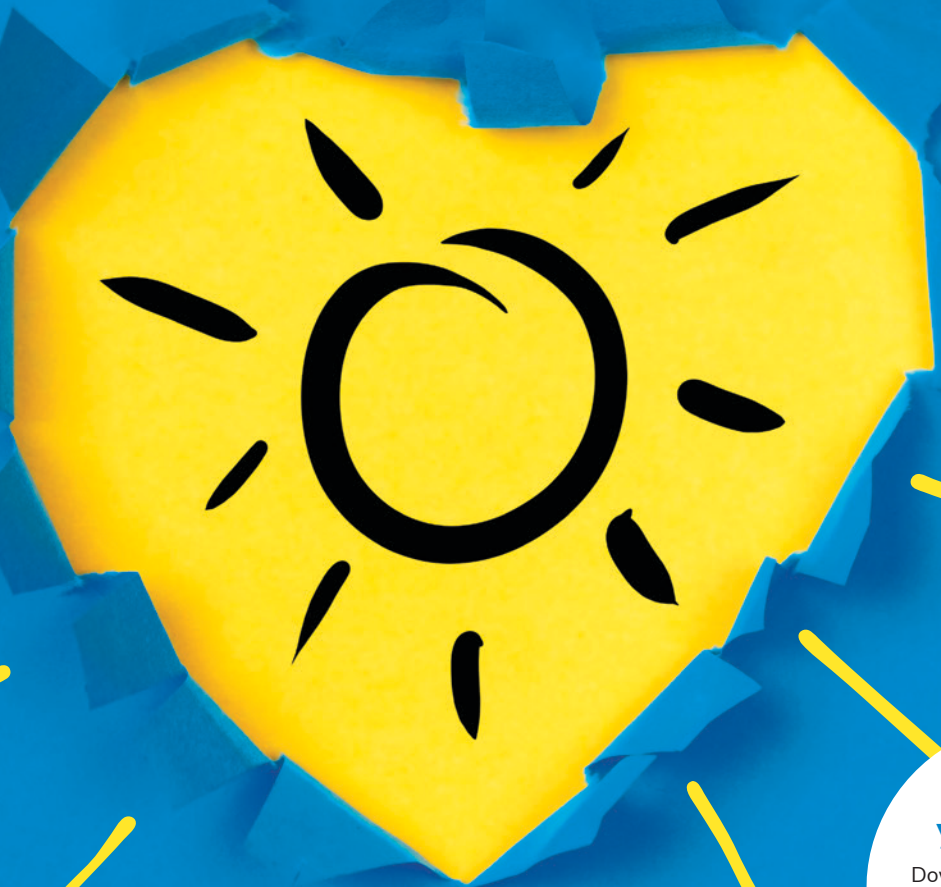


Solar-powered planet

Help young people to explore the energy of the future by making a circuit powered by the sun

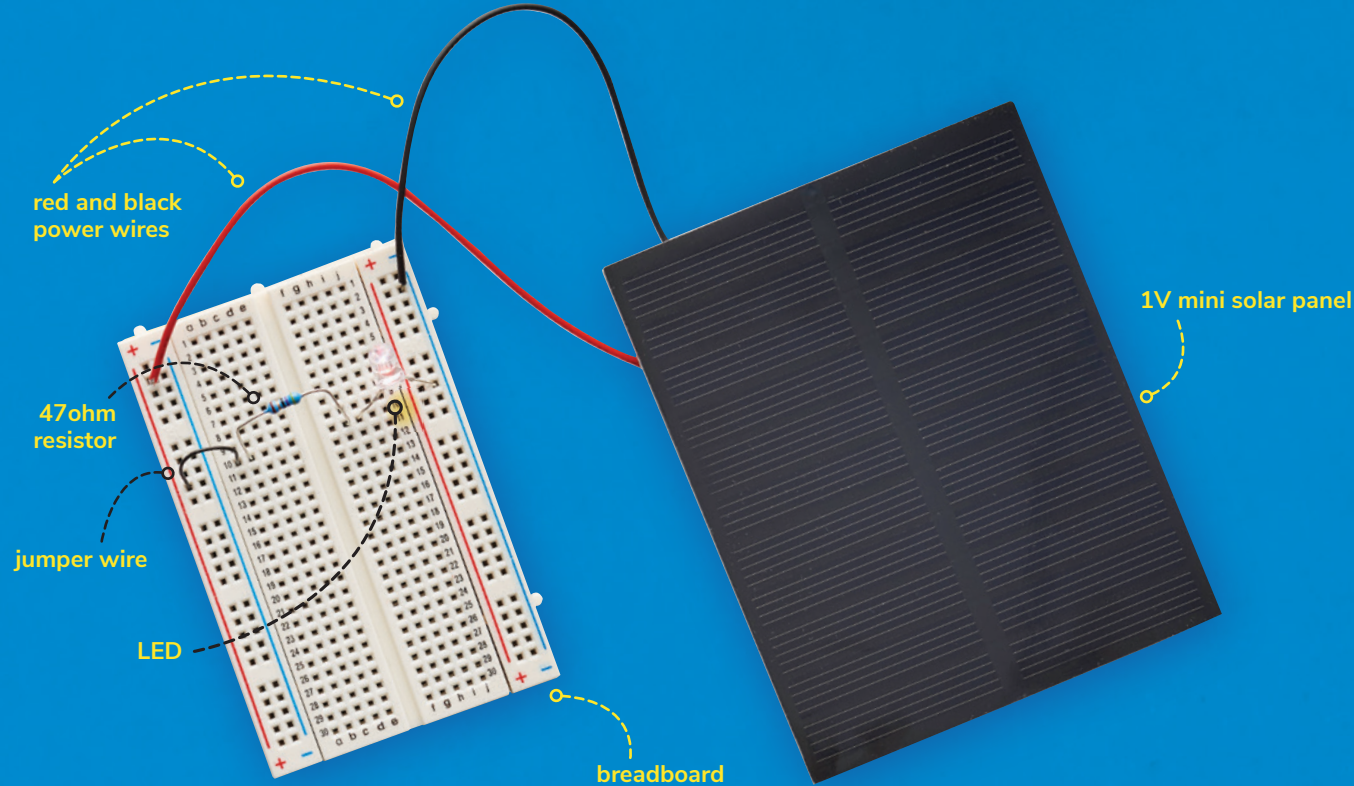


Before you start...

Download a step-by-step guide with photos for this activity at: scouts.org.uk/supporters/iet/.

Ray of light

Solar power is already one of the most popular types of renewable energy, and experts predict that solar will account for a bigger amount of energy use in the future, due to diminished traditional energy resources and their damaging emissions. Solar panels work by absorbing sunlight and then converting it to usable energy. It then flows through the electrical panels in our homes for us to use.



Suitable for Scouts and Explorers

You will need (for each group)

- standard 5mm LED (approx 15p each)
- 47 ohm resistor, eg a carbon film resistor (approx £10 for pack of 1,000)
- small solar panel or cell capable of supplying 1 volt, with red and black power wires for connecting to breadboard, eg a 1V mini solar cell (approx £8 each)
- 0.6mm single core wire (jumper), pre-cut to size and the insulation removed from both ends (approx £3 for 11m)
- 390 tie point prototyping breadboard (approx £6.50 each)
- sunlight (free!)

Instructions

- 1** Split your section into small groups. Each group will make their own solar-powered planet.
- 2** On the breadboard, place a jumper wire from the positive side of the left power rail, which is labelled with a '+', to one of the breadboard rows.
- 3** Place one lead of the 47 ohm resistor into the same row the jumper wire was placed on the breadboard. Place the other lead of the resistor in the same row, but on the other side of the small trench running down the middle of it.
- 4** Connect the positive leg of the LED (the longer one) into the same row as the second lead of the resistor placed in step 3. Then place the shorter, negative leg of the LED into the negative power rail on the right-hand side of the breadboard: you can use any opening in the column labelled with '-'.
 - 5** Set the power output from the solar panel to 1 volt.
 - 6** Connect the red, positive (+) wire from the solar panel to the left-hand side positive rail on the breadboard. The wire can be placed in any opening in the positive rail column.
 - 7** Connect the negative lead from the solar panel into the right-hand side negative rail on the breadboard. This will complete the circuit. If enough sunlight (solar power) is present, the LED will light up!
 - 8** Ask the young people to move their solar circuits to a window. Explain that they can control when the LED is on or off by changing the amount of energy (light) that gets to it. Suggest that they try putting their hand over the solar panel to see what happens – the LED should go out.

Time needed 60 minutes

Badge



IET partners the Scout Electronic Activity Badge

Partner



Outcomes

Young people will construct a simple circuit using solar energy to turn on an LED that will help them appreciate the growing importance of greener energy. The solar power output is interactive, as the young people can easily change the intensity of the LED by removing/reducing the power source, either by putting their hand over the panel or moving it away from direct sunlight.

More information

For more badge resources, activity sheets and event opportunities visit: scouts.org.uk/supporters/iet/.