Name: _____

Regents Biology

Off Site Learning Packet

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North Salem High School

MISSION: *Engage students to continuously learn, question, define and solve problems through critical and creative thinking.*

Biology as a Science

(pp.13 - 18)

If you have any problems – please sign up for extra help after school.

Mr. Collea
Ms. Oliver

Assignment #1

Directions: Base your answers to each of the following questions on your **Course Information Sheet.**

1. What is the name of one of the websites for this class? _____

2. In your *opinion*, which 2 *Helpful Suggestions* are the most important and why?

_____

_____

_____

_____

3. Which 2 days does Mr. Collea have extra help? _____ _____

4. Which 2 days does Ms. Oliver have extra help? _____ _____

5. What will be the 4 sections of your Biology Binder?

(1) _____ **(2)** _____ **(3)** _____ **(4)** _____

6. Late homework is never accepted. **True** or **False**

7. What are exams called in this class? _____

8. Exams will make up approximately what percentage of your quarter grade? _____

9. Homework, quizzes and labs will make up the remaining _____% of your grade.

10. According to the New York State Regents, _____ minutes of successful lab work is required for you to take the Living Environment Regents Exam in June?

11. What is Mr. Collea's and Ms. Oliver's definition of being *tardy*?

_____

_____

12. Where are cell phones kept during class?

_____

13. Backpacks are not allowed on the floor in the science lab. **True** or **False**

14. Make one *observation* of your biology classroom or biology teachers and then make an inference based upon that observation.

Observation	Inference

15. Hypothesize (predict) who is one of Mr. Collea's and Ms. Oliver's favorite authors?

_____

Assignment #2

Several of the labs that you will do this year will require you to design an experiment that will provide the answers to scientific questions. In designing an experiment, it is important to understand the importance of using a **control** or **control group**. A **control** or **control group** is an *established point of reference*. It allows you to make *comparisons* that generate valid information. In designing a *valid* experiment it is important that only one variable is changed relative to the control. The one thing that is changed is the **independent variable**. What you measure to see if the change has any effect is the **dependent variable**.

In this assignment you will be provided with data collected from a series of experiments designed by Mr. Birdsall to maximize the reproduction rates of his earthworms. You see, Mr. Birdsall is a vermiculturalist who raises earthworms because he likes their taste; whether they are deep fried in chocolate or fresh out of the topsoil. Mr Birdsall is interested in increasing the number of egg cases his worms lay in a 24 hour period. He has identified the following variables he would like to investigate to see what can make his earthworms reproduce at their optimum rates.

- % moisture in the soil
- % sand in the soil
- the amount of food (g)
- whether the soil is covered or not

Below is a table of the current conditions on Mr. Birdsall's worm farm with the averaged results of the # of egg cases per 24 hour period per worm. This information will represent his **control group** because you will use this information to *compare* the other results to see if there is an effect.

CONTROL GROUP	**Moisture**	**Sand**	**Food (g)**	**Soil Covered**	**# Egg Cases**
	20%	**15%**	**10**	**NO**	**54**

Mr. Birdsall decided to design and perform an experiment to determine the effect of changing the conditions on his worm farm. The table below contains the results of his first experiment.

Trial 1	**Moisture**	**Sand**	**Food (g)**	**Soil Covered**	**# Egg Cases**
	25%	10%	15	YES	92

1. Look closely at the first trial and COMPARE the results to that of the control group to determine what SPECIFICALLY caused the significant increase in the number of egg cases produced.

_____

_____

2. Was Mr. Birdsall's first experiment a good one that produced valid results? Explain

_____

_____

_____

After looking at the results of his first experiment, Mr. Birdsall realized that it was impossible to identify what *specifically* caused the *significant* increase in egg production because he changed too many things or there were **too many independent variables**. ALL good experiment must have only ONE independent variable. So the tireless worm farmer decided to perform four more experiments or trials in order to determine which variable had the greatest impact. The control group along with the results of his four additional experiment are found in the data tables below.

CONTROL GROUP	**Moisture**	**Sand**	**Food (g)**	**Soil Covered**	**# Egg Cases**
	20%	15%	10	NO	54

Trial 2	**Moisture**	**Sand**	**Food (g)**	**Soil Covered**	**# Egg Cases**
	20%	10%	10	NO	52

Trial 3	**Moisture**	**Sand**	**Food (g)**	**Soil Covered**	**# Egg Cases**
	20%	15%	15	NO	64

Trial 4	**Moisture**	**Sand**	**Food (g)**	**Soil Covered**	**# Egg Cases**
	25%	15%	10	NO	50

Trial 5	**Moisture**	**Sand**	**Food (g)**	**Soil Covered**	**# Egg Cases**
	20%	15%	10	YES	82

Note that in each of his four additional experiment or trial only one variable at a time is changed. The one thing that is changed in an experiment is the independent variable. This makes it possible to determine the effect of that specific variable by *comparing* it to the **control group**. In other words, a scientific experiment must have a control and test only one variable at a time.

3. List two more characteristics of any good experiment.

a) _____

b) _____

4. List two ways you can improve or modify any valid experiment.

a) _____

b) _____

5. According to the results of his four additional experiments, which variable had the greatest increase in the number of egg cases produced?

_____

_____

6. According to the results of his four additional experiments, which variable had the greatest decrease in the number of egg cases produced?

_____

_____

Assignment #3

Directions: Go to Collea's Corner to watch the below mentioned Ted-Ed video and then answers the questions below.

Questions No One Knows the Answers To

- Chris Anderson

Background Information:

This TED-Ed video is designed to catalyze curiosity. TED Curator Chris Anderson shares his boyhood obsession with quirky questions that seem to have no answers.

1. List three questions Chris Anderson asked himself as a child.

(1) _____

(2) _____

(3) _____

2. List 2 questions you often ask yourself and would like to find the answers to.
(Be prepared to share at least one of these with the class.)

(1) _____

_____

(2) _____

_____

Assignment #4

Directions: Answer these questions as completely and as accurately as possible as these are the types of questions you will see on your first exam.

Crossword Puzzle