

Name _____

The Balloon and the Bottle

Materials:

- one small party balloon
- one small bottle/flask
- hot plate
- balance
- oven mitt

Procedure:

1. Pour about 15 ml. (1 Tbsp.) of water into an empty glass bottle/flask.
2. Weigh the bottle, water, and balloon using the balance. Record the weight on the data table.
3. Partially blow up the balloon, and then let the air out of it. Do this several times as this helps to stretch the balloon.
4. Stretch the open balloon over the top of the bottle.
5. Heat the bottle until the water boils vigorously. Write down your observations of the water and the balloon on the data table.
6. Using an oven mitt, place the bottle with balloon on the balance; record the weight on the data table.
7. Allow the bottle to cool. Write down observations of the balloon and the bottle.
8. Weigh the bottle and the balloon. Record information on the data table.

Predictions:

1. Will the weight change when the flask/bottle, water and balloon are heated, cooled?

2. What do you think will happen to the balloon when the bottle is heated, cooled?

3. What is going to happen to the water when it is heated; cooled?

Data Table

Temperature of Bottle, Balloon, and Water	Weight (unit)	Observations
Room Temperature		
Hot		
Cold		

Analysis Questions

1. Compare your observations to your predictions.
 - A. Were your predictions correct?

 - B. Did anything surprise you during the experiment? If so describe it.

2. What do you think caused the balloon to expand? What's going on outside the balloon that's causing this to happen?

Analysis Questions (ct'd)

3. Why do you think the balloon was sucked into the bottle? What's going on outside the balloon that's causing this to happen?
4. What did you observe inside the bottle as it cooled?
5. What's happening to particles inside the balloon? Are they moving? Were they moving?
6. How did this experiment demonstrate water changing from liquid to gas?
7. What would have happened if the bottle were placed in the freezer?