Culminating Lab – Design your own Plop, Fizz, Boom Experiment

Scientist Name: _____ Partner 1:_____ Partner 2: _____
[-1 if missing]

In this experiment you will develop and test a hypothesis, analyze data and draw conclusions. While you will be preparing and performing the experiment in groups, **each person will carry out the analysis independently and hand in their own lab write-up**. **Plagiarism (copying) will be awarded a mark of 0.**

Safety: Goggles must be worn by everyone at all times until the teacher tells you the lab is done.

A) **Prelab**: Practice putting lid on film canister and turning it upside down quickly. Practice using the stopwatch (left button – reset; right button – start and stop).

B) **Procedure for Preparing the Control Sample**

1. Measure 5 mL of ice cold water and pour it into the film canister.
2. Measure the temperature of the water.
3. Plop ¼ tablet of Alka Seltzer into the canister, start stopwatch, put the lid on, turn over and place on floor.
4. **Take two big steps backwards (about 2 m away). Do not go near canister until after it explodes.**
5. Measure the time to explosion. Observe and estimate how high the container flies.

C) **What do we want to know?**

Ask a question based on one of the following <u>independent variables</u>.

- **water temperature**, with increments of 15°C
- **water volume**, with increments of 5 mL
- **amount of Alka Seltzer**, with increments of ¼ tablet

Your team will decide on the independent variable you want to use from the list above.
Everyone is going to measure the same <u>dependent variable</u> - **time to explosion.**

D) **Planning and preparing your experiment:**

- On the lab write-up sheet, write down your independent variable, dependent variable, 2 controlled variables, the question your group is investigating (Hint: be sure to include both variables), and your hypothesis (Hint: be sure to include both variables).
- List your materials and equipment.
- Write a numbered list of steps for your <u>complete</u> experimental procedure (include control sample).
- Prepare your observation table, including column titles and units.
- Determine how much Alka Seltzer you need from the teacher to complete your experiment.
- **Hand in your lab package to your teacher. It will be returned to you on the experiment day.**

On the experiment day:

E) **Perform the experiment:** On the day of the experiment, perform the lab and record the results in your observation table. **Safety: Always stand back** until the canister explodes.

F) **Cleanup**: Put back all equipment. Use paper towel to wipe up everything. Paper towel recycles. Use a little Enviroclean on the table. Mop up floor. Put away goggles. Wash hands.

G) **Analyze: Write** a **concluding** statement. Be sure to **name both variables** and state if your hypothesis was **supported or rejected**. Finish the lab write-up analysis questions.

Culminating Lab – Experiment Planning V2

Scientist Name: _____ **Partner 1:**_____ **Partner 2:** _____

Our **independent variable** is: [1]	Our **dependent variable** is: [1]
Two **controlled variables** are: [2]	

Our question is: [1]

_____

Our hypothesis is: [2]

_____

_____

List of Materials and Equipment: [2]

Total number of Alka Seltzer tablets needed for your experiment (to nearest quarter): _____

Procedure: Write a **numbered** list of steps for your experimental procedure, including the preparation of your control sample. Remember that someone reading your procedure should be able to repeat exactly what you did in your experiment. [4]

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Observations:

Use this table to record ALL your observations, both quantitative and qualitative.

Write **column and row titles** and **units**. THINK!! [4]

		Time ( )

Lab Planning, Procedure and Observations Total _____ /17