

Names: \_\_\_\_\_

Date: \_\_\_\_\_

## **Part A: Inquiry Project Proposal (Science 9 Pathways)**

Proposal Due Date: \_\_\_\_\_

*Proposals need to be typed, in size 11-12 font, and include all of the headings below. Please submit a hard copy and e-mail an electronic copy on the due date.*

*Exceptions: diagrams may be drawn by hand; sections 7b and 8 only for certain experiments*

1. OVERALL TOPIC: (any format)

2. TESTABLE QUESTION: (needs to include independent & dependent variables)

3. RESEARCH:

Attach an *annotated bibliography* with at least 3 reliable resources (not Wikipedia) that you use to help you come up with your hypothesis. For each resource, include:

- Name and link (or title) of resource
- Summary of information found in resource that relates to your research topic

4. HYPOTHESIS: (“educated guess” about how the independent and dependent variables are related. Must come up with after research, but before experiment. Hypothesis can be proven wrong; or you may find evidence to support it.)

5. VARIABLES:

List your variables:

- a) Independent variable:
  - a. Level(s) of independent variable to be tested
- b) Dependent variable:
- c) Relevant control variables:

Answer this question:

*How will you measure your dependent variable? How will you ensure accuracy and consistency in your measurements?*

5B. DIAGRAM OF CONTROL/TREATMENT GROUPS

6A. MATERIALS: List all materials that will be used.

(Include exact quantities and be specific! E.g. instead of “two beakers”, say “two 400 mL beakers”.)

(Note: you will also need a lab notebook to record data in.)

6B. SPECIALIZED MATERIALS

List any materials that may not be available already in the Cambie laboratory prep area. This could include reagents, biological specimens, specialized equipment. Outline a plan to obtain each material, as well as back-up plans if possible. (These materials should also be listed in 6a.)

7A. PROCEDURE:

List and describe steps taken to complete the project.

Include the following information:

*How many trials? How many test subjects or test runs per trial?*

7B. EXPERIMENT SET-UP (required for any laboratory experiments):

Labelled diagram(s) that could be used to help someone replicate the experiment.

8. ETHICAL CONSIDERATIONS (required for any studies with live test subjects):

Human studies: How will you obtain informed consent from your participants (i.e. letting them know the risks and benefits of participating in the study)? How will you ensure that test subjects' data remains confidential and anonymous?

Biology studies with live test subjects: How will you select your participants in an unbiased way? How are you minimizing the risk of any potential harm to your test subjects?

9. PLANNED TIMELINE:

Include time to collect materials, trial-run experimental set-up, and complete all the trials planned in 7a. Also include buffer room to allow for unforeseeable circumstances. Aim to have finished data collection by mid-January. Note that due to the individualized nature of the project, much of the experimentation may need to occur outside of class time.

10. PREDICTION: If your hypothesis is correct, what do you predict will occur when you carry out your experiment? (keep this short)