Name _____  Date _____

Science/Period _____  **Charles's Law Lab**

I. **Question/ problem**: What happens to the gas in a balloon when heated and cooled?

II. **Hypothesis** : (10 pts) _____

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**Materials:** Balloon, string, metric ruler, pencil, sunglasses/ safety goggles, casserole dish, sauce pot

III. **Procedure:**

1) Put on sunglasses or safety goggles. Inflate a balloon making sure it can fit in the palm of your hand. Make a knot in the end of the balloon so that air cannot escape.

2) Measure the circumference of the balloon by using a string placed around the widest part of the balloon. Place your finger at the spot where one end of the string touches another part of the string. Use a metric ruler to measure the distance between the two spots. Record your data in the table below in pencil.

3) You have a choice between 2 methods:

**Method 1**: Place the balloon on a cookie sheet or casserole dish. Set the oven at the lowest temperature-not more than 65° C (150° F) or "warm". Leave the balloon in the oven for about 3-5 minutes.

**Method 2**: Bring a pot of water to a boil. Shut of the stove and carefully immerse your balloon under the water for about 30 seconds.

4) Remove the balloon and **QUICKLY** use the piece of string to measure the circumference. Record this measurement in the chart below in pencil.

5) Place the balloon in a freezer for 1 hour.

6) Remove the balloon and **immediately** measure. Record its circumference in the data table below in pencil.

**Data Table** (20pts)

| Balloon | Circumference (cm) |
|---|---|
| Initial | |
| After oven | |
| After freezer | |

**IV. <u>Analysis & Conclusion</u>**: *restate (5 pts) & use complete sentences (5 pts)* to answer the following questions *by applying your science knowledge & using **quantitative** data:*

1.) What happened to the size of the balloon at the higher temperature? **(10 pts)**

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2) At the lower temperature, what happened to the size of the balloon? **(10 pts)**

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3) Was your hypothesis supported or refuted? **(5 pts)** _____

4) State Charles's Law. Does your results support or reject Charles's Law? Be sure to use quantitative evidence. (25 pts)

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Jacques Charles
1746 - 1823