Name	Period	Date

# Variation in Sunflower Seeds Worksheet

# Introduction

One of the central ideas in Charles Darwin's theory of evolution by natural selection is that variations (differences) exist naturally within any population of organisms. These variations are the "raw materials" upon which natural selection works. Without variation evolution, indeed life itself, would be impossible. In this lab we examine the range of variation within a "population" of sunflower seeds. The number of stripes is a polygenetic characteristic – determined by multiple genes. Thus, the more "striped genes" the seed has inherited, the more stripes it will have. This has consequences for the future offspring of the plant that eventually grows from the seed.

# Instructions

- 1. \_\_\_\_Check off each instruction as you complete it.
- 2. \_\_\_\_\_Secure the following materials from the indicated place:
  - a. A baggie with sunflower seeds.
  - b. CAUTION: THE SEEDS ARE COVERED IN FUNGICIDE -DO NOT EAT!
  - c. Magnifying glass
- 3. \_\_\_\_\_Write a hypothesis that predicts the average number of (white) lines on a sunflower seed. Have your instructor check this off before going on!
- 4. \_\_\_\_\_Count the number of white stripes **on a minimum of 101** sunflower seeds and record the data in Table 1.
- 5. \_\_\_\_\_Count partial lines if they are longer than half the seed otherwise ignore them. **Count Both Sides**.
- 6. \_\_\_\_\_Construct a bar graph of your individual data as Graph 1.
- 7. \_\_\_\_\_Transfer your individual totals to the class data table

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## Part I ... Data Collection

Tally marks are to help you keep track of your counting. Simply make a mark in the appropriate box for each seed as you go through your bag. Total up the tallies and record in Column C. Columns E are for whole class data.

Α	В	С	E		
Number of Stripes	Individual Totals		Class Totals		
per Seed	Tally Marks	Seeds	Seeds		
0 - 1					
2 - 3					
4 - 5					
6 - 7					
8 - 9					
10 - 11					
12 - 13					
14 - 16					
	Total # counted seeds =				

### **Instructions (Day 2)**

- 1. \_\_\_\_ When all the class data has been entered on the board or in the computer, complete Table 2.
- 2. Construct a bar graph of the class data as Graph 2.

### Graphing

Graph 1: Your group's Data															

Name \_\_\_\_\_

Graph 2: Whole Class Data															

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Part III Conclusions			
1. Hypothesis:			

3. Describe the shape of the line form in the class data.

2. Was your hypothesis correct or incorrect? Explain why?

4. How does the shape of your individual graph compare to that of the class data? (Hints: Is it shaped differently? Is it symmetrical?

5. List possible reasons why your graph is different?

6. If birds ate (selected) only seeds with 10 or more stripes, what would happen to the average number of stripes on sunflower seeds over several generations (time)?