Name: _____ Date: _____ Per: _____

The Bird Seed Experiment Lab

PURPOSE:
In the following lab, students will be able to recognize and explain the "steps" of the Scientific Method and setting up an experiment.

OBJECTIVES:

- Recognize the *problem* of an experiment.
- Demonstrate the difference between an *observation* and an inference.
- Distinguish between a *control* and an *experimental group* in an experiment.
- Design an experiment similar to the Bird Seed Experiment.

DIRECTIONS:
Please read the lab *carefully* and place all of your answers on the answer sheet.

Informational Background:
A student wants to know if birds choose the seeds they eat strictly by the color of the seed. He knew that the birds liked to eat round, red sorghum seeds. He decided to use this type of seed in an experiment to find out which color seed birds would choose if they had several color choices.

QUESTION #1: *What was the problem the student was trying to answer in this experiment?*

Procedure:
The student attached a cupcake pan to a platform on top of an 8 foot metal pole. He set the pole up at the end of a field near some trees. IN one of the compartments of the pan he placed 25 natural red sorghum seeds. He then colored the rest of the seeds with food coloring: yellow, blue, pink, and green. The food coloring adds no taste or odor to the seeds, just color. He then placed 25 seeds of each color separately in the other compartments of the pan. Each day for a period of two weeks the student counted the number of each color that remained in each compartment of the cupcake pan. He recorded the number of seeds eaten and replaced the missing seeds so there would be 25 of each color in the pan.

In order for the student to compare the results in the experiment he had to figure out which would be the *experimental group*. This is the group that had one single factor change during the experiment. Another part of the experiment keeps everything unchanged. This is called the *control group*.

QUESTION #2: *What part of the Bird Seed Experiment could be called the experimental group?*

QUESTION #3: *Which part of the experiment was left unchanged, or is the control group?*

Independent

A variable is a single factor or thing in an experiment that is changed between the experimental and control groups. The other factors that remain the same for both groups are known as the control factors. You can make an accurate conclusion when you compare the control group to the experimental group.

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QUESTION #4: *What is the variable* Independent *in the experiment?*

QUESTION #5: *Name four (4) factors that were kept the same for both the control group and the experimental groups.*

QUESTION #6: *Why is a control group necessary in an experiment? (Find the answer above.)*

DATA FOR THE BIRD SEED EXPERIMENT

Days / Seed Color	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Total # Seeds eaten
Red	23	24	23	24	22	20	20	23	23	24	25	23	22	24	320 } control
Blue	18	21	12	11	12	14	8	11	15	7	9	12	10	7	157
Green	10	12	14	7	9	1	0	0	4	2	11	20	7	1	98 } exp.
Pink	22	21	19	20	22	23	22	23	23	19	22	20	22	21	299
Yellow	5	15	7	2	4	6	5	8	4	1	2	7	5	4	75

After looking at the chart showing the results of the experiment, the student made a statement that *"the seed most eaten in the experimental group was pink."*

QUESTION #7: *Look at the chart and make two observations regarding the results of the experiment. (Remember to give facts, NOT an opinion.*

One inference of the results might be that "the pink seeds were most popular in the experimental group because they looked most like the natural color of the red sorghum seeds."

QUESTION #8: *Read each statement below. Indicate which statements are* ~~interpretations~~ inferences *by placing an "I" on the line after each statement. Place an "O" on the line to indicate if the statement is an observation.*

A. *Fewer yellow seeds were eaten on the average than any other experimental seed color.*
B. *Birds eat yellow seeds only by accident, since so few were eaten.*
C. *Birds must like the red seeds and dislike the other colors, since they ate a lot of the red seeds but very few yellow seeds.*

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Bird Seed Lab Answer Sheet

1) Problem: _____

2) Experimental Group(s): _____

3) Control Group: _____

4) Independent Variable: _____

5) Dependent Variable: _____

6) List 4 Control Factors:

   A. _____

   B. _____

   C. _____

   D. _____

7) Why is a control group necessary in an experiment?

_____

_____

8) Write two observations based on the **results** of this experiment.

   A. _____

   B. _____

9) Look at Question #8 in the directions and determine whether those statements are Inferences (I) or Observations (O)

   A. _____

   B. _____

   C. _____