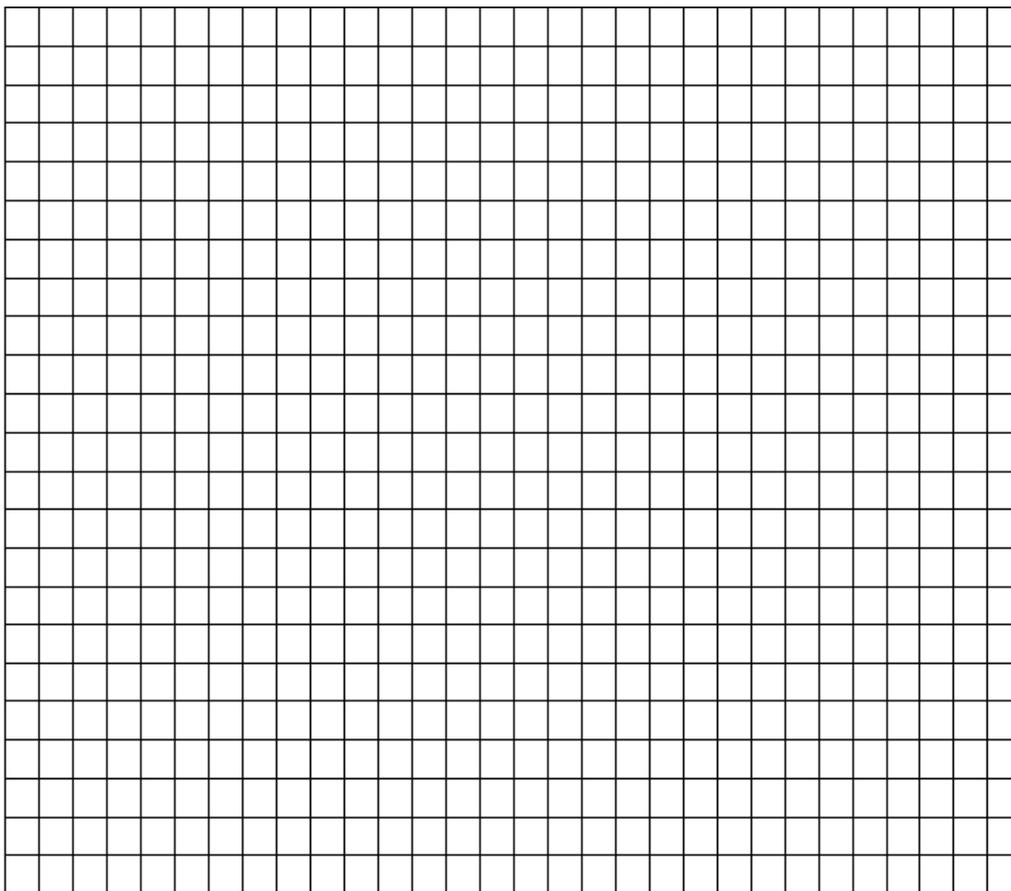


Year (Round)	Deer Population (#)	Prediction for Next Round
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

Data Analysis:

Graph the results from your data table and to show the rise and fall of the deer population. Create a line graph using the data from the table above; make sure to label your axis(s) and include the units of measurements.

Effects of Resources on Deer Population



Results/Conclusion:

1. List the basic needs of animals.
2. Describe the relationship between resource availability and population growth or decline.
3. Define —limiting factors|| and provide three examples.
4. What is the carrying capacity for the deer population according to your graph?
5. Once the deer population goes significantly above carrying capacity, describe what happens to the deer population in the years following.
6. Write a conclusion of your findings (be sure to use all vocabulary words from front of sheet).

Limiting Factors Activity

Benchmarks: **SC.912.L.17.5** Analyze how population size is determined by births, deaths, immigration, emigration, and limiting factors (biotic and abiotic) that determine carrying capacity.

Background:

A variety of factors affects the ability of wildlife to successfully reproduce and to maintain their populations over time. Disease, predator/prey relationships, varying impacts of weather conditions from season to season (e.g., early freezing, heavy snows, flooding, and drought), accidents, environmental pollution, and habitat destruction and degradation are among these factors.

Some naturally-caused as well as culturally-induced limiting factors serve to prevent wildlife populations from reproducing in numbers greater than their habitat can support. An excess of such limiting factors, however, leads to threatening, endangering, and eliminating whole species of animals. The most fundamental of life's necessities for any animal are food, water, shelter, and space in a suitable arrangement. Without these essential components, animals cannot survive.

Wildlife populations are not static. They continuously fluctuate in response to a variety of stimulating and limiting factors. Natural limiting factors tend to maintain populations of species at levels within predictable ranges. This kind of —balance in nature|| is not static, but is more like a teeter-totter than a balance. This cycle appears to be almost totally controlled by the habitat components of food, water, shelter, and space, which are also limiting factors. Habitat components are the most fundamental and thereby the most critical of limiting factors in most natural settings.

Problem Statement: How will resource availability affect the population of a species in an ecosystem?

Vocabulary: reproduction, predator, prey, degradation, limiting factor, habitat, species, population, resource, carrying capacity (all vocabulary words must be used properly in conclusion portion of lab)

Materials (per group): open space

Procedures:

1. Make a hypothesis based on the problem statement above for the resources being supplied.
2. Obtain a number (1 through 4) from your teachers.
 - a. Deer = 1
 - b. Resources = 2, 3, 4
3. Go outside. Deer will all stand on one side of the sidewalk and all the resources will stand on the opposite side. Stand with backs toward other group.
4. Each student should choose a what action sign to make for the first round. Students 2 – 4 will decide what resource they will be and all the deer will decide what resource they are looking for.

Resources will include food, water, and shelter. A deer can choose to look for any of its needs in each round, but cannot change its mind after turning around to face the "habitat".
5. Make the sign of the resource.
 - a. Food = Rub stomach with hand
 - b. Water = Raise hand to the mouth as if to drink from a cup
 - c. Shelter = Raise arms over head
6. When teacher says —GO...turn around and face the other group. Continue to hold sign.
7. When deer see a student in the habitat making the sign they need, they should walk quickly, but calmly, to get that student and take them back to the deer side. This represents the deer successfully meeting its needs and reproducing. Those deer who do not meet their needs remain in the environment to provide habitat for the other deer in the next round.
8. Record the number of deer in each round for graphing later.
9. Predict what will happen in the next round.
10. Repeat steps 3 – 8, fifteen more times.