



Sheet #

Name:

## Pushing up with Pressure

Open to page 18 in your Monster Storms book. Read the purple box at the top of the page.

**Goal:** Investigate the strength of air pressure.

### Materials:

Activity sheet

Small cup with w/ a hole

Water

Piece of tape

Small cup

Sink

Index card

**Pre Lab** – Answer these questions before you begin the activity.

1. I'll start you off with an easy one: if you have a cup filled half full of water and turn it upside down what is going to happen to the water?
2. We've learned that air pressure is caused by molecules in our atmosphere being pulled down and moved around by gravity. Do you think air pressure acts in all directions or just down? Why?
3. If air pressure outside a container is greater than the air pressure inside the container then there will be an overall inward push (or pressure) on the container. What would happen if a hole was opened on the container?
4. Why do you think it's possible to keep water in the cup using an index card?

### **Making observations**

Make sure you do the activity over the sink; I don't want your group to have to waste time cleaning up spills. Over the sink... not the counter, or floor or desk... make sure you are over the sink. Be careful not to squeeze the cup when it's upside-down; this could push the water out. Now, read through the following question as a group. When you are done call your teacher over and explain exactly what you are going to do for the lab and what materials you need.

5. Fill a cup a little over  $\frac{1}{2}$  full with water. Hold the cup over the sink and place an index card over the top. While holding the card firmly against the cup so that no water can spill out, carefully turn the cup over. Gently pull your hand away from the bottom of the cup. Explain what happens.

6. Why does the water do this?

7. Now do the activity again with the cup that has a hole in the bottom. Make sure that the hole is covered with a piece of tape before you start. Repeat the same procedure as before...over the sink. Describe what happened this time.

8. What was different? Explain why it happened.

9. What would happen if the hole was on the side of the cup instead of the bottom?

10. Do you think the size of the cup would make a difference in the results of the activity?

11. If we did this with something other than water do you think it would still work? Why?

12. What would make this experiment not work?

**Bonus Question:** *this could get you an extra point on this sheet if you give me a good answer.* Using what you know about air pressure, explain what happens when you drink through a straw.

