



Credit: Getty Images

Follow the energy path

This experiment shows the path of energy through various systems, ending with its gradual dissipation, which can be measured using a thermometer.

You will need

- Disposable plastic beaker
- 2 similar microwave-oven-safe mugs
- Microwave oven
- Accurate thermometer
- Some water

Steps

1

Fill the plastic beaker to the brim and empty it into a mug. Repeat with another empty mug.

2

Measure and record the temperature of the water in each mug.

3

Place the mugs in the microwave oven at an equal distance from the centre. Heat for two minutes. Remeasure and rerecord the temperatures.

4

Pour the contents of one mug into a flat metal dish or container (a metal takeaway tray would be ideal).

5

Continue to measure temperatures every 5 minutes for 1 hour, charting any temperature changes on graph paper.

Analysis/ discussion

How hot will the water get during the two minutes it is heated in the microwave?

Which one will cool down fastest, and why?

Draw out the energy path, working all the way back to the Sun's energy being absorbed by plants and animals (Energy flows from sunshine to plants and animals and on to the fossil fuels that they become. Energy flows as these are burned in a power station to make electricity, which powers the microwave. Here the energy flows into the water and then back out into the atmosphere).