

# Study Plan

**Problem:** Will water take less time to boil if the lid is on the pot?

**Hypothesis:** If the lid is on the pot the whole time, the water will take less time to boil than if the lid is off of the pot the whole time or some of the time.

I made this hypothesis because having the lid on the pot would keep more heat inside the pot. Heat makes water molecules move quickly. The more heat, the faster the water molecules move.

**Independent Variable (IV):** How often the lid is on the pot.

**Dependent Variable (DV):** The time it takes for the water to boil, measured in minutes and seconds.

**Control:** The lid off of the pot the whole time.

**Constant Variables (CV):**

Where: The kitchen stove.

When: Trial 1 - January 17, 2004  
Trial 2 - January 18, 2004  
Trial 3 - January 19, 2004

How: The same pot and lid, the same stove burner, the same burner setting, the same amount of water, the same starting water temperature, the same kitchen air temperature.

## **Materials**

- pot and lid (2.8 liter Revereware)**
- stove with gas burners**
- measuring cup (that measures ml)**
- aquarium thermometer (to measure temperature of water)**
- "regular" thermometer (to measure room temperature)**
- water**
- timer**

### Procedure

1. Get out a pot with a lid.
2. Measure 1500 ml of water and pour the water in the pot
3. Measure the temperature of the water.
4. Write down the room temperature.
5. Put the pot on a burner.
6. Get the timer ready.
7. Turn the burner to high and start the timer.
8. See how long the water takes to boil.
9. Do this 4 times.
  - A. lid off the whole time.
  - B. lid off every 1 minute for 10 seconds
  - C. lid off every 3 minutes for 10 seconds
  - D. lid on the whole time.Cool off the burner and pot each time.
10. Make sure these things stay the same: pot and lid, which burner is used, burner setting, water temperature, air temperature, amount of water.

### Safety Suggestions

1. Turn the pot handle toward the back of the stove.
2. Don't touch the metal part of the pot or lid after it's gotten hot.
3. Don't touch the burner after it's gotten hot.
4. Keep all clothing away from the burner.
5. If using a stool to see the water on the stove, stand on it properly.

