6.5 Learning Opportunity

Name: _____

Wildlife Proportions/Mark recapture method

You may use a calculator to perform computation on this assignment. However, please do show your proportion and the method you use to determine the value of the variable in each problem.

As we learned today in class, the proportion below can be used to estimate the total population of animals in a habitat.

$$\frac{Number\ of\ tagged\ animals\ in\ the\ recaptured\ sample}{Total\ number\ of\ animals\ in\ the\ recaptured\ sample} = \frac{Number\ of\ tagged\ animals\ in\ the\ total\ population}{N\ (Total\ number\ of\ animals\ in\ the\ population)}$$

Use this proportion to solve the following problems.

1) In a mark/recapture study, 60 deer are tagged and released back into their habitat. On the recapture, 54 deer are caught. 9 of those 54 recaptured deer are found to have tags. Write and solve a proportion to estimate the total number of deer in the forest habitat.

2) The brown anole is very common on the CSN campus. In an attempt to estimate the total population of brown anole lizards on campus, students devised a humane way to capture, mark, and release a sample size of 35 of these lizards. A week later, students gathered a large sample of 110 brown anole lizards. They found that only 10 of these lizards were marked. Use this information to estimate the total population of brown anole lizards on the CSN campus.

Use this proportion to solve the following problems.

$$\frac{Number\ of\ tagged\ animals\ in\ the\ recaptured\ sample}{Total\ number\ of\ animals\ in\ the\ recaptured\ sample} = \frac{Number\ of\ tagged\ animals\ in\ the\ total\ population}{N\ (Total\ number\ of\ animals\ in\ the\ population)}$$

3) Scientists net 250 piranha from a section of the Amazon river. They mark their tail with a special dye. A few days later, the same scientists net 850 piranha and find only 34 with dyed tails. Estimate the total number of piranha in this section of the Amazon river.

4) A wildlife preserve believes they have approximately 1200 wild horse on their land. They round up 15 horses and humanely tag one of their ears. If their estimate of the total population (1200) is correct, and they later corral 160 horses, how many of these horses should be tagged? What could the wildlife preserve do next time to improve the reliability of their estimate?