

The Devil and the Deep Blue Sea

Objectives:

- Students will operationally define air pressure.
- Students will manipulate laboratory equipment.
- Students will determine what variables affect air pressure.

Materials:

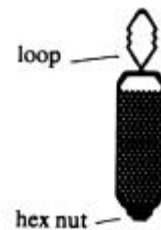
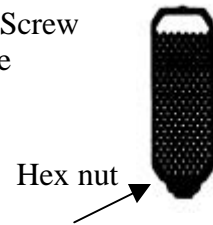
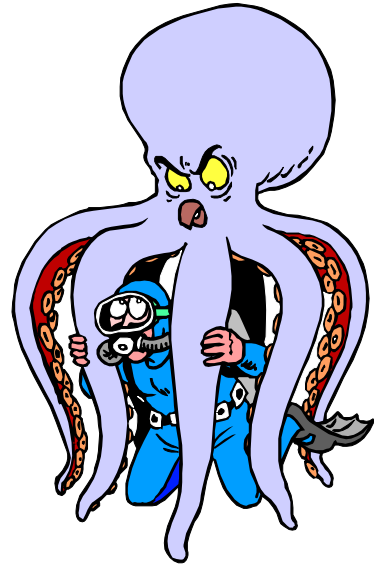
2 liter plastic soft drink bottle, plastic eye droppers, hex nuts to fit droppers, scissors, water, paper clip, mono-filament fishing line, glue gun, food coloring, heat source

Procedure:

1. Cut plastic dropper so that the tube portion measures approximately 1cm. Screw the hex nut onto the dropper. (See diagram.) Repeat this procedure for the second dropper.
2. Unbend the paper clip and make it into a hook. The hook portion must be able to fit through the mouth of the soft drink bottle. Glue the hook to one of the droppers. (See diagram.)
3. Cut off about 7.5cm of mono-filament and form it into a loop. Melt the ends of the loop together. Glue the loop to the top of the other dropper.
4. Squeeze enough colored water into the hook diver allowing its top to float above the top of the water. This diver must be able to float while holding the loop diver.
5. Squeeze enough colored water into the loop diver to keep it sitting on the bottom of the bottle. You may want to use the glue gun to seal the loop diver.
6. Fill the soft drink bottle with water. Push your divers into the soft drink bottle and screw on the top.
7. Squeeze the bottle and observe the motion of the diver.
8. Now try to hook the loop and bring both divers to the top.

Results:

1. What makes the hook diver dive?
2. What happens to the water in the loop diver when you squeeze the bottle?



3. Why must you keep constant pressure on the bottle to keep the hook diver in place?
4. Why can't you squeeze the sides of the bottle until they touch?
5. How does pressure affect you daily?
6. What did you change in this experiment? What happened when you made the change?
7. How does the amount of pressure you use affect the diver?
8. Since you cannot change the amount of water in the bottle once it's sealed, what is changed by squeezing on the bottle? How do you know?

