Names:_____

Soda Can Gas Law Lab

Introduction: Can you crush a soda can without using force? You can! No, it's not magic; it's science! Using the power of the Gas Laws, you will be able to quickly crunch a soda can whether you're the strongest kid in school or your upper body strength leaves something to be desired. Don't work harder! Work smarter with the Gas Laws!

Materials: Empty soda can, stove top, water, graduated cylinder or measuring cup, thermometer, glass bowl, ice, tongs

Procedure and Data:

1. Record the volume of the can (found on the can): _____ mL. (This is V_1)
2. Look at the can. Completely describe the can in the space below.

3. Using the graduated cylinder, measure out 10 mL of water and add it to the can.
4. Place the soda can on the stove top burner. Turn on burner and listen for water to boil.
    a. Water boils at _____°C or _____K (This is T_1)
5. While the can is heating, fill a glass bowl halfway with ice. Add water to fill the bowl the rest of the way leaving about 3-4 cm at the top.
6. Using the thermometer, take and record the temperature of the water: _____°C or _____K (This is T_2).
7. Once all the water has evaporated from the soda can, use the beaker tongs, remove the beaker from the stove top and IMMEDIATELY invert it into the ice water. Record your observations below:

8. Wait for the can to cool completely. While waiting, using T_1, V_1, & T_2, find the predicted V_2. Write the equation & show all work.

9. Fill the now crunched and cooled soda can completely with water.
10. Pour the water out of the can and into the graduated cylinder, finding the new volume of the can.
    a. _____ mL (This is actual V_2)
11. Compare the predicted volume (the volume you calculated) to the actual volume (the volume you measured.) Use complete sentences.

12. Calculate the percent error for your lab. Show all your work. Make negative answers positive (if necessary.) Formula: (actual- predicted)/predicted x 100

13. Do you have a low percent error or a high percent error? Using complete sentences, explain why your percent error was greater than 0%. Include a discussion of any issues that would have affected your lab results.

14. Which gas law (name) does this lab represent? Describe how this lab represents this law. Use complete sentences.

15. What gas law variables were held constant during this lab? What evidence do you have that they were in fact constant? Use complete sentences.