Foundation "If I have seen further, it is by standing on the shoulders of giants." –Sir Isaac Newton

Project: Science Report: Design Your Own Experiment

This project will help you demonstrate that you understand the foundational characteristics of experimental design. You will use this same set-up and reporting method on your other lab experiments throughout the rest of the school year. Therefore, this is an excellent opportunity for you to get feedback and ensure your foundation is strong.

Directions: Complete in your Notebook. Don't forget to title your page and add it to your table of contents. You have a variety of lab objects available to you→ rubber bands, balls, paperclips, beakers, water, dice, small cars, paper, etc. If there's a material you want and aren't sure about just ask Ms. Chal if it's available.

Your task is:

1. Come up with your own TESTABLE scientific question, with available lab supplies.
2. Identify the parts of your experiment that you will manipulate and test.
3. Develop a plan/procedure for testing out your question. Write it on your group's whiteboard and get it signed off by one of your teachers. ____
4. Collect materials.
5. Create a table for tracking your data as you go. (include multiple trials for accuracy)
6. Test it.
7. Write out your Claim-Evidence statement. (we will learn about Reasoning later on)

Setup your notebook:

Title: Design My Own Experiment

Scientific Question: _____ (Underline IV and italic DV.) Explain why you chose this question. (Example: How does the amount of sleep of an athlete affect how many free throws they can make out of 100 shots?)

Hypothesis: Predict what you think will happen. (If (IV) then (DV)... because…).

Experimental Design: Include a paragraph that explains the design of your experiment and how you will test out your question. Be sure to explain the following: IV, DV, Control V, Constants, Repeated Trials, etc.

Procedure: Write out the final draft of your specific, step-by-step procedure.

Data: Create a table for collecting your data. Here is an example, but it might look different then this:

Fill it out as you complete your tests.

The effect of "IV" on "DV"

IV (unit)	DV (unit)			
	Trial 1	Trial 2	Trial 3	Average

Summary of Scientific Results: This is the hearty part of your science report and will be a foundation for demonstrating your scientific knowledge. For all scientific experiments this year, you will have to write a summary of scientific results. It must include:

- An explanation of whether or not your hypothesis was correct and evidence to support this.
- Any significant learnings that were made during the experiment.
- A recognition of error: explanation of anything that might have gone wrong that may have skewed your results or things that you would do differently if you did this again.
- A claim-evidence-reasoning statement (you can skip the reasoning today!)

Claim: What do you now know that answers your question? (Should include IV and DV in concise statement)

Evidence: How do you know it? (Must be actual summary of data from the tests/ include averages for multiple trials)

[SKIP for today] Reasoning: Why is this so? Explains the scientific concepts that support your claim and evidence. It IS NOT a restatement of your claim. Because you designed experiments separate from specific science concepts that we are studying, you do not have to write the reasoning today.

Check out google classroom to see a model report from Ms. Chal's Experiment on Footwear & Juggling Skills AND rubric for Science Reports.*

*Rubric is below for this CMSTEP assignment

Important Dates:

Day 1: Developing a Scientific Question and Planning Your Experiment

Day 2: Gather Materials, Testing, and Complete Data Table

Day 3: Analyze Results and Complete Summary of Scientific Results

Science Report Rubric (this rubric will be used for all experiments throughout the year)

	Outstanding **A**	**Proficient** **B**	**Developing** **C**	**Not there yet** *Revision Required
Designing an Experiment **4**	Identifies and clearly explains various parts of an experiment; design allows for testing a specific scientific question; step-by-step procedure aligned to variables and easy to follow	Can identify most parts of the experiment, though may incorrectly explain one of the parts; procedure is included	Can identify most parts of the experiment, though may incorrectly explain 3 or fewer parts; procedure is included	The design doesn't allow for testing of a single scientific question or more than one of the parts of the experiment are incorrectly identified; may lack some procedural steps.
Writing hypotheses **4***	Makes a prediction about what will happen and explains why; uses the If… then… because… format. Reasoning is clear and relevant	Makes a prediction about what will happen and explains why; uses the If… then… because… format. Attempts to explain prediction	Makes a prediction about what will happen; attempts to use the If… then… because format, but is missing key parts (such as an explanation)	No prediction made
Collecting and analyzing data **4**	Collects and presents data that is clear and accurate; correctly analyzes and interprets data, explaining findings in a clear, concise manner.	Collects and presents data that is clear and accurate; correctly analyzes and interprets data, though explanation of findings is occasionally hard to follow or includes minor errors	Collects and presents data that is mostly clear and accurate; includes some significant errors in data analysis and interpretation, explanations are missing or incorrect	Data and analysis are incomplete or have major errors
Summary of Scientific Results **4**	Identifies if hypothesis was right or wrong; refers to specific data as evidence to support claim; reasoning included for concept-specific experiments. Explanation of any errors included.	Identifies if hypothesis was right or wrong; makes general or vague reference to data to support claim; reasoning included for concept-specific experiments. Explanation of any errors included.	Identifies if hypothesis was right or wrong, but with no explanation	Does not evaluate the hypothesis
Presenting scientific findings **4**	All parts of the lab are clearly and professionally written. Clear attention has been given to writing conventions (complete	Most parts of the lab are clearly and professionally written. Clear attention has been given to writing conventions, and there are	There are significant issues with the presentation in the lab, including sections that are missing or incomplete and/or writing that is not	The lab is not presentable in its current condition

	sentences, capitalization, end punctuation), and there are very few errors (<2 per page)	very few errors (<2 per page)	appropriate for the setting; there are numerous writing convention errors (2-5 per page)	

Any skills for which I do not have any data (due to missing assignments or questions that are skipped) will be marked "Incomplete".

*May want to eliminate or make this worth less