# Procedure

Apparatus

- Two wooden blocks
- Buzzer
- Batteries
- Wires to connect up the circuit
- Aluminium foil to make four strips 8 cm by 1 cm
- Self-adhesive paper labels to make four strips 6 cm by 1 cm
- Scissors
- Sticky tape
- Tealight candle
- Tongs
- Heatproof mat

Setting up the circuit

Your must wear a labcoat and goggles and your circuit must be set up on a heatproof mat.

1. Make three or four bimaterial strips by sticking a 6 cm x 1 cm length of self-adhesive label to an 8cm x 1cm strip of aluminium foil leaving 1 cm of foil uncovered at either end of the strip.

2. Tape one end of the strip, paper side up, to a wooden block so that the aluminium touches the end of a length of wire. Make sure that most of the strip overhangs the block as shown in the diagram.

3. Tape another length of wire, the contact, to a second wooden block so that the uninsulated end overhangs by about 1 cm. Position the contact so that it is a couple of centimetres above the aluminium on the overhanging end of the bimaterial strip as shown in the diagram.

4. Connect the buzzer and battery, in series, between the other ends of the two lengths of wire.
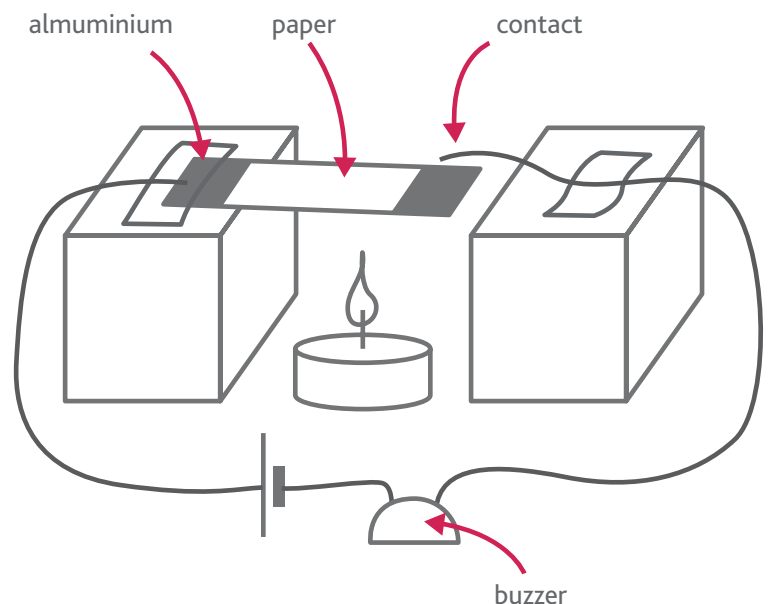
Bimaterial strip experiment observations

Labcoat and goggles must be worn.

Light the tea light candle and using a pair of tongs, slide it under the bimaterial strip for a second or two then remove it before the paper starts to burn. If this happens, replace it with a new bimaterial strip and take more care next time.

Record and explain your observations.

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The bimaterial strip can be a very sensitive device. If it is too sensitive it might sound an alarm just because it is a hot day.

It can be a very sensitive device that will respond to small changes in temperature. It is relatively easy to adjust. Try changing it to make it more sensitive and less sensitive.

Q. What did you do to make it less sensitive?

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Q. What did you do to make it more sensitive?

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Evaluate the bimaterial strip as a fire sensor (what are its advantages and what are its disadvantages)?

Advantages:

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Disadvantages:

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Q. How might such a device be incorporated into the IoT to produce a more rapid response to a fire?

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