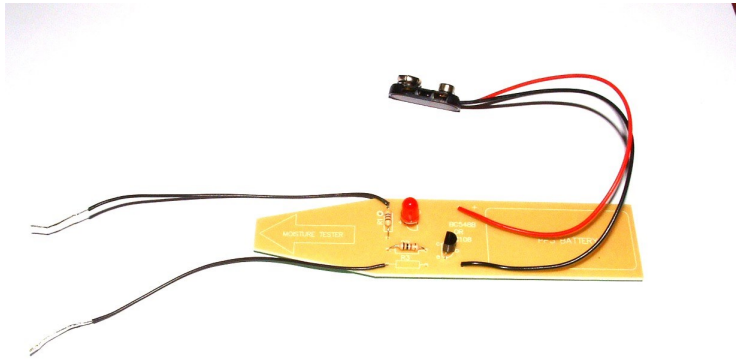
3a If you want to have probe leads as well as the array, cut two equal lengths of wire and remove the insulation from each end. Before soldering, insert the end of one wire into the R1 terminal nearest the edge of the board and poke the other probe wire through the R3 hole nearest the pointed end of the board and solder them to the board.



Top Tip:
Tape the Battery Connector wires to the PCB near to where they are soldered—this will prevent breakage

4. Testing

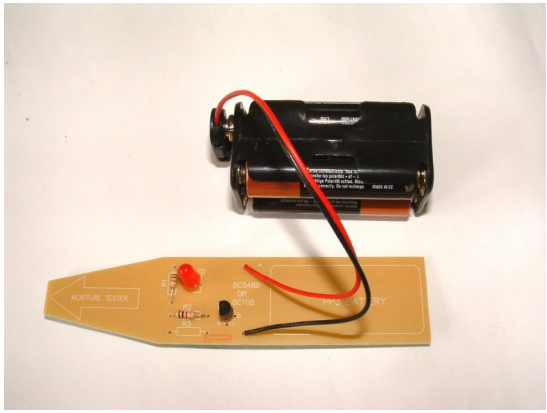
Connect a 6v or 9v battery to the connector and check that the LED lights up when the metal strips on the array are connected by a spare bit of wire or when the two wire probes touch each other. Now with dry hands check that it partially lights when you touch the array and fully lights when you touch the array with wet hands.

* With the Sensor, invent a way of setting off an alarm if the bathroom floor gets flooded.

This is an Education Kit – not a Toy.
It requires adult supervision during construction.
The Kit contains small parts and is NOT suitable for children under 8yrs of age.

'Rapid' MOISTURE SENSOR

INSTRUCTIONS



The Electronics should look like this when finished.

The LED will light up if there is moisture on the probe array. You can test it by touching the array with a wet finger which should cause the LED to light up.

You can use the sensor for checking whether a plant has been watered or raising an alarm if it rains or if the bathroom or kitchen floor gets flooded.

Tools Required

Resistor Colour Chart Insulation Stripper Wire Cutters
Nose Pliers Soldering Iron; Solder

Safety

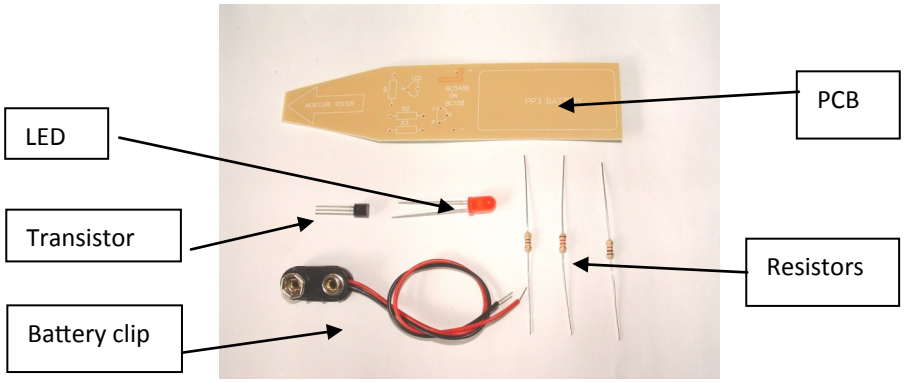
Observe all the rules when soldering or using any of the tools

Topics learned

- Electrical circuits
- The use of printed circuit boards
- Terminology and signs for electrical components
- Soldering and complying with Safety Regulations

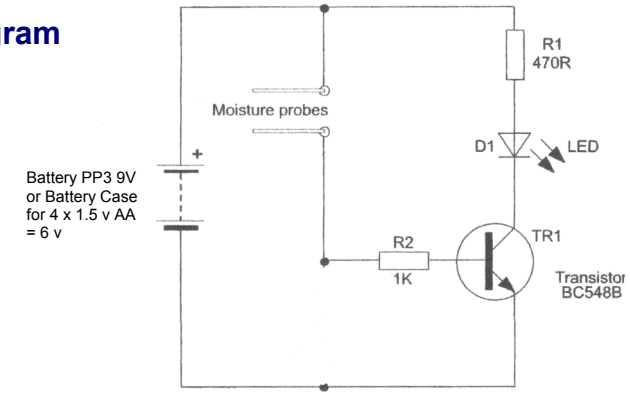
1. Check that you have all the parts

Put a tick in the table



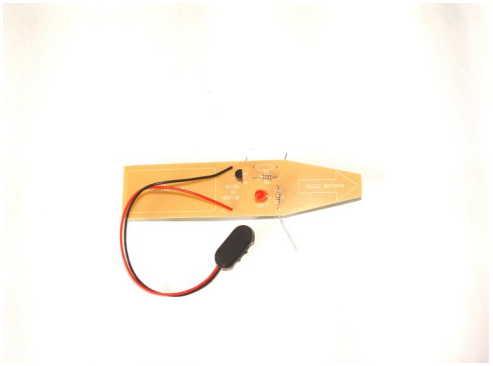
	Description	Number	Check
1	**Printed Circuit Board**	1	
2	**Battery clip**	1	
3	**BC548B Transistor**	1	
4	**Red LED**	1	
5	**R1 Resistor 470 ohm Yellow, violet, brown**	1	
6	**R2 Resistor 1000 ohm Brown, black, red**	1	
7	**R3 Resistor 2000 ohm Brown, red, red NOT USED**	1	
8	**Battery Case for 4 x 1.5 v AA.**	1	

2. The Circuit Diagram

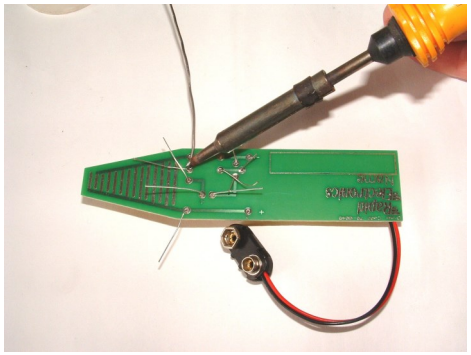


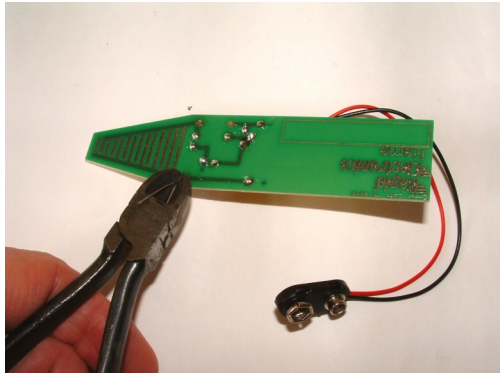
3. Assembly and Soldering

From your resistor colour chart decide which resistor is which. Bend the wires of the resistors and push them through the holes in the circuit board in the places marked (R1 and R2). The circuit board shows a resistor R3 but this is omitted. Assemble the LED with the 'flat' on the base in the position shown in the component layout diagram (The long leg is adjacent to the + sign.) Check that the transistor is in the right way round (shown on the circuit board) and bend the three legs apart slightly before trying to push them through the PCB. Fit the battery connector wires—red to the + sign and black to the—sign. After fitting, bend all the wires out a little to prevent the components falling out of the PCB prior to soldering.



Neatly Solder the ends of the component wires onto the back of the circuit board.
(See 3a on the back page if you want to have probes as well as the array.)





Be careful and neat with all the soldering and avoid bridging solder points on the board. When finished soldering clip the excess wires off with a pair of wire cutters.