Name: _____ Date: _____ Period: _____

Genetic Drift & Gene Flow Activity

Part I Directions: Genetic Drift

1. Grab a bag of beads; this represents the original population (72) of the ***Coloris caput (Latin for colored bead)*** organism.

TABLE I **A** **B** **C** **D** **E**

Color of bead from original population	# of each color from original population	% of each color from original population	# of each color from genetic drift population	% of each color from genetic drift population
	Total # of beads in original population = ☐	Your percentages should add up to 100%	Total # of beads in genetic drift population = ☐	Your percentages should add up to 100%

2. Carefully empty the bag and record the necessary information for the original population in the first two columns (A & B) of Table I above. Calculate the percentage of each color (#of color/total # of beads) in column C.

3. Place the beads back in the bag. One person needs to close their eyes and randomly pick out 45 beads. DO NOT LOOK at them until after you remove them from the bag. This represents the genetic drift population. Record all the necessary information for the genetic drift population in columns D & E in Table I.

4. Define Genetic Drift.

5. Why were you asked to close your eyes when picking beads for genetic drift?

Part II Directions: Gene Flow

6. Put all your beads back in your bag. Fill in columns A, B & C in Table II. It should be the same information as in Table I. You will now demonstrate gene flow. Reach your hand in and grab a group of beads (at least 20), make it random, don't pick the colors you want. (Record on a sheet of paper what colors they are so you can get them back later). Listening to your teacher's instructions pass your beads to another group. Fill in the chart below:

Table II

A	B	C	D	E
Color of bead from original population (use same information in above chart)	# of each color from original population (same as above)	% of each color from original population (same as above)	# of each color after gene flow population	% of each color after gene flow population
	Total # of beads in original population =	Your percentages should add up to 100%	Total # of beads after gene flow population =	Your percentages should add up to 100%

7. Define Gene flow.

Take a minute to get your beads back from the other group and give the beads you got back to that group. Put your original population back in the bag.

Complete the Post Lab Questions.

Part I Genetic Drift:

1. Does the new genetic drift population have more or fewer number of organisms than the original population? _____ Why?

2. What colors in the original population are NOT represented in the genetic drift population?

3. How do the percentages of colors compare between the original population and the final population after genetic drift?

4. Let's assume that the beads are beetles and that the new environment consists of lots of greenery and many bright red flowers. Which colors in the genetic drift population would have better fitness in this new environment? _____Why?

How might these survivors affect the allele frequency in the beetle population?

5. Which beetles would have less fitness? _____ Why?

What might happen to the alleles for those individuals that have less fitness?

6. If we only considered the effect of genetic drift on these beetles, would it matter what color the beetle was as to if it survived or not? _____ Explain.

Part II Gene Flow:

1. Does the new gene flow population accurately represent the original population in allele frequency? _____ Explain by citing your data.

2. What colors in the original population are NOT represented in the gene flow population?

3. How do the percentages of colors compare between the original population and the final population after gene flow?

4. Compare and contrast **Genetic Drift** and **Gene Flow** below:

Similarities	Differences