**Mark and Recapture Lab**

**Procedure:**

1. Put approximately two handfuls of beans in a cup.
2. By sight, write down an estimated guess as to the number of beans in the bag
3. “Capture” a sample and record this number in your data table as N1
4. Replace the beans captured with the same number of “marked” beans. Put the removed beans in the extra cup so they do not get mixed in with the population again.
5. Place your hand over the cup and shake it to distribute the “marked” beans among the population.
6. Capture another sample from the population.
7. Count the number of beans captured and record this number in your data table as N2
8. Of the beans counted, count the number of the “marked” beans and record this as R.
9. Return all beans to the cup and shake the cup.
10. Repeat steps 7 and 8 for 9 additional trials.
11. When your group has completed 10 recaptures, average all of the population estimates (N) together and enter this value in the data table

Lincoln Index: P= (N1 x N2)/ R

|  |  |  |  |
| --- | --- | --- | --- |
| N1 = | | | |
| Trial | N2 | R | P |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |
| 6 |  |  |  |
| 7 |  |  |  |
| 8 |  |  |  |
| 9 |  |  |  |
| 10 |  |  |  |
| Average P = | | | |

**Percent Error**

Count the actual number of beans in the population (exact population):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Calculate percent error using the following formula:

| Exact population - Approximate population| x 100 =

Exact Population

**Directions:** Answer the following questions in complete sentences on a separate sheet of paper.

**Analysis Questions:**

1. How does the average population size compare to the actual population size?
2. If there is a difference, explain what might cause the difference.
3. What trends do you see in the class data as a whole?
4. Does this method appear to be an effective way to predict population size? Why or why not?
5. How would it be possible to decrease the percent error using this technique?
6. If you were predicting a large population (like an ocean fishery) would you percent error be very large? Why or why not?
7. What problems might scientists encounter in using this method in the field that you would not have encountered in the simulation?