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AIM ACADEMY

Air Pressure Experiments

Join Aim Academy science teacher, Dr. Karen Joseph, each week for science experiments you can watch with your kids or try at home.

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EXPERIMENT 1

Egg in a Bottle

SUPPLIES NEEDED:

- **One hard-boiled egg peeled and chilled**
- **wide mouth glass drinking bottle – the mouth needs to be a little smaller than the egg**
- **vegetable oil**
- **matches**
- **strip of paper slightly shorter than the bottle, folded a couple times lengthwise**
- **water and an adult helper**

TO DO:

1. Use a paper towel to coat the inside edge of the glass bottle with a little of the vegetable oil.
2. Dip the egg in water and set it with the small end down in the mouth of the bottle. Be sure the egg is slightly larger than the mouth of the bottle.
3. With your adult helper, use a match to light the end of the strip of paper on fire. Lift the egg off the bottle, drop the paper inside (flame side down) and quickly put the egg back on the bottle.

EXPLANATION:

The egg wobbles a bit in the mouth of the bottle and then gets sucked inside the bottle. When you first set the egg on top of the bottle, the air pressure in the bottle was the same as the air pressure outside the bottle, so the egg just sat there. But when you dropped the burning paper into the bottle, the heat from the flame heated the air and consumed the oxygen inside the bottle. The flame went out when there was no more oxygen, and the air inside the bottle began to cool. The cooler air molecules moved closer together, lowering the pressure inside the bottle and creating a partial vacuum. The partial vacuum pulled on the egg, pulling it into the bottle.

EXPERIMENT 2

Rising Water

SUPPLIES NEEDED:

- a votive candle
- matches
- food coloring
- a small plate or saucer
- a glass jar larger than the votive candle but smaller than the saucer
- water and an adult helper

TO DO:

1. Set the votive candle in the center of the small plate.
2. Have your adult helper light the candle.
3. Add a few drops of food coloring to a cup of water and stir.
4. Pour the colored water into the plate around the candle until the plate is nearly filled.
5. Carefully place the glass jar upside down over the candle and lower it until the mouth of the jar is sitting in the water.
6. Observe closely.

EXPLANATION:

As the candle burned, it warmed the air inside the jar and used up the oxygen, lowering the air pressure inside the jar so that it was lower than the air pressure outside the jar. This created a partial vacuum inside the jar, which pulled the water up into the jar.