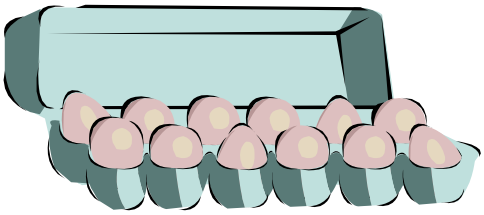
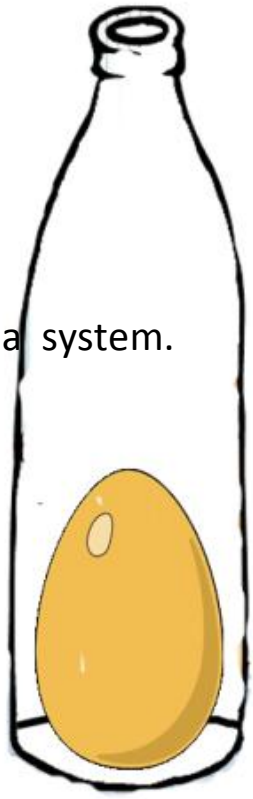


Egg in a Bottle



Objective:

To demonstrate the effects of temperature and pressure on a system.

Advanced preparation:

- Hard-boil the egg.
- Select a glass bottle that is ½ mm smaller than the egg.

Materials per experiment:

- Pre-selected bottle.
- One egg hard-boiled egg.
- Match.

Procedure:

1. Peel the shell off of the egg.
2. Place the bottle on a flat surface away from the edges of the lab bench or table.
3. Lite the match. Allow it some time to catch on fire.
4. Immediately place the egg into the opening of the flask.
5. Observe the changes and write down your observations.
6. Now explain what you think happened.
7. How would you get the egg back out without breaking it?

Brandon Gallenstein, Science Education Scholar, Texas Tech University
Center for the Integration Of Science Education and Research (CISER), Texas Tech University. 2011
Funded by the Howard Hughes Medical Institute.

What happened?

The egg appears to be sucked inside. However, the egg is actually pushed inside by the atmospheric pressure inside the bottle. The match heats the air inside the bottle, causing it to expand. When the match goes out, the pressure inside the bottle drops below the outside pressure, pushing the egg in from the outside.

Getting it back out:

To get the egg back out you will just want to flip over the bottle so that the egg rests inside the opening. Then blow into the bottle. This will create more pressure inside the bottle then there is on the outside. Like before the pressure inside and outside the bottle want to be equal. This means that the air in the bottle wants to move out, do this it has to move the egg.

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