

Pre-AP Biology-ROHS

Summer Project 2017-2018

The following two assignments must be completed independently during your summer vacation. You will earn **one test grade, one homework grade, and one daily grade** for this summer project. All work is due on the 2nd day of school, Tuesday, August 22, 2017. You may contact me during the summer if you have problems. My contact information is: janet.counts@cloud.redoakisd.org.

***Failure to complete this assignment MAY result in your failing the 1st six weeks .**

Assignment 1: Scavenger Hunt – (50pts)

Locate the listed items (see below) and take a picture of them, either with your phone or with a digital camera. **You may not use pictures from magazines or the internet!** If you are in the picture, you will receive more points for that item. Use the following format to present your project:

FORMAT --Have the pictures developed and mount them (each on a separate page) on card stock. Bind all of the pages like a book. Decorate the cover of the book. Identify each picture with **item number, Phylum name, common name, and scientific name** (hint: *binomial nomenclature*).

*****NOTE***- Your project will not be accepted in any other format.**

Item List- one species from each phylum

1. Chordata
2. Basidiomycota
3. Pterophyta
4. Echinodermata
5. Anthophyta
6. Mollusca
7. Arthropoda
8. Coniferophyta
9. Zygomycota
10. Annelida

Assignment 2: Experimental Design Project – (50pts)

Biology is the study of life. In this course we will begin with a look at the characteristics shared by all living things. You will be doing an experiment this summer to investigate the characteristics of growth and development. Growth is defined as an increase in the number of cells in an organism or an increase in the amount of living material in a cell.

Development is defined as a change in the form of an organism as it goes through its life cycle from embryo to adult. The following is a description of the project:

Experimenting With Plants

In this project you will design your own experiment and record your data for **20days** (if you go out of town, you will have to make arrangements for the recording of data). Start early so that you can start over if your seeds do not germinate the first time.

Introduction

Science is a process of predicting, collecting data, and drawing conclusions. The purpose of this assignment is to practice the process of science while testing an actual hypothesis.

Scientific Problem

What are some factors that may affect the growth of plants? Choose one factor (variable) like amount of soil, amount of light (DO NOT USE “**NO LIGHT**”), amount of water (DO NOT USE “**NO WATER**”), or use of materials such as fertilizers, different types of soil, other liquids, and test how it will affect plant growth.

Background Research

Determine factors that are needed for a plant to grow, survive, and reproduce. You may use textbooks, the internet, or other references that can be cited with a bibliography. Write one page that summarizes your research. Include at least two sources in your bibliography.

Forming a Hypothesis

What do you predict will happen in this experiment? Write a paragraph which gives your prediction (hypothesis-an ‘if/then’ statement) and a paragraph that explains why you think this will occur.

Materials

1. Packet of Bean Seeds (I suggest RED BEANS or STRING BEANS)
2. Small containers (Plastic cups, Plastic plant pots, etc.)
3. Potting soil (You can try using soil from your own ‘flower bed’)
4. Water
5. Any other materials that your ‘FACTOR’ requires

Experimental Design

1. **For best results:** Allow all of the seeds to germinate and grow into small seedlings before you start the experiment. To get the seeds to germinate: place them in wet paper towels for several days.
2. Set up two small containers of seedlings. Subject one container to normal conditions, based on your research. This one will act as a **control**. A control is a group in which all factors needed for success are optimal.
3. Subject the second container to your variable. This one will act as your **experimental group**. An experimental group is the one that you have changed one factor, to see the effect on growth.
4. Write a paragraph that explains how you set up your experiment. Be sure to include the following terminology: **control, experimental group, independent variable, dependent variable**.

*******Allow the seeds to grow for at least 20 days. Be sure to start early, in case you have to start over.**

Data Collection

1. During these TWENTY days, measure the height of the plant in cm. Check at least every 2 days. If you are out of town, you must make arrangements for someone to check your plants. If your plants do not germinate within 7 days, you will need to replant them – this is why you need to start early! TAKE PICTURES OF YOUR RESULTS EVERY 5 DAYS. YOU SHOULD ALSO BE IN EACH PICTURE.
2. Create a data table to display your data. This table should be neatly drawn with straight lines and correctly labeled.
3. Present your data in a line graph. This graph should be neatly drawn with straight lines and evenly spaced intervals on the X and Y axis. You should use graph paper. (NOTE: YOUR GRAPH SHOULD HAVE TWO LINES. YOU WILL NEED A KEY FOR THIS GRAPH.)
4. PICTURES should be included. DRAW, COLOR, AND LABEL all parts of the plant. You should also include at least 5 photographs WITH YOU IN THE PICTURES.

Conclusions (Discussion)

Describe the effects of your FACTOR on plant growth. Support your conclusion with the data you have collected.

What Do I Need To Hand In? Include the following items in a folder. Do not email your final product.

1. Research Paragraphs and Bibliography (TYPED AND DOUBLE SPACED)
2. Hypothesis Paragraph (TYPED AND DOUBLE SPACED)
3. Experimental Design Paragraph (TYPED AND DOUBLE SPACED)
4. Data Table
5. Line Graph
6. Conclusion Paragraphs (TYPED AND DOUBLE SPACED)
7. Pictures
8. The actual plants in baggies. – Bring at least TWO plants (One from the control group and one from the experimental group). DO NOT BRING THE CONTAINER THAT YOU GREW THE PLANTS IN. DO NOT BRING THE SOIL.

