

Name:

Period:

## **LAB 8.1 - CARTESIAN DIVERS**

### **BACKGROUND**

Our research so far has given us information on mass and volume and how they relate to positive and negative buoyancy. However, we learned in the Bill Nye video that there is something called “Neutral Buoyancy,” the point at which an object is neither positively nor negatively buoyant (it is neither floating nor sinking). This helped us develop a question about the relationship between the mass and volume of a neutrally buoyant object.

We will be using a Cartesian Diver apparatus to answer the question above. However, we first need to be familiar with how the Cartesian Diver works.

### **PROBLEM**

How does a Cartesian Diver operate?

**HYPOTHESIS** - see below

### **MATERIALS**

- ◆ 2000 mL bottle w/cap
- ◆ Eye dropper
- ◆ Water
- ◆ Apron & Goggles
- ◆ Beaker (600mL)

### **PROCEDURE**

1. Observe the demonstration Cartesian Diver. Write your observations below.
  
  
  
  
  
  
  
  
  
  
2. **Hypothesis** - Take a moment to observe the Cartesian Diver in operation. Watch what it does and try to explain the phenomena that you witness.

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3. Using the materials provided. Build and test your own Cartesian Diver.
  - a. Use the 600mL beaker to test whether or not your diver floats before dropping it into the bottle.
  
4. Make observations about the following
  - a. Under what conditions does it sink?
  - b. Under what conditions does it float?
  - c. Can you modify the Cartesian Diver to make it float or sink under different conditions? For example, can you do something to the Cartesian Diver to make it easier or more difficult to sink?

**DATA**

Record your observations here. Use *words and diagrams* as much as possible.

**SUMMARY**

1. Now that you have used the Cartesian Diver in class, how has your hypothesis changed? Write your new hypothesis using terms we've studied in prior labs (*mass, volume, buoyancy, etc.*). (You may write directly on this sheet)

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