**AP Environmental Science Lab Book**

* Lab notebook is a composition book with graph paper.

1. **Number the Pages.** All pages must be numbered front and back before the first lab is due. Number pages starting with page one in the upper right hand corner, the back of page one which would be page two should be placed in the upper left corner. Continue numbering throughout the book.
2. **Reserve the first two or three pages for the table of contents.** It should have two columns. One for title of lab and another for page numbers. In the back of the lab book neatly glue in all of part 4- so you will always have the information on hand.
3. **Title**

Should be descriptive. For example, “Enzyme Catalysis” is a better title than “Lab 2”. “Enzyme Catalysis of Hydrogen Peroxide by Catalase” is even better. When in doubt follow this “The Effect of \_\_\_\_\_\_\_\_\_\_\_\_on \_\_\_\_\_\_\_\_\_\_\_\_” . Be specific. Should describe what is happening in the lab.

1. **Members of the group.**
2. **Primary Question for Investigation**

* 1-2 sentences describing the major goal of the experiment.
* Should be specific enough to relate to the specific procedures performed. For example, if you measured the rate of enzyme action in varying pHs, temperatures, and concentrations a GOOD statement would be:

-To measure the effect of pH, temperature, and concentration on the rate of enzyme reaction.

- How do concentration, pH, and temperature effect the rate of enzyme activity?

1. **Hypothesis and Rationale for the Investigation**

* If/then statements
* Briefly state your reasoning.
* When writing your hypothesis, be as specific as possible about what you are measuring.

1. **Experimental Design and Materials**

* List or illustrate materials
* Procedure in your own words. Provide sufficient detail so that someone could replicate your results. Do in paragraph form.
* Discuss strategies for testing your hypothesis, using appropriate controls and variables.
* For observational labs, explain what you did.

1. **Data/Results**

* Tables and graphs. MUST have straight lines done with a ruler.
* Each graph or table must be labeled.
* Label each axis.
* Lines must fit data.
* Show any calculations.
* One graph per page, multiple tables and be placed on a page.
* Include a key where necessary.

1. **Analysis (can be typed and pasted in lab book)**

* Answer all analysis and topics for discussion questions that appear in the investigation.
* Number the questions
* Answer all questions in full sentences, preferably in the form that includes the question in the answer. Even if you rewrite the questions, you still must answer in complete sentences.

1. **Conclusions/Discussion**

* Describe the experiment that you performed (1-2 sentences).
* Talk about what you did to the variable, including a discussion of your control.
* Refer to your tables and figures and explain important findings. Use data to support your statements.
* Your hypothesis can be “supported” or “not supported” by the data, it cannot be “proved” or “disproved”
* Always be as specific as you possibly can be. (Instead of “Most of the time…,” write “For 7 of the 10 time intervals examined…”).
* Don’t describe your data as “vague” or “inconclusive.” If a trend that you thought would exist, doesn’t, that doesn’t mean the data is vague. The absence of evidence is not evidence of absence.
* When describing sources of error, don’t include irregularities in the environment that you controlled. (Ex. The florescent lights in our room affect your control group the same as your experimental group, because they are on the whole time. Therefore, they’re not a source of error. This is why we do a control in the first place!)
* Could we change this lab in any way to obtain different data? If so how? (If you only had differences in substrate (soil) in your choice chambers, what would happen if you changed the moisture or shade in the chambers?)
* Be aware of what you are measuring. (A pill bug’s “preferences,” “desires,” or “needs,” are not measurable. Its movement, or its presence in a certain choice chamber, is measurable).