

Mr. Krebs Contact Information

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IB Biology II Summer Assignment (50 Points)

The summer assignment is due on the first day of school. NO LATE WORK WILL BE GRADED

The summer assignment is split between three parts:

(1) Generate a list of three IA Research Questions (5 points).

→ **If you have questions regarding your topic contact me**

(2) Choose one of your IA ideas and complete the IA design outline page below (5 pts)

(3) Collect one round of preliminary data for the IA design you chose (40 pts)

(that means 5 values of the independent variables at one repetition)

→ **Make sure that the research question that you chose provides good data**

*** You may also collect all 5 repetitions of your investigation as well, but this is not required at this point***

The GIST:

- Explore three potential IA ideas. Generate a list of three research questions.
- The lab design = complete grid on next page (it does not have to be in grid format).
This means that you will have generated a RESEARCH QUESTION, INDEPENDENT VARIABLE, DEPENDENT VARIABLE, CONSTANTS, BACKGROUND QUESTIONS TO RESEARCH, AND FOUR EXPERIMENTAL GROUPS IN ADDITION TO A CONTROL GROUP.
- The Data collection = Complete one round of data collection. There are sample data tables below to give you an idea of what I am looking for.
**Please note: Feel free to collect all your data for your investigation if you'd like to. We will be focused on this the first week of school.*
- That's it!

Research question				
Independent variable				
Dependent variable: Quantitative data			Dependent variable: Qualitative data	
Constant variables				
Background Questions				
Hypothesis				
Control group	Experimental group # 1	Experimental group # 2	Experimental group # 3	Experimental group # 4

Data Table Sample #1 (Your data table might look different - this is just an example)

	Dependent variable				
	<u>10 mins</u> m/s	<u>20 mins</u> m/s	<u>30 mins</u> m/s	<u>40 mins</u> m/s	<u>60 mins</u> m/s
<u>IV 1</u>					
<u>IV 2</u>					
<u>IV 3</u>					
<u>IV 4</u>					
<u>IV 5</u>					

or it could look like this

Data Table Sample # 2: (Your data table might look different - this is just an example)

	Dependent Variable	
	<u>INITIAL RECORDING OF BIOMASS</u> (kg)	<u>Final Recording of Biomass</u> (kg)
<u>IV 1</u>		
<u>IV 2</u>		
<u>IV 3</u>		
<u>IV 4</u>		
<u>IV 5</u>		

Term Glossary

Research Question

- The research question is clearly stated and precisely formulated
- Research questions includes IV and DV
- Research question includes scientific name of organism, if relevant (Genus species)
Example: What natural fertilizers (cow manure, chicken manure, mushroom compost, kitchen compost, TN clay) will allow the daisies to increase in mass (grams) the most over a 12 week period?

Background

- The background sets the research question to context
- Appropriate and relevant biology is described and explained
- Citations relevant to the research question is used
- Background information is used to form a hypothesis
- Null and alternative hypothesis is given if a statistical test of significance is used.

Variables

- Independent variable (IV) = the thing you vary
- Dependent variable (DV) = the thing you measure
- Controlled variable (DV) = the things you are controlling between all trials

Examples:

IV: four natural fertilizers (compost, animal manure, cottonseed meal, alfalfa meal) and water

DV: the dried biomass of the daisies as measured on a digital scale

CV: volume of soil, volume of water added daily, breed of daisy seed used, mass of fertilizer added, time fertilizer is added, daylight exposure, ambient temperature

Hypothesis

Must be in “ If, then.. Because of the statement”.

Ex : If five groups of daisies are exposed to four different types of natural fertilizer and one group is exposed to water only, then the group exposed to backyard compost will grow the most because of (cite recent research.)

Resources

- [HOW TO CHOOSE AN IA TOPIC TO STUDY.pdf](#)
- [DP Biology_ IA ideas during a pandemic 2020-21.pdf](#)
- [ECOLOGY_ INVESTIGATION IDEAS.pdf](#)
- [IA MISTAKES TO AVOID.pdf](#)
- [sample ia_ELODEA.pdf](#)
- [Secondary Data SAMPLE IA_ 12_19-3.pdf-original copy](#)