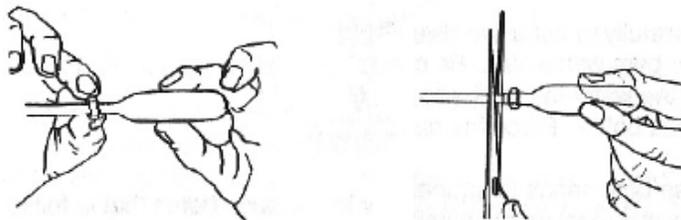
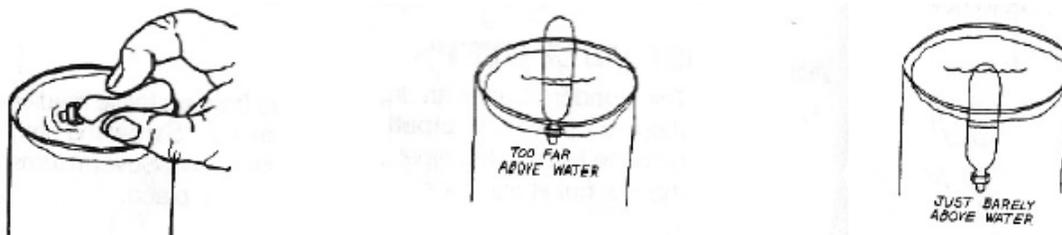


## Activity Sheet Constructing a Cartesian Diver

1. The standard Cartesian diver is made from a plastic medicine dropper known as a pipette and a hex nut. Screw the hex nut onto the base of the pipette as shown below, several turns of the hex nut should be sufficient to hold it in place.



2. Cut off all but  $\frac{1}{4}$  of an inch of the pipette stem. This is the standard diver.
3. Place the diver in a cup of water, making sure that the water in the cup is at least four inches deep. Notice that the diver floats. Why? While the diver is still in the water, squeeze the bulb of the pipette to force air out and release pressure to draw water up into the diver. Continue squeezing air out and drawing water up into the diver until the pipette is about half full of water. Let go of the diver and see if it still floats in the water. When properly adjusted, the diver should just barely float in the cup of water. If the diver sinks to the bottom, squeeze out a few drops of water and retest.



4. Carefully transfer the diver to the soda bottle that is full to the brim with water. Be careful not to accidentally lose any of the water in the diver when you are transferring it to the soda bottle. Place the cap on the bottle.
5. Use both hands to squeeze the sides of the bottle. You may have to squeeze hard depending on how you adjusted the water level inside the diver. Watch the diver sink when you squeeze the bottle, or float when you release it.



Student Name(s): \_\_\_\_\_  
Date: \_\_\_\_\_

### **Activity Sheet** **Buoyancy and the Cartesian Diver**

1. Add a few drops of food coloring to the small plastic cup filled with water and stir.
2. Squeeze out all of the water in your diver and replace it with the colored water in the cup.
3. Just as before, make sure the diver barely floats in the cup, and then add the diver to the full soda bottle. Screw on the soda bottle cap.

4. Make a prediction—what will happen as you squeeze the bottle?  
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\_\_\_\_\_  
\_\_\_\_\_

5. Squeeze and release the bottle a few times and observe what has happened. What does this tell you about the water?  
\_\_\_\_\_  
\_\_\_\_\_

6. Based on your above answers and your knowledge of buoyancy, can you make any predictions about how the Cartesian diver works?  
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\_\_\_\_\_  
\_\_\_\_\_

