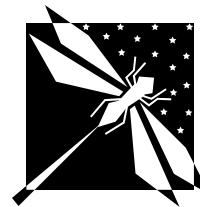


## Biology I Pre-AP Summer Assignment Class of 2013



Hello and welcome to Biology at ISA!

Biology is one of the most interesting courses that most people ever take because it's the study of life – what it is, how it works, and how living things interact with the world around them. It applies to your life now and forever! This course is also one of the more challenging classes that you will likely experience in high school simply because of the tremendous volume of information that we will be covering.

This summer assignment is designed to help you get organized and prepared for the coming year while also assessing the knowledge of science that you have acquired during your middle school years. It should be interesting and fun for you, but like all other things you will do in biology it will require thought, effort, and analysis. *Don't procrastinate until the last weekend before school starts, because you won't be able to do this assignment well.* In fact, "Don't Procrastinate" would be a good motto for the entirety of your freshman year.

Please call me if you have questions at (210) 393-4816 or email me at gmcphe@neisd.net.

Have a great summer!

Mr. McPherson ☺

### **Assignment #1 – Gathering Supplies**

For this class you will need the following supplies. Please gather your materials now, because you will need to utilize some of them to complete your summer assignment. All of these materials can be found at almost any grocery, discount, or dollar store.

- Composition book with your first and last name printed on the front.
- Set of markers or colored pencils for drawings and laboratories.
- Graph paper in moderate amounts – feel free to go in with your friends on this one.

### **Assignment #2 – The Big Picture in Biology**

This assignment will help you recognize and understand the big-ticket ideas in biology before you jump into the class. Understanding these concepts will greatly aid your understanding of the material we'll cover throughout the year. Do this *before* moving on to Assignment #3.

### **Assignment #3 – Science All Around You**

This assignment will help you to understand that important scientific discoveries are occurring all the time. Please complete this assignment *before* beginning Assignment #4.

### **Assignment #4 – Being An Experimental Scientist**

In biology this year you will be expected to extract a great deal of learning from labs, simulations, models, and activities. This approach requires your full mental participation in these activities. This assignment will let you practice turning your brain to the "on" position and demonstrate your understanding of scientific processes and procedures. This one will require a great deal of time, so be ready and don't procrastinate until the last weekend before school starts – you won't get done!



## Biology Summer Assignment Assignment #3 Science All Around You

This assignment should be completed on the first few pages in your composition book.

1. Scan magazines or the newspaper for articles about scientific *findings* or *experiments*. If you scan the paper over a period of several days, you may find articles that are more interesting to you.
2. Completely cut out the article that most interests you, and attach it to the first page(s) of your composition book with glue or tape.
3. To analyze this news article, answer the following questions in your composition book. Base your answers on the information in the article itself and what you infer.
  - What question(s) did the scientists ask?
  - What background information informed the scientists?
  - What type of investigation did the scientists conduct?
  - What tools did the scientists use?
  - What results did the scientists get?
  - What conclusions did the scientists draw?
  - What new questions did the scientists ask?
4. Record in your composition book at least two scientific questions that *you* would like to research. These may be related to the article you analyzed or to another area of science.



**Biology Summer Assignment**  
**Assignment #4**  
**Being An Experimental Scientist**



For this activity, you will be a scientist as you carry out a full inquiry of your own design. Remember that each of the thinking steps, such as asking a good question, deciding how to test it, and analyzing the meaning of the data you collect, is just as important as the hands-on step of doing an experiment. Your performance in this activity will demonstrate both your understanding of the particular area of science that you investigate and your ability to explain and use scientific processes. Please complete this activity in your composition book following Assignment #3. Allow *at least* 12-15 hours over one week to do this project well.


The process of science:  
asking questions, gathering information, testing questions, and proposing explanations.

**Materials**

Will vary – be sure that the materials you utilize are safe or that you have careful supervision from a responsible, knowledgeable adult.

**Process and Procedures**

1. Use the figure and caption above to answer these questions in your composition book:
  - Which of these steps were evident in the article that you analyzed in the previous activity? Give specific examples, and explain how they were evident.
  - Identify 3-4 specific occasions in middle school when you have used these steps.
  - What do you think an excellent project would look like when it is finished?
  - What would it be like and feel like to complete an excellent project?
2. Choose an area of science that interests you, and identify a testable question. An example of a testable question could be “What dog food brand does my dog prefer?” This question you are able to test experimentally. “Is my dog happy?” on the other hand, is not a testable question.
  - In your composition book, record the question in 1-2 sentences.
  - Explain why your question is significant to you. Include the information you already know concerning your question.
  - Restate your question as a hypothesis that can be tested.
  - Record which of the Big Concepts in biology is most related to your hypothesis.
3. Use the library, internet, or other available resources to gather information related to your questions. Scientists use data that others collect as well as data that they gather directly. Please record your sources of information in a “Research Bibliography” in your composition book. Include the author, title, publisher, and date and place of publication.

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4. Design an experiment to test or answer your question by doing the following:
    - Describe your experimental design in your composition book and include your:
      1. rationale, that is, how this experiment will test your question.
      2. hypothesis, including your predictions for the outcome of the experiment.
      3. procedure, complete with needed materials.
      4. data analysis, or how you plan on analyze the data you will collect.
  5. Write a safety plan for your experiment in your composition book. Are there any dangerous materials or situations in your experiment? Could harm come to yourself, others, or any living organisms your experiment may include?
  6. Discuss your research, experimental design, and safety plan with your parent(s) before you continue. If they believe that your experiment is reasonable and safe, then have them sign your composition book underneath your safety plan.
  7. Carry out your experiment and carefully record your data in your composition book.

### **Analysis & Conclusions**

8. Organize your data in a way that makes it easier to see patterns or understand what the data tells you. Examples of organization methods include charts, graphs, tables, and keys. Do this in your composition book.
9. Decide what your data tell you, and record your preliminary conclusions in your composition book. Include any unexpected difficulties or limitations of your experimental design that you may have encountered.
10. In your composition book, explain what your conclusions indicate about the question you asked. Support your conclusions by making specific references to your data.
11. Identify the connections between your experimental inquiry and two of the following aspects of biology:
  - the unifying principles of biology (Big Concepts from Assignment #2)
  - current events from Assignment #3
  - technology
  - culture
  - history
  - ethics

**Congratulations!**  
**You're done!**  
☺

**You will turn in your composition book on the first day of class.**  
**Make sure you bring it with you!**

