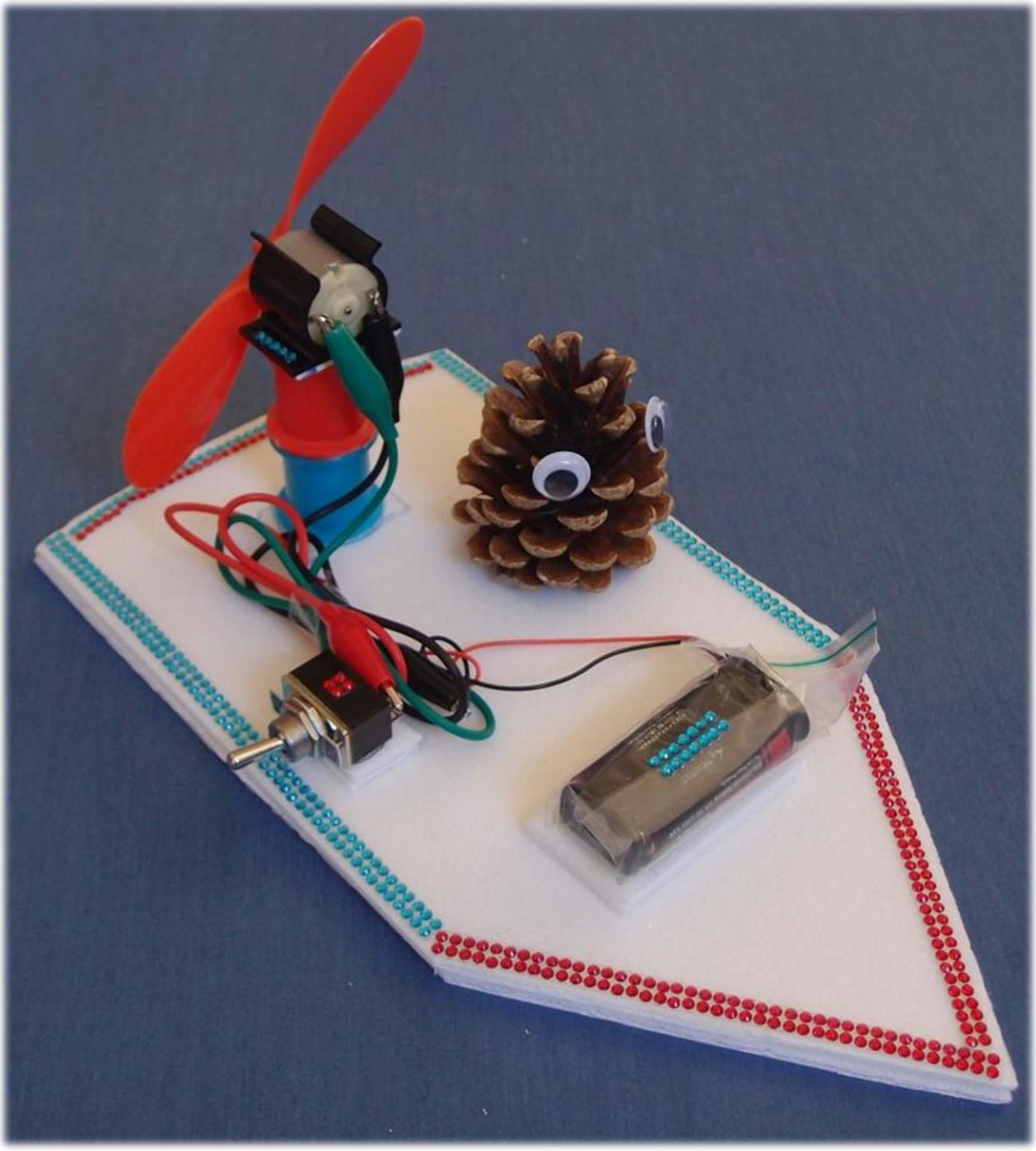
Fan Boat Instructions



Follow this step-by-step guide on how to make your own fan boat.

Associated resources:

- Fan Boats Lesson Plan
- Fan Boats Presentation
- Fan Boats Design Sheet
- Fan Boats Worksheet

<u>You will need:</u>

Parts

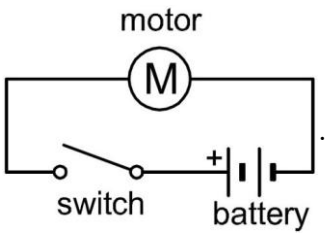
- 1 sheet of polystyrene foam
- 1 battery holder
- 1 snap battery connector
- 2 AA cells (zinc chloride, not alkaline or re-chargeable)
- 1 small plastic bag
- 1 toggle switch
- 1 motor
- 1 motor mount
- 1 propeller
- 3 crocodile leads
- 2 cotton reels
- 1 pine cone
- 2 wiggly eyes
- Rhinestone craft tape

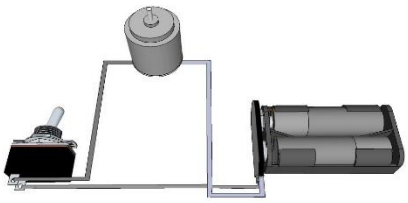
Tools and consumables

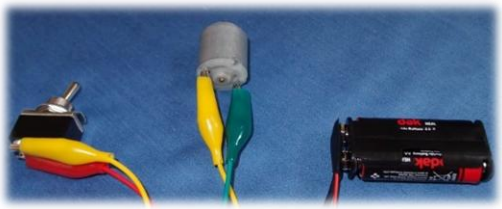
- Ruler
- Pencil
- Felt tip pen
- Large scissors
- Sheet of A4 card
- Sellotape
- Low melt temperature glue gun

Step 1

Make this circuit and check that the motor shaft goes round when you switch on, then switch off. Be careful not to short circuit your battery (i.e. connect the wires from your battery directly together) - they must go via the motor. Tie the wires from your battery snap in a reef knot as shown so that you are less likely to accidentally short circuit your battery.







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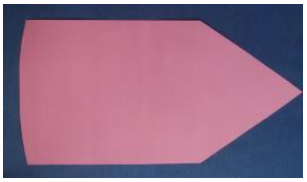
Step 2

Use the ruler and pencil to draw a boat shape on the A4 card. Make it 15 cm wide and use the full length of the card, as this will make a stable base for your boat. Cut out your template.

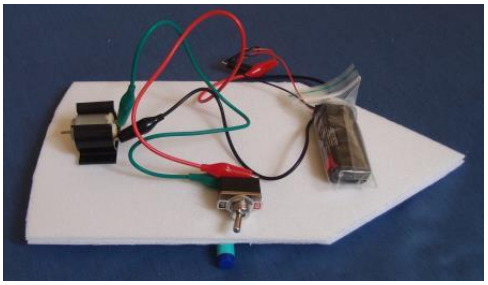


Step 3

Cut the polystyrene foam sheet in half, then draw round the template on each half and cut out. Glue the two halves together. Keep the template in case any of your pupils get into difficulties with their own designs and need to borrow it.

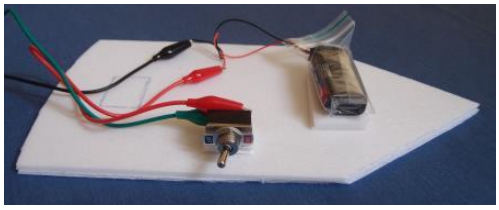
Step 4

Clip the motor into the motor mount. Place the battery inside the plastic bag with the wires sticking out, and Sellotape the bag tightly round it. This is to help prevent the battery getting wet. Place the felt tip pen or pencil under the middle of the boat as a pivot, and position the electrical parts so that the boat is roughly balanced. The motor can be at the front or the back. Mark the positions of the electrical parts on the boat base.



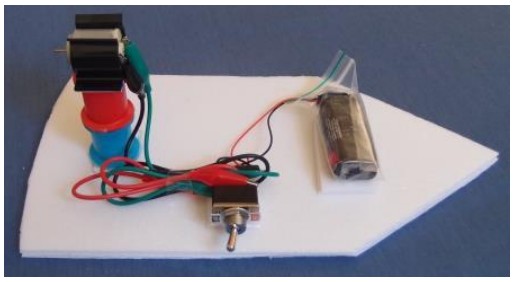
Step 5

Use the foam offcuts to make a double thickness platform for your battery, and another for your switch, to help prevent them getting wet. Glue these onto the boat base, then glue on the battery and the switch.



Step 6

Glue one of the cotton reels to the base where your motor will be fitted. Glue the second cotton reel on top. If the motor is at the front, fit it with the shaft facing forwards. If the motor is at the back, fit it with the shaft facing backwards, to avoid the propeller catching on the wires. Remove the plastic film from the self-adhesive pad on the motor mount and stick it onto the top of the cotton reel stack. Neatly fold and tape the wires in position.



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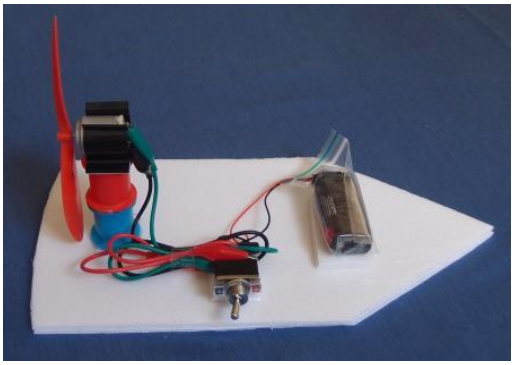
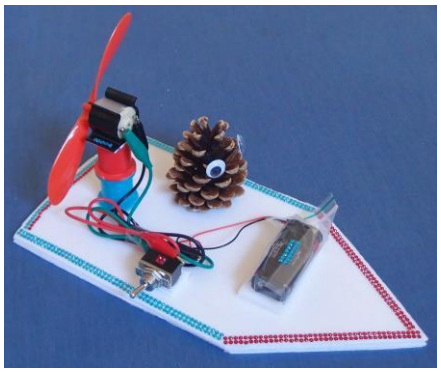
Step 7

Try to work out which way round the propeller should be fitted on the motor shaft. It should push air towards the back of the boat. The propeller blades are curved to 'scoop up' the air (like a spoon 'scooping up' soup), so the inside of the curve should be facing the back of the boat. Hold the motor and push the propeller onto the motor shaft. Turn the propeller all the way round with your finger to check it doesn't touch the cotton reels. If it does then slide the motor in its mount until there is a gap between the propeller and the cotton reels.



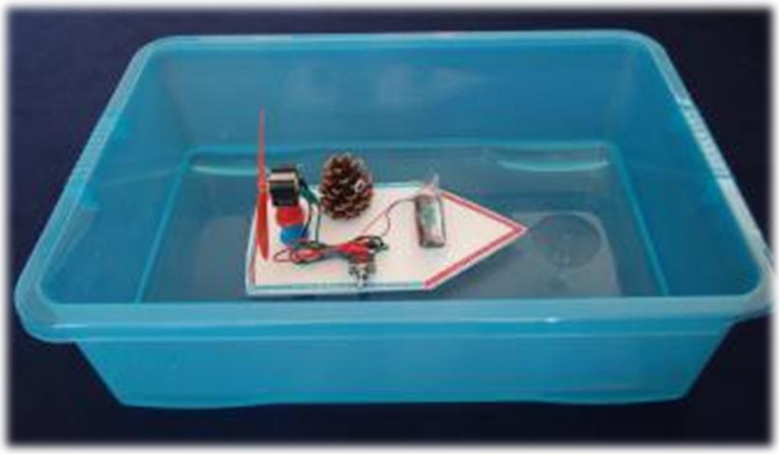
Step 8

Switch on and check the propeller blows air towards the back of the boat. If it blows air towards the front then swap over the two crocodile clips attached to the motor contacts, so that the motor turns the other way. Make a pilot for the boat using the pine cone and wiggly eyes, then decorate with rhinestone craft tape.



Step 9

Test out your boat in a paddling pool, water tray, sink, bath, shallow plastic box or similar.



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