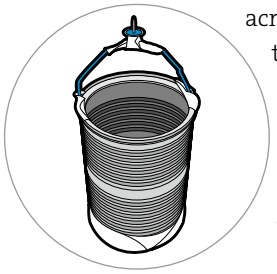
CREATE A SOLAR TOWER

Harness the warmth of the sun by making a heat-powered tower

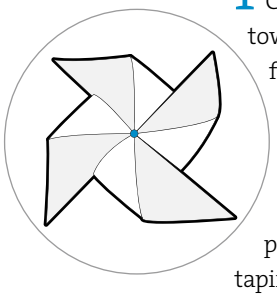
SUITABLE FOR CUBS, SCOUTS AND EXPLORERS

1 Split your section into pairs. Each pair will make a tower, so make sure you have enough equipment for everyone. Ask each pair to tape three cans together to make their tower, ensuring there are no sharp edges.



2 Unfold a paper clip and use it to create an arch across the top of the tower. Tape it in place.

3 Tape a drawing pin at the top of this arch.



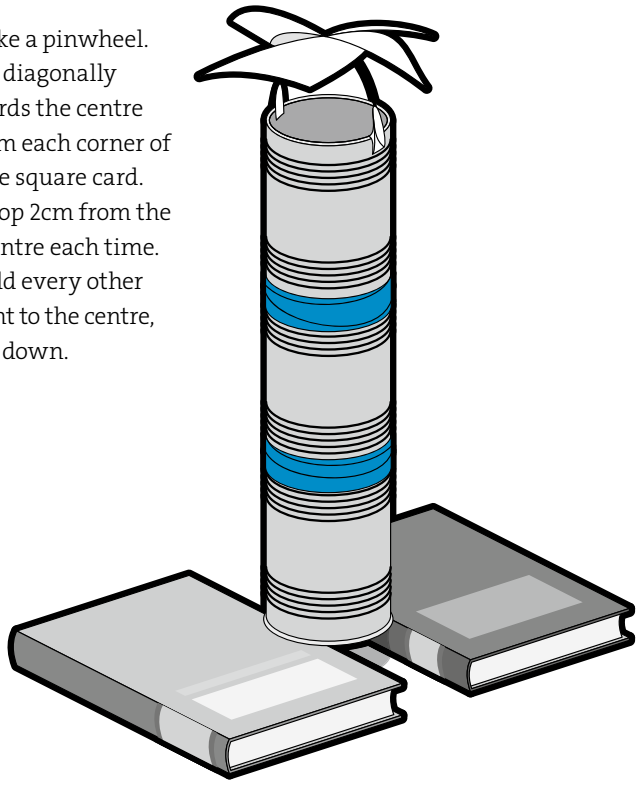
4 Make a pinwheel. Cut diagonally towards the centre from each corner of the square card. Stop 2cm from the centre each time. Fold every other point to the centre, taping down.

5 Balance the pinwheel on the drawing pin on top of the tower.

6 Put the two books next to each other and then move apart by about 2–3cm.

7 Position the tower on top of the books over a space to allow air to flow from below.

8 When this tower is placed in the sunlight, warm air inside the cans will create a convective updraft and spin the pinwheel – an example of renewable energy.



TIME NEEDED

30–40 minutes

EQUIPMENT NEEDED

For each tower:

- Three large, clean, empty tin cans (top and bottom removed)
- Tape
- Paper clips
- Drawing pins
- A 15cm square of thin white card
- Four hardback books, same size

THIS ACTIVITY LINKS WITH THE FOLLOWING BADGES

Cubs Environmental Conservation Activity Badge

OUTCOMES

The young people will learn how to create a thermal tower, which will help them to understand simple thermodynamics. They will also be introduced to the idea of how a convective updraft can be used to spin a wheel, and how this is a source of renewable energy. To find out more about thermodynamics, go to tinyurl.com/qzqz3gf.

TAKE IT FURTHER

Now that the young people have found out about the affect of warm air, they can find out about what 'warm' and 'cold' air masses do to the typical weather in your area and note down the effects of land and sea on air masses.

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Illustration: Tom Hughes