

WORKSHEETS

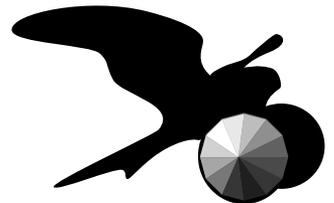
PUPIL FILE WORKSHEET 1:

SUNNY

Assignment 1: Make an energy web

Assignment 2: Draw Sunny the electric car

Assignment 3: The solar tower



ADVENTURE PACK

THE INVENTORS

AND THE WHEEL OF THE SUN



ASSIGNMENT 1: MAKE AN ENERGY WEB

Everyone will do this assignment on their own.

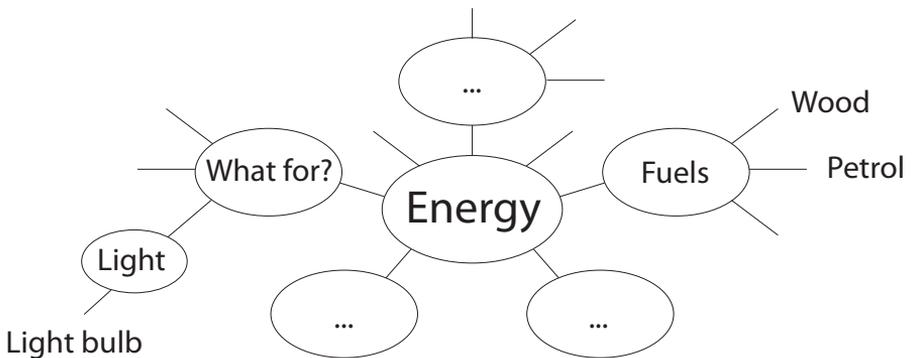
THE ULTIMATE ENERGY SOURCE

Uncle George is looking for the ultimate energy source.

We will make an energy web to discover what we know about energy.

What you need (per pupil)

- 1 sheet of paper (preferably larger than A4)
- Pencil or pen



Assignment

1. You are going to make a web about energy. Take the sheet of paper and draw a circle in the middle of it. Write the word "energy" in the circle.
2. What do you know about energy? Write everything you can think of about energy around the word in the middle.
3. Compare the words of the entire group and together with the teacher make one big web on the board (see picture).

Now listen to the story of a young inventor.

ASSIGNMENT 2: DRAW SUNNY THE ELECTRIC CAR

Everyone will do this assignment on their own.

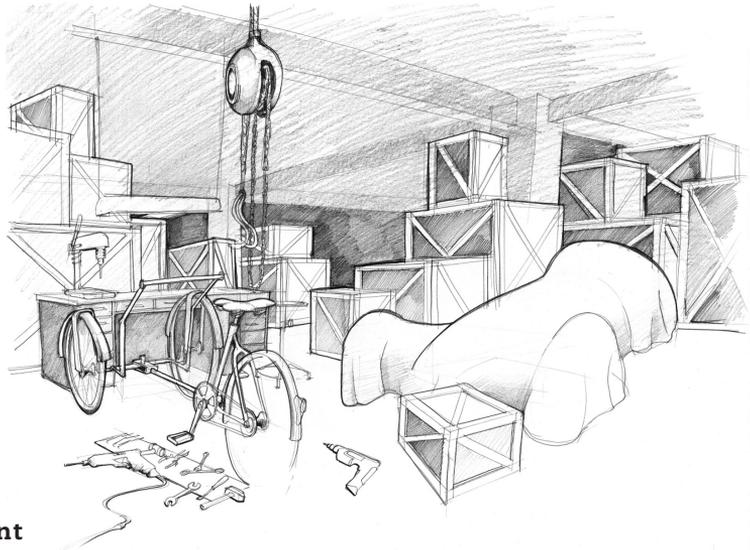
SUNNY, SIMON'S ELECTRIC CAR

Simon has built an electric car that is powered by solar energy.

Can you draw and colour Sunny? What is important for an electric car? Think about materials, how to charge Sunny, its shape, etc.

What you need (per pupil)

- Sheet of paper (use the back of your wordweb)
- Pencil
- Colouring pencils and/or pens



Assignment

Draw Sunny three times. Once seen from the front, once seen from above and once seen from the side. Don't forget to draw where Sunny's batteries are.

When you're ready look at the designs of the other people in your group. Which designs do you think are good? Why?

Now listen to the story of the fortune-teller.

ASSIGNMENT 3: THE SOLAR TOWER

This assignment will be carried out in groups of four.

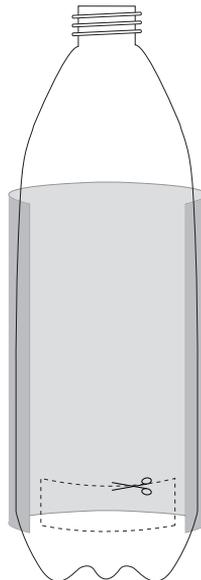
Sunny is an electric car that runs on solar energy. There are all kinds of ways to capt the sun's energy. Today we will see how you can use the sun's heat to make something turn.

What you need (per group of four pupils)

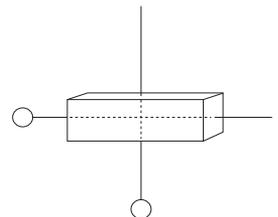
- | | |
|--------------------------------------------------------------|-------------------------------------------|
| <input type="checkbox"/> Plastic bottle | <input type="checkbox"/> Sellotape |
| <input type="checkbox"/> Black paper | <input type="checkbox"/> Felt-tip pen |
| <input type="checkbox"/> Sturdy piece of aluminium | <input type="checkbox"/> Pair of scissors |
| <input type="checkbox"/> Two pins | <input type="checkbox"/> Ruler |
| <input type="checkbox"/> Piece of clay of 2.5 x 0.5 x 0.5 cm | <input type="checkbox"/> Biro |

Assignment

1. Take the plastic bottle and find the cut in the bottle. Take the felt-tip pen and ruler and draw a rectangle around 10cm wide and 2 cm high on the bottle. Make sure the bottom line runs along the cut (see picture 1).
2. Cut the rectangle out of the bottle
3. Take the sheet of black paper and bend it around the back of the bottle. Secure it with sellotape (see picture 1).
4. Take the block of clay of 2.5 x 0.5 x 0.5 cm. In the horizontal middle stick a pin into it and stick the second pin in the vertical middle (see picture 2).

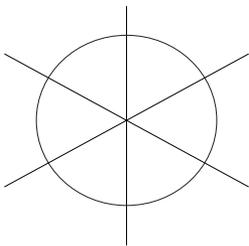


▲ picture 1

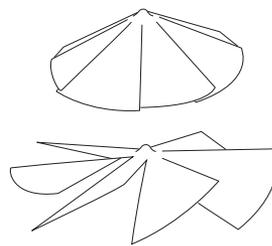
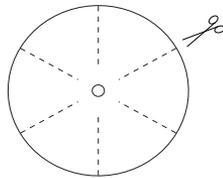


▲ picture 2

5. Lay the block with the pins on the neck of the bottle. Check that the pin is sticking straight up. Otherwise stick it in again.
6. Lay the bottle lid on top of the sheet of aluminium and draw around the lid on the aluminium.
7. Take your ruler and divide the circle into 6 pieces. Cut out the circle (see picture 3).
8. Lay the circle flat on a pile of paper and press the point of the biro right in the middle of the circle. Turn the biro around a few times (whilst pressing down). Make sure you don't make a hole! The circle will bend a bit.
9. Now cut along the 6 lines almost to the middle. Carefully bend the pishaped wings over a little to form a little umbrella and then fold each sail to create a windmill (see picture 4).

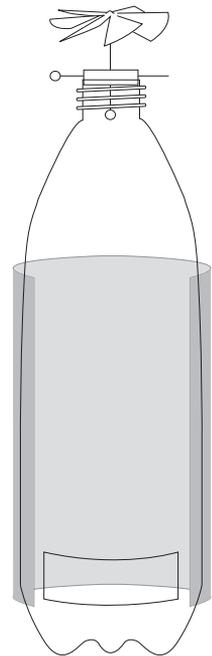


▲ picture 3



▲ picture 4

10. Carefully place the windmill on the pin. This is difficult. Make sure the point of the pin is in the dent made by the biro. The windmill will remain in place better if the sails of the mills face down a little. If it really won't stay in place, you might have to cut out a new windmill. Make sure that the dent is exactly in the middle of the windmill.



▲ picture 5

11. To test the tower, wave your hand in front of the opening in the bottom of the bottle. Your windmill should start to turn.
12. Now put your solar tower in the sun with the opening towards the sun. Watch what happens. If there is no sun you can always place the solar tower in front of a hot radiator.

Questions

Explain how the solar tower works.

Why is there a hole in the bottom of the solar tower?

Think of how we can convert the movement of the windmill into electricity.
Tip: consider the electricity for the light on your bike.

Does the solar tower provide renewable energy? Can you explain why?

TAKE ANOTHER LOOK AT YOUR ENERGY WEB. ADD WHAT YOU HAVE LEARNED ABOUT ENERGY FROM THE ASSIGNMENTS. IF YOU HAVE TIME LEFT, YOU CAN MAKE A DRAWING OF THE SOLAR TOWER OUTSIDE SOMEWHERE. CAN YOU THINK OF A GOOD PLACE TO PUT IT?

Tidy away all your things! Keep the solar tower for next time.