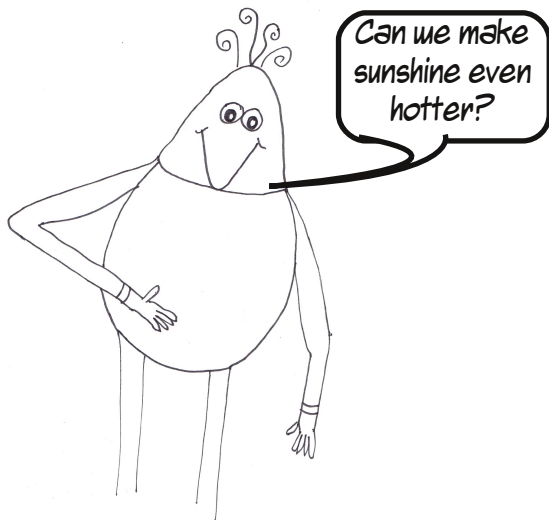


Monster Sciences

Making Science Fun!



AN EXPERIMENT ABOUT **ENERGY**

CONCENTRATING THE SUN'S HEAT

What you will need:

- A magnifying glass
- A balloon
- A sunny day

What you will do:

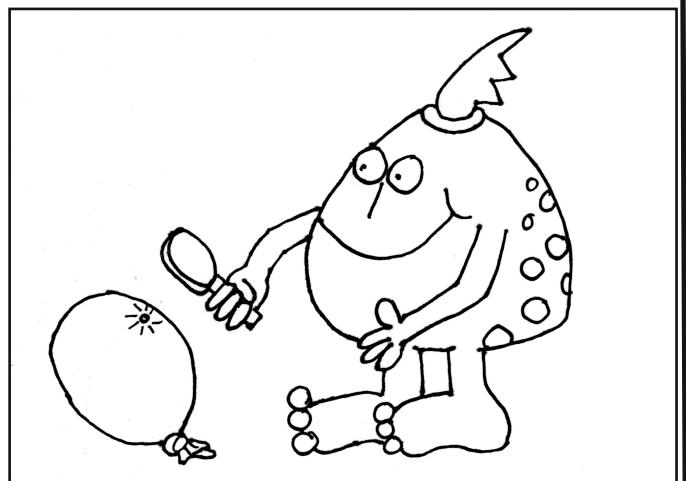
1. Blow up the balloon and tie it.
2. Take the balloon outside and place it on the ground. **IF IT WANTS TO BLOW AWAY YOU MIGHT NEED TO TIE IT TO SOMETHING WITH A PIECE OF STRING.**
3. Now hold the magnifying glass above the balloon between it and the sun. **BE VERY CAREFUL NOT TO LOOK AT THE SUN!**
4. You should be able to see a little spot of bright light on the balloon. Hold the magnifying glass very still and keep that bright light on the same spot on the balloon. **IT MAY TAKE A LITTLE WHILE FOR SOMETHING TO HAPPEN, BUT BE PATIENT!**

What should happen:

The sun's energy reaches the Earth both as light and as heat. I don't want to spoil the surprise, but the sun's heat is being concentrated by the curved shape of the glass in the magnifying glass, so that spot on the balloon is going to get very, very hot! What do you think will happen?

Monster Challenge:

- Find out how this idea of concentrating the sun's rays can be used for cooking.
- What other uses can you think off? Draw and label a picture of your invention.



TEACHING NOTES:

Monster Sciences Experiment: Energy EN05

Key Concepts:

- The sun produces heat energy

Resources:

- Experiment description Energy EN05 - one copy per student.
- Investigation Report IR01 - one copy per student
- Magnifying glasses, balloons, possibly some string.

Lesson Notes:

As a class read through the procedure of this experiment and explain, or demonstrate, the process. Getting the balloons tied up can be tricky, so you might have to help some students with this!

Explain the safety aspects of the experiment in particular what areas of the playground the students can use and reminding students not to look directly at the sun because it can damage their eyes.

Pass out the magnifying glasses and ask the students to investigate them. Ask them to describe how they look, what they are made of, what shape they are etc. You are aiming to get someone to notice the curved shape of the lens. Ask them to look through the magnifying glass and describe what they see. Discuss how the light that comes through the lens is bent and that is what makes things seem bigger. Then explain how using it outside bends the sun's rays into a small area, making it hot.

Before beginning the experiment students should complete the sections of their Investigation Report IR01 from "Title" to "Hypothesis".

Following the experiment bring your students together to discuss their results and complete their investigation report.

What should happen in this experiment and why?

When the wall of the balloon heats up enough it will melt and the balloon will pop!

Follow up questions:

- Did the pop give you a fright?
- What would happen if the magnifying glass lens was curved the other way?
- Does it make a difference how far away the magnifying glass is from the balloon?
- Could you make this happen on a cloudy day? What would be different? [it may take longer]