



AN EXPERIMENT ABOUT AIR

AMAZING AIR PRESSURE

What you will need:

- a plastic cup
- water
- a piece of cardboard

What you will do:

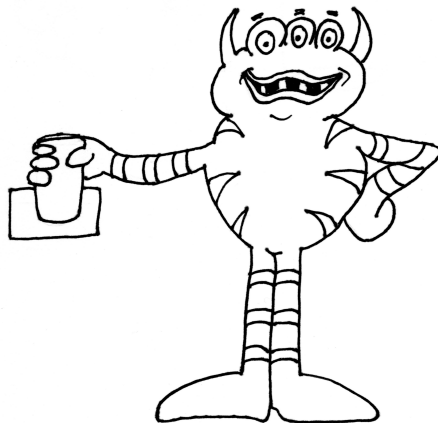
1. Check that the cardboard is big enough to cover the whole top of the cup with a bit of extra room right around it.
2. Fill the cup way up to the very top with water. **MAKE SURE THERE IS NO ROOM FOR AIR IN THE CUP.**
3. Put the cardboard on top of the cup.
4. Put your hand over the cardboard to hold it in place, then flip the cup upside down.
5. Carefully take your hand off the cardboard and watch what happens!

What should happen:

There is air all around the cup pushing against it and the cardboard. There is no air inside the cup pushing to get out, so the air outside the cup can hold the cardboard in place until something stronger than the air moves it.

Monster Challenges:

- Slowly tilt the cup in different directions. Does the cardboard move at all? What do you have to do to get the cardboard off? How hard was it to remove?
- Think about how this experiment works and see if you can design another experiment to show the same thing. Can you put something different in the cup for example? Would rice work? What about juice? How about sand? Why or why not? Try it and see if you are right.



TEACHING NOTES:

Monster Sciences Experiment: Air A11

Key Concepts:

- Properties of air: air pressure

Resources:

- Experiment description Air A11 - one copy per student.
- Investigation record IR - one copy per student.
- plastic cups, squares of cardboard slightly bigger than the mouth of the cup, water

Lesson Notes:

As a class read through the procedure of this experiment and discuss how the students are going to conduct the experiment. I always do this experiment outside just in case.

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?

Students will be amazed that the cardboard stays in place, but as they tilt the cup eventually the cardboard may slide off. The cardboard is easy to remove once the cup is up the right way and it can be easily pushed down when the cup is upside down, but it is surprisingly difficult to remove by tilting the cup.

Follow up question:

- What did you do to remove the cardboard in the end? Was it hard to get it off?
- Can you think of a way to do this experiment without having to turn the cup upside down? (You can fill it underwater and place the cardboard on then lift it up already upside down, then slowly remove your hand from the cardboard)