Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Period: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Fish Survey

Objective: Students will learn how to estimate the size of a fish population in a lake.

Materials: Each pair of students will need: 1 spoon and paper cup; small white beans (about 100 a cup); colored markers; and calculators.

1. Without disturbing (touching) the bluegills (beans) in any way, guess the number of bluegills in the lake. Write the number below.
2. What are some of the potential sources of error in estimating this way?
3. Your job is to gain information about the number of bluegills in the lake. You’re going to net and tag some bluegills. Pour out about 30 beans to represent the portion of the bluegills netted and tagged.
4. Using a marker, color your beans to represent the tagged bluegills. Write your number on the data sheet.
5. What other information would biologists note about the fish while they are tagging?
6. “Release” your bluegills by putting them back in the lake. Simulate their daily movements and interaction with the rest of the fish in the lake by shaking your cup. Obviously hold your hand over the cup or put your lid back on so the beans don’t go everywhere. The last thing you want to do is pick up beans for the rest of the period.
7. Now you are going to determine the total bluegill population of your lake by taking a sample with a “net”. Use your spoon and take a scoop. On your data sheet record the total number of bluegills trapped and the number that were tagged in your scoop.
8. You will now estimate the total population of bluegills in the lake by using the following formula:

Population = Total fish tagged x Total fish in the net

 Tagged fish in net

1. Record this number on your data sheet.
2. Return your bluegills to the lake mix the population as done before and take a second sample. Record the new data on your data sheet, as well as calculate the population.
3. Compare your two calculations with each other as well as your initial estimate.
4. What are some possible reasons for the differences?
5. Now you are to determine the accuracy of your initial estimate and your calculations. Return the second sample to the cup, and actually count all the fish (beans). Record your number below.
6. Why can’t biologists actually count all the fish in a lake?

Analysis:

1. Which was closest to the actual population, your original estimate or one of the calculations?
2. What do you think are some of the reasons for this difference?
3. What conditions, not present in this activity, in an actual lake might affect the bluegill population?