|  |  |
| --- | --- |
| Quiz(14pts) |  |
| Completeness(10pts) |  |
| **GRADE:** |  |

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ APES

Mr. Crisci

**Lab: DESIGN YOUR OWN EXPERIMENT** Date: \_\_\_\_\_\_\_\_\_\_

**Introduction:**

Why blow bigger bubbles than others? Does it really make a difference what gum you chose? The answers to these questions are all within the realm of science because they are testable by controlled experiments, observations, and data gathering.

**Possible Questions:**

* If gum shows greater elasticity then it will produce larger bubble width?
* If gum shows greater elasticity then it will produce larger bubble circumference?
* If pillbugs are placed in a petridish where they can chose between light and dark surfaces, they will chose dark surfaces?
* If pillbugs are placed in a petridish where they can chose between moist and dry conditions, they will chose moist conditions?

**Hypothesis:**

Make a group decision about which of the above questions you will test or make up a different question. Finally, form a testable hypothesis about the questions. Form a **null hypothesis** (H0) for your experiment, something to the effect that gum elasticity will have no effect on bubble width/circumference/etc. If you can reasonably show that this is not the case, then elasticity must have an effect on bubble width/circumference/etc. The alternate hypothesis (HA) should be something to effect that elasticity does have an effect on bubble width/circumference/etc. With your data, you should be able to find out if elasticity has a positive or negative effect on your bubble.

It is also important to note that you will never be able to prove or disprove your hypothesis. You will only be able to say that the data supports or does not support your hypothesis.

**Plan the Experiment:**

Use your lab report handout as a guide.

1. Write your experimental plan in the form of a numbered list. You should also list the materials you will need. First, list your materials. Then, list the details of your procedure. *Do not make Step 1: Collect Materials. Assume that your reader saw the materials list and already collected the materials. Your first step should be what the reader needs to* ***do*** *with the materials.*
2. Identify the conditions you will hold constant and name a single variable that you will test (your independent variable). Decide what you are going to measure during your experiment (your dependent variable) and how you will know if your data supports your hypothesis.

**Check the Plan:**

Review the “Scientific Method” to make sure that you have included all pertinent steps. Some things to keep in mind:

1. Does your plan test only **ONE** variable, such as the amount of fertilizer added or pillbug environmental factors?
2. Have you determined how many pillbugs or gum types you will use in each group and which dependent variable you will measure? Also, have you decided how often you will take measurements?
3. Did you make a data table in your lab notebook that compares the observations you made on the control and experimental groups?

**Possible Materials:**

*You do not need to use all of these. This is just a list of what you have available to work with. If you need something not listed here, your teacher may be able to get it for you....just ask*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Pillbugs | Digital scale | Sponges | Soil | Fortune fish |
| Water | Various gum | Ruler/meter stick | Dark paper | Seeds |
| Petridishs | Heat lamp | Parafilm | Paperclips | Grow light |

**Conduct Experiment:**

Set up your experiment and place it in a safe place where it will not be disturbed, but where you can easily access it for data check-ups.

**Experimental Design:**

*Answer the following questions based on the lab your group created:*

1. State your problem.
2. State your null and alternate hypothesis.

**Null Hypothesis** (H0) -

**Alternate (Regular) Hypothesis** (HA) -

1. List your materials.
2. What conditions will you hold constant throughout your experiment?
3. What will be your control?
4. Identify the independent (the variable you changed) and dependent variable (the variable you measured).
5. Discuss your procedure (make a list...). Make sure you are only changing one variable, but have a minimum of THREE experimental groups.

In this area include personal notes and data collection. You could make a table to organize your data.