

Unit 0

Nature of Science

CC38 Biology

SECTION C

0.3 Assignment: Practice the Scientific Method and Lab Report Writing **(60 points)**

Writing formal **lab reports** is an essential skill for secondary school student interested in higher education, for both scientific and non-scientific fields! This activity's purpose is to aid you in strengthening your scientific and technical writing skills, as writing lab reports based on assigned virtual lab, experimental, and observational will be a required entity within this course.

The research paper (lab report) is the primary means of communication in science. Lab reports present the results of an experiment and interpretation of data, describes the rationale and design of the experiment, provides a context for the results in terms of previous findings and assesses the overall success of the experiment(s).

Formal lab reports should always be written in third-person, passive voice, and should not be inclusive of first-person, "I" statements. Also, try to avoid "active voice" within a lab report. For example, if there are instructions to pour a liquid a lab report would be written to provide that procedure as "200 mL of distilled water was poured into a 500 mL beaker," (passive voice) and not "I poured 200 mL, of distilled water into a beaker" (active voice) or "Pour 200 mL, water into a beaker" (directional/command).

Scientific and academic language should also be used at all times throughout the lab report, in addition to proper grammar, syntax (word order), and sentence structure (punctuation, capitalization, spelling, etc.). Writers should also avoid any colloquial (slang, regional) terms and phrases within the writing of their lab report.

As a reminder, **all** lab reports should follow a specific flow and order. All sections but the title have the section explicitly labeled, usually in bold letters to differentiate it from the rest of the text, and left aligned on the page (not centered). A blank line should appear after the last word of the section to separate the various sections, but a line should not be placed after the section title. The various sections of a lab report should appear in your paper in the order described below:

Introduction
Objective (Question)
Hypothesis
Materials
Procedure
Data (Results)
Analysis
Conclusion

In this lab activity, you will practice and refine your abilities to draft an original, and formal lab report. You will be given a description of a lab, along with data collected from the experiment. From this information, you will construct the proper sections of a formal lab report for the example experiment provided.

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CC38 Biology

The grade you earn for this activity will be dependent upon your ability to construct a properly formatted, formal lab report, inclusive of all of the components mentioned above and the detail of information provided within each section.

How Much Bounce Could a Bouncy Ball Bounce?

BACKGROUND INFORMATION:

Your little sibling asked for you to get them a toy that would “bounce to the moon” (meaning, super high), because they were fascinated with the idea of high bouncing things (kangaroos, springs, and even bouncy balls)! You had the GREAT idea to take your sibling to the store, and buy them a bouncy ball with the limited money that you had (because, you are the BEST sibling ever)!

Once you arrived at the store, you and your sibling saw a display for toy bouncy balls in various sizes and colors! On one side of the display, they had bouncy balls that were 15 cm in diameter for \$5, and on the other side larger balls that were 30 cm in diameter for \$15! Your sibling automatically gravitated to the larger ball, demanding two in the colors purple and green, but, you redirected them to get two smaller balls (as you only had \$20 to spend, and you wanted to use the leftover money to buy something for yourself)! They argued about getting the larger balls, because they assumed that a larger ball would mean that they would get a greater amount of bounce, however you respectfully disagreed. In order to appease their request, you bought one of each sized ball, and made a bet/wager with them that a larger ball would not necessarily mean a greater bounce! They agreed upon your offer, stating that if they were right, you'd buy them two additional balls later, and if you were right they'd do your household chores for a week!

In order to determine who the winner was going to be, you devised a method to test your idea by measuring the bounce height of the smaller and larger bouncy balls by dropping them both from 5 different initial heights onto a tile floor. Three trials were done for all 5 heights, and for each type of ball (the same ball and the same location were used for every trial). As a reminder, the goal of this investigation is to determine the relationship between initial height, bounce height of the ball, and the ball's size (and of course, bragging rights with your sibling)!

BOUNCING RESULTS:

15 cm ball:

- Initial Height (cm) → 20 cm = bounce height → 18 cm (trial 1), 14 cm (trial 2), and 16 cm (trial 3)
- Initial Height (cm) → 40 cm = bounce height → 32 cm (trial 1), 37 cm (trial 2), and 35 cm (trial 3)
- Initial Height (cm) → 60 cm = bounce height → 51 cm (trial 1), 55 cm (trial 2), and 53 cm (trial 3)
- Initial Height (cm) → 80 cm = bounce height → 74 cm (trial 1), 74 cm (trial 2), and 76 cm (trial 3)
- Initial Height (cm) → 100 cm = bounce height → 95 cm (trial 1), 89 cm (trial 2), and 91 cm (trial 3)

30 cm ball:

- Initial Height (cm) → 20 cm = bounce height → 15 cm (trial 1), 14 cm (trial 2), and 16 cm (trial 3)
- Initial Height (cm) → 40 cm = bounce height → 30 cm (trial 1), 35 cm (trial 2), and 36 cm (trial 3)
- Initial Height (cm) → 60 cm = bounce height → 50 cm (trial 1), 49 cm (trial 2), and 55 cm (trial 3)
- Initial Height (cm) → 80 cm = bounce height → 72 cm (trial 1), 75 cm (trial 2), and 76 cm (trial 3)
- Initial Height (cm) → 100 cm = bounce height → 95 cm (trial 1), 98 cm (trial 2), and 90 cm (trial 3)

In this lab activity, you will practice and refine your abilities to draft an original, and lab report inclusive of the proper sections of a formal lab report: introduction, objective, hypothesis, materials, procedure, data, analysis, and conclusion.

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Be mindful of how you incorporate the information from above, and that you use proper scientific vocabulary and reasoning, as well as proper grammar and sentence structure to convey your ideas.
