PreLAB BIOLOGICAL PRINCIPLES I

Natural Selection & Scientific Process

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Read the lab exercise for next weeks lab and answer the following questions. Please make sure you bring the lab exercise and these questions completed to the next lab.

1. What two population characteristics are the necessary components for natural selection?
Hereditary variations and overproduction.

2. How is each one simulated in our experiment?

We will simulate the organisms using large, colored craft beads. The varying population is simulated due to the 3 different colors of the craft beads. Overproduction is simulated due to the background color of the container, giving one type of bead an advantage over the others, potentially influencing the population.

3. Based on the characteristics of our model population, what is the basic hypothesis this experiment is designed to test?

The hypothesis is: Does the gene for color determine the survival rate for a population.

4. Read the procedure section carefully, and see if you can identify 3 procedures designed to keep experimental conditions the same for all the groups.

Each group starts with the same amount of large beads. Each group has a time limit of 30 seconds. Each round, every group will select a different member to be the predator.

What are such procedures called?
These are known as controls.

5. A population of beads contains 15 red beads, 20 pink beads and 5 white beads.
Calculate **R and W.**

$$R = \frac{(15 \times 2) + 20}{(15 + 20 + 5) \times 2}$$

$$R = \frac{30 + 20}{40 \times 2}$$

$$R = \frac{50}{80} = \frac{5}{8} = 0.625 \text{ or } 62.5\%$$

$$W = 1 - R$$

$$W = 1 - 0.625$$

$$W = 0.375 \text{ or } 37.5\%$$