Lab Activity:
Predator Prey Simulation

Objective Students will simulate predator prey interactions. The number of predator and prey in their "ecosystem" will be recorded and graphed which will show a predator prey cycle in an ecosystem.

Materials (Prepared in advance)

Each group will receive 200 small _____ -- The small squares represent the prey population.

Each group will receive 50 large _____ -- The large squares represent the **predator** population. Each group will receive a data table (prepared) and blank graph paper to graph the data.

Instructions Your lab table or desk will represent your ecosystem (Please clear all objects, such as purses and backpacks)

1. Place 3 prey; on your table.
2. Toss 1 predator onto the table (evenly dispersed) and attempt to make the card touch as many prey as possible. In order to survive, the predator must capture at least three prey. It will be impossible for your predator to survive at this point.
3. Remove any prey; captured and record your data for the 1st generation.
4. The prey population doubles each generation. Count how many prey (small squares) you have left on your table, double that number and add prey cards to the table. Record the number in the data table under the 2nd generation "number of prey staring". (It should be 2x the number you have under the "hares remaining" for generation 1)
5. Your predator died during the first round, but that's okay, a new predator moves in for the second round. Put a 1 in the "number of predators" for generation 2 to represent the new arrival. Repeat the tossing procedure and record your data for the second generation.
6. Again, number or prey doubles, if your predator didn't "capture" 3 prey, it died. But a new one moves in for the next round. Keep going, adding to the number of prey each round.
7. Eventually your predator will be able to capture enough prey to survive. Guess what happens? The number of predators double. Add to your predator population by adding predator cards. Now when you toss your predators, you will be tossing more than one. Don't forget to remove any "captured" prey.
8. Continue to record the data through 20 generations.
9. Construct a graph. On the X-axis, put generations 1 through 20, on the Y-axis you will have the population numbers for each generation (number of predators, number of prey). Use one line for the predator and one line for the prey to graph the data.

Data Table

GENERATIONS	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th	19th	20th
# of Predators Starting																				
# of Prey Starting																				
# of Predators Remaining																				
# of Prey Remaining																				

Graph:

( )

( )

Y: _____

X: _____(   )
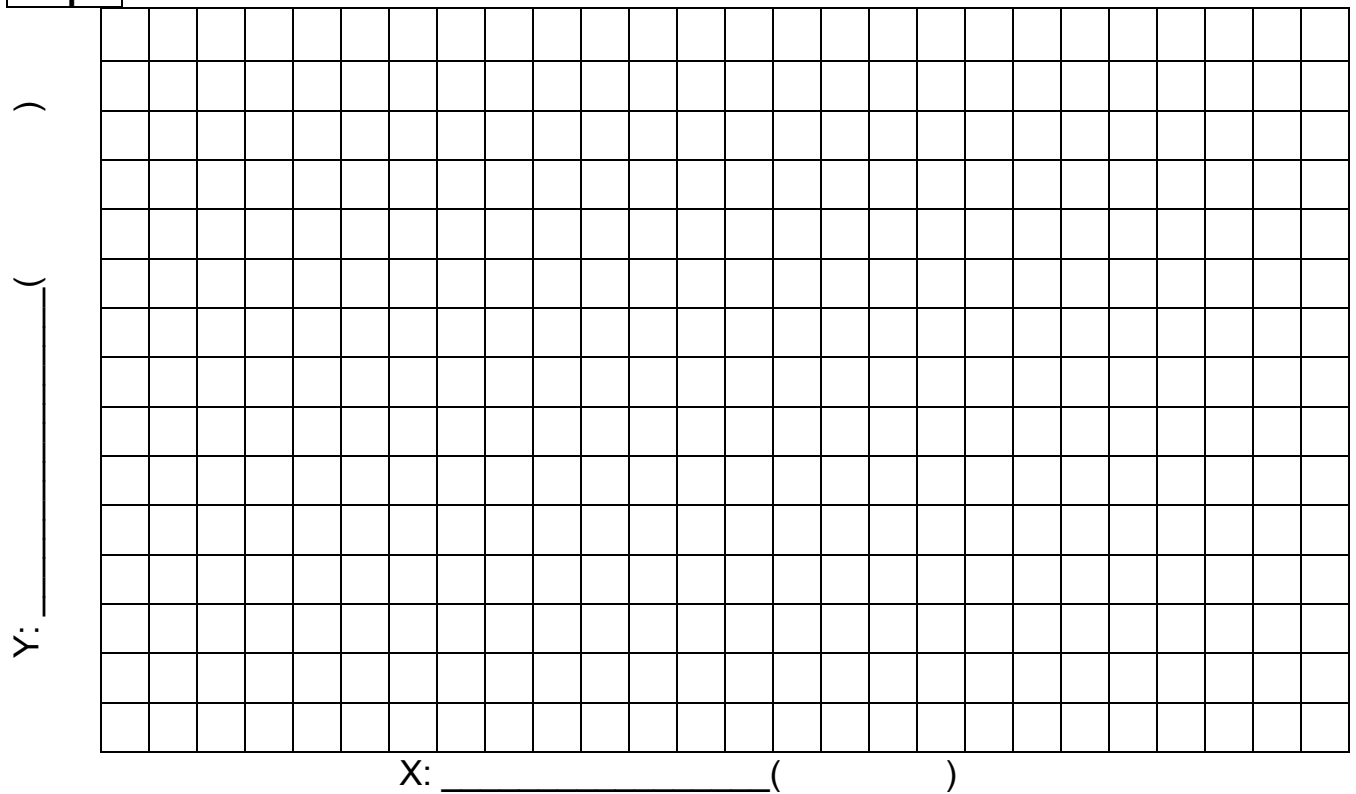
Analysis

1. Describe what happens to the predator and the prey population as time goes by.

2. Explain how this simulation could be applied to the predation on juvenile oak trees and how that effects Oak tree recruitment.

3. Make a prediction about what would happen to your prey population if a new predator were added to the system.

   - Has anything like this occurred in the oak tree ecosystems in CA?

4. What kind of situations have led to an over abundance of deer in Oakland communities?

5. Why are predators/prey relationships considered a "checks and balances relationship?"

6. Explain how this simulation models a real ecosystem.