Name _____ Period _____

Predator-Prey Simulation

Purpose: To simulate predator-prey relationships as they would occur in nature.

Materials: calculator, 1white sheet of paper, set of white squares and colored squares, masking tape

Setup: Your teacher will give you the following supplies:
1. White squares: These will be your *mice*.
2. Colored Squares: These will be your *lynx*.
3. White 8 x 10 sheet of paper: Tape to your desk. This is your *meadow*.

Game Procedures:
For each generation, the mice cards are always randomly tossed into the meadow first, followed by the lynx cards. Once it has landed, if a lynx card touches any part of a mouse card, the mouse is eaten (and removed from the game). (The lynx could also eat more than one mouse at a time.)

1.) Each mouse not caught by the lynx doubles for the next generation.
2.) A lynx needs to catch three mice to survive. If a lynx catches less than 3 mice or lands outside of the meadow, it dies. If there are no surviving lynx, one new lynx will migrate to the meadow for the next generation.
3.) When a lynx catches at least 3 mice, it survives AND has 1 offspring for every 3 mice caught. (For example, if a lynx catches 6 mice, it will have 2 offspring.)
4.) There must always be 3 mice to start a generation. If the mice population is wiped out, 3 new mice will migrate to the meadow for the next generation.

Getting Started:

1.) Start by tossing 30 mice (white cards) into the meadow.
2.) Toss 1 lynx (colored card) into the meadow in an effort to catch the mice.
3.) Remove all caught mice and the lynx and complete the data table for generation #1. **If the lynx did not catch a total of three mice then it will die.**
4.) At the beginning of generation #2, double the mice that survived (they've reproduced) and toss all new mice into the meadow. A new lynx will migrate to the meadow if your other lynx dies, so toss it in or toss in the old lynx with one new offspring. In your data chart, fill out the number of mice and lynx starting this generation.
5.) Remove the caught mice. Double the surviving mice and keep the lynx if it has survived. Record the new data for generation #2.
6.) Eventually the mice population will increase enough so that the lynx will be able to catch at least 3 and reproduce. *This simulation is more realistic if you base your lynx offspring on each lynx's catch, rather than totals.*

Data:

Generation	Starting # Mice	Starting # Lynx	Starting Mice : Lynx Ratio (Mice/Lynx) Reduce to whole numbers!	Mice Caught	Mice Left	Mice Offspring (= Mice Left)	Lynx Starved	Lynx Surviving	New Lynx Offspring (3 Mice Caught = 1 New Lynx)
1	30	1	30/1= 30						
2									
3									
4									
5									
6									
7									
8									
9									
10									

Analysis:

Graph the data for the 10 generations, using a line graph. Graph **both** the mouse and lynx data on the **same** graph, using a **different colored line** for each. (Note the colors in your key.) After the graph, explain what is happening (i.e. what does the graph mean).

Mice and Lynx Populations

Key
= mice
= lynx

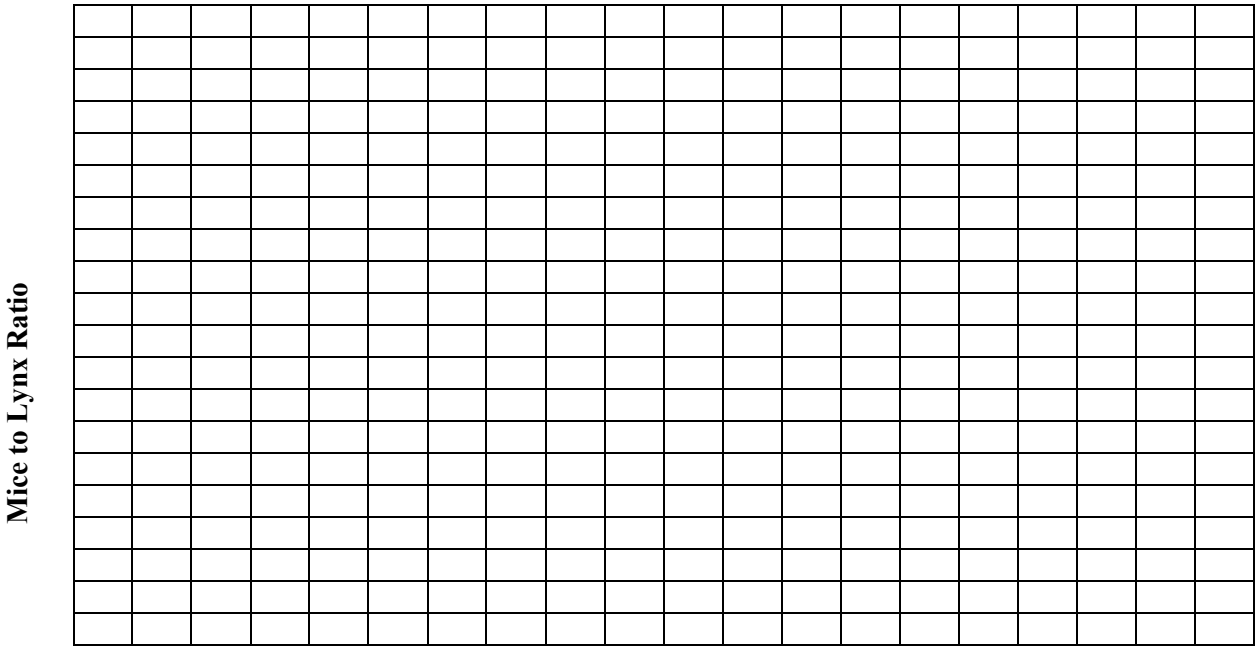
Population

Generation #

Explanation (what does the graph show is happening with these two populations?):

Next, graph the mice: lynx ratios for each generation. After the graph, explain what is happening.

Mice: Lynx Ratios



Explanation (what does this graph show is happening?):

Analysis:

1.) Which animal was the predator?

2.) Which animal was the prey?

3.) If the population of lynx was suddenly reduced, why might the population of mice eventually drop?

4.) Give another example of predation found in nature.

5.) How is predation different than parasitism?

Conclusion:

Claim: (How were the predator and prey populations related?)

Evidence:

Interpretation: