**The Great Geyser Experiment** – A Controlled experiment

Names (groups of 3): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

We will conduct this experiment on September 6th – I will provide the geyser tubes and the mentos – you need to provide the diet pop.

1. **Choose one of the following questions (circle it).**
   1. How many Mentos creates the highest geyser?
   2. What type of Mentos creates the highest geyser?
   3. What type of pop creates the highest geyser?
   4. What volume of pop creates the highest geyser?
   5. What temperature of pop creates the highest geyser?
   6. Or another one of your choice –please confirm with the teacher before proceeding.

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1. **VARIABLES:**

**Independent: (**the variable that will be manipulated in your experiment) **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Dependent:** (the variable that you will measure during the experiment) **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. **HYPOTHESIS:** What do you expect will happen in terms of geyser height?

**In this format:**

If we \_\_\_\_**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** (independent variable) then the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** (dependent variable) will **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** because**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.

1. **EXPERIMENTAL CONTROLS:** A list of all the factors you will keep the same in each of your trials.
2. **MATERIALS:** A list and pictures of what you will use to conduct the experiment.
3. **PROCEDURE:** a flowchart showing all the steps you will take to collect the data
4. **Observations:**

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| **Variable** | **Height** |
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1. **DISCUSSION**
2. **Data Analysis:** Describe the trends/patterns/relationships found in the data. Also comment on the reliability of the data which includes comments on any outliers or anomalies (data that just doesn’t seem to fit the trend) in the data.

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1. **Reliability and Validity:** E**valuate** the method and make comments on its **reliability** and **validity**. This includes the sources of error and limitations of the experiment.
   * 1. **Reliability of the method:** refers to whether the method allows for the collection of sufficient reliable data to answer the question. This depends upon the selection of the measuring instrument, the precision and accuracy of the measurements, errors associated with the measurement instrument, the size of the sample, the sampling techniques used and the number of readings.

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* + 1. **Validity of the method:** refers to whether the method allows for the collection of sufficient valid data to answer the question. This includes factors such as whether the measuring instrument measures what it is supposed to measure, the conditions of the experiment and the manipulation of variables (fair testing).

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1. **Assessing the Hypothesis:** Comment on the validity of the hypothesis based on the outcome of the investigation. Includes a statement about the hypothesis being supported or not supported.

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1. **Improvements and suggestions for further investigation:** suggest **realistic** improvements to the method and make suggestions for further inquiry when relevant. This includes new questions, what could be investigated next time, how the variables could be manipulated next time.

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1. **Conclusion:** draw a **clear** conclusion **based on** the **correct interpretation** of the data and **explain it** using scientific reasoning. Also explain what can be concluded based on the data with reference to the hypothesis.

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**For peer and self-assessment**

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#8b

#4, 5 and 6

#8a

#8e

#8d

skip

#8c

#7

#3