Can Crusher Lab

**Purpose:** To explore the gas laws in real life scenarios and to use the relationship between volume, temperature, and pressure in order to explain the phenomenon.

**Prelab Questions:**

1. Write down Charles’ Law (the formula):
2. Explain in words how volume and temperature are related (constant pressure).
3. Look up the barometric pressure and record it (it should be around 30). Once you have that number, divide it by 29.924. This answer will give you the pressure in atmospheres (atm):

**Procedure:**

1. Fill the plastic tub with cold water (if available)
2. Pour approximately 20 mL of water into the aluminum can
3. Place the can on a ring stand and wire gauze as if you were heating a beaker.
4. Heat the can until the water is at a rolling boil.
5. Once the water is at a rolling boil, use beaker tongs to **quickly** invert the soda can upside down into the bin. Be sure to *submerge* the mouth of the can under water.
6. Record observations and repeat steps for 2nd can (if available)

**Observations (before/during/after):**

**Analysis:**

1. When the can is on the ring stand, what phase change is occurring?
2. There are two vapors (gases) in the can, one is air, and the other is what?
3. As soon as your turn the hot can over into the “cold” water, what happens to the temperature of the can **and** how will that change the volume inside the can?
4. On the back of this paper answer the following question in a few short sentences. Be sure to include a gas law to help explain this, as well as your observations to support your findings:

Based off your answer from number three, inside the can will create a partial vacuum (an area of very low pressure). Use this information, and today’s barometric pressure to help explain *why* the can crushed.