

Name _____ Class _____ Date _____

Investigating Variation

Problem: What pattern exists in the variation of a trait in a population of organisms, and what is the significance of this pattern?

Background Information: Lima beans are seeds ready to grow into plants, which will produce more lima beans. The lima beans your class examines today represent a group of individual organisms of the same type that live in the same area—a **population**.

Procedure:

1. With your partner, measure the length of 40 different lima beans to the nearest millimeter (mm). Record your data on a table that you design in your science journal.
2. Once you have recorded the size of 40 lima beans, either you or your partner should go and make tally marks on the class data table. Be sure to make tallies in groups of five to make it easier to total each group!
3. After all of the groups in the class have recorded their lima bean data, your teacher will add up the totals.
4. Make a bar graph of the class data on your graph paper.

Analysis and Interpretation: Answer the following questions on a separate sheet of paper. You will attach the paper to your graph and turn both in to your teacher.

1. What general pattern or shape do you see when you look at the shape of the bar graph you made?
2. What does this shape tell us about the variation of traits in a population?
3. What advantage to the survival of the germinating seed is a large size? (Refer to your notes from the *Anatomy of a Seed Presentation*.)
4. In nature, lima beans must fall onto the ground, where they depend on moisture and other favorable conditions in order to germinate. Sometimes, such as during a drought, the only moisture is found in small cracks in the ground. Which of the lima beans would be more likely to survive and germinate in this situation?
5. “Normal” for any trait in a population is the most common variation of the trait, that is, the variation under the high center part of the curve of the graph. Predict what the new “normal” of lima bean size would be if the scenario above (a drought resulting in small cracks in the ground as the only way for seeds to find water) occurred. Draw a diagram of what the graph would look like, using the same range of sizes that you used in your class graph.
6. Can variation be advantageous to the survival of a lima bean population during times of a changing environment? Answer using CER format.