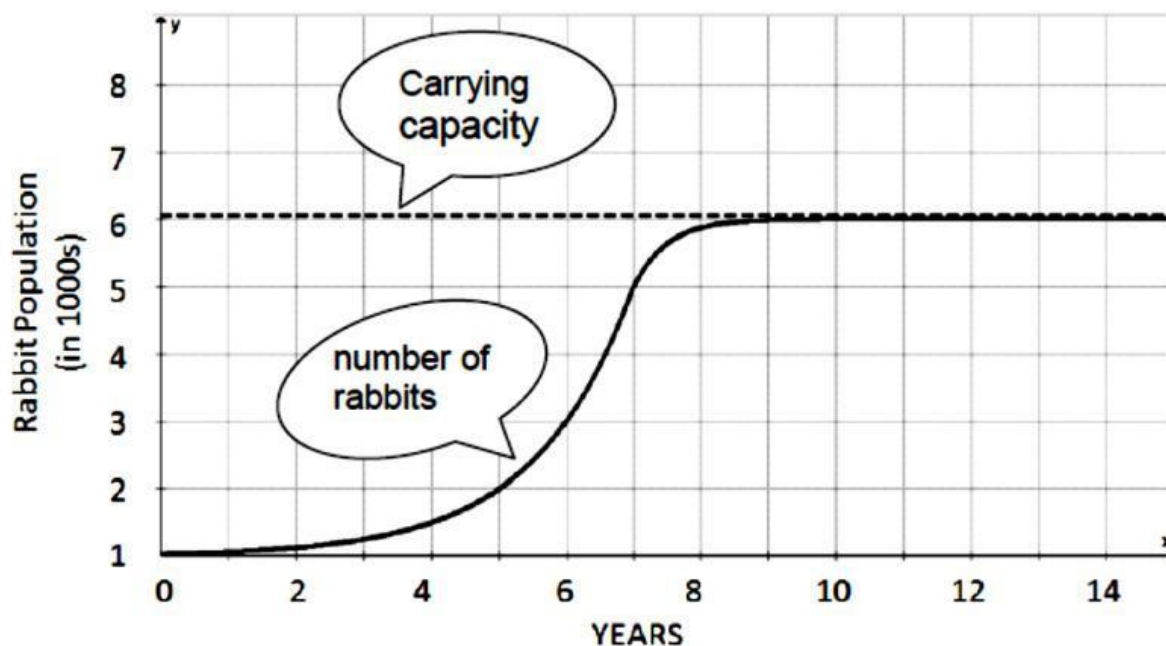


Name: \_\_\_\_\_

### Carrying Capacity Activity

**Background:** The **Carrying Capacity** is the largest number of individuals of one species that an ecosystem can support. In all populations, there are factors that limit or restrict the number of individuals in a population. These are called **Limiting Factors**. Limiting factors include things like food, water, shelter, mates, nesting materials, etc. If a population goes above its carrying capacity, some individuals will die.

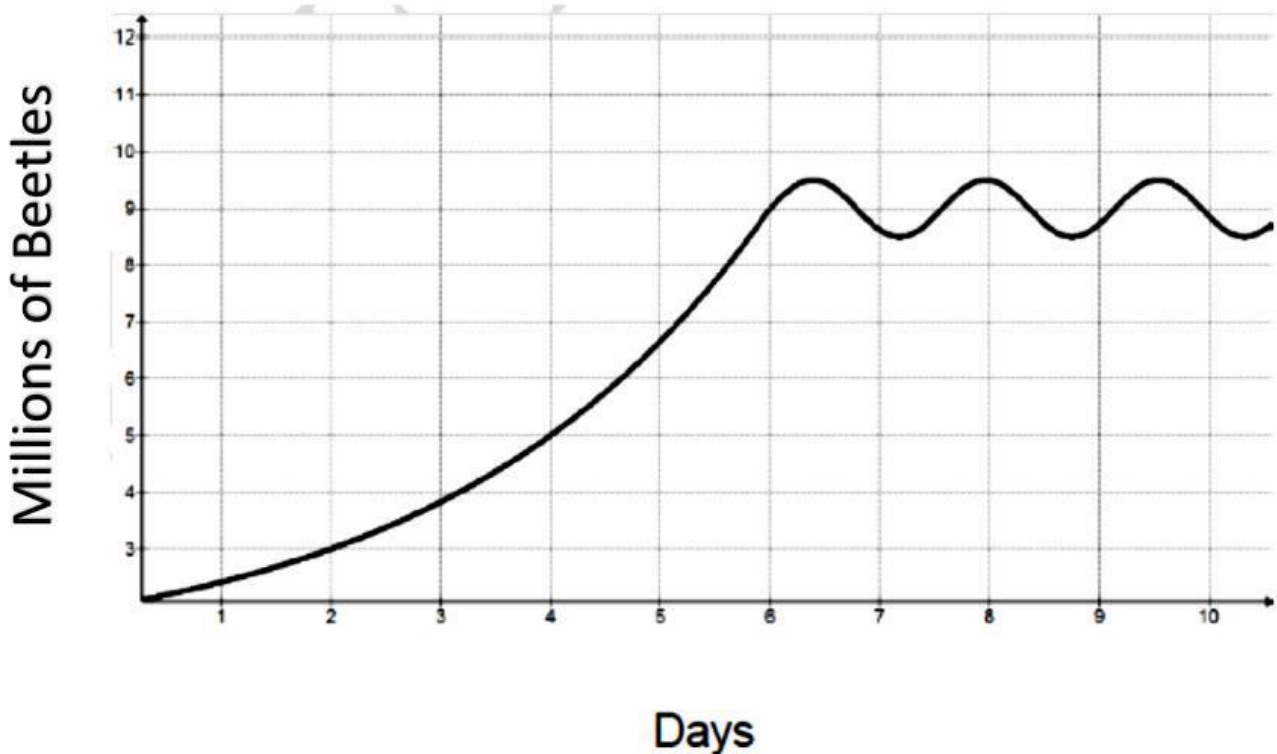
**Directions:** Use the chart below to answer the following questions:



1. Define Carrying Capacity: \_\_\_\_\_  
\_\_\_\_\_
2. Define Limiting Factors: \_\_\_\_\_  
\_\_\_\_\_
3. Identify **TWO** examples of Limiting Factors: \_\_\_\_\_
4. Use the chart above to determine how many rabbits are in the population:
  - a. 4 years: \_\_\_\_\_
  - b. 6 years: \_\_\_\_\_
  - c. 7 years: \_\_\_\_\_
5. How many years did it take for the rabbits to reach their carrying capacity? \_\_\_\_\_
  - a. How did you find this answer? \_\_\_\_\_
6. How many rabbits can survive in the population at the carrying capacity? \_\_\_\_\_

**Background:** In a real ecosystem, a population will fluctuate above and below the carrying capacity. When the population gets too high some individuals will die off which causes the population to lower. In the graph below, the beetles overshoot their carrying capacity. At this point there was not enough food, so more beetles die and fewer beetles are born. The population then crashes (decreases rapidly). Eventually more beetles are born and the population goes up.

**Directions:** Use the chart below of a population of beetles to answer the following questions:

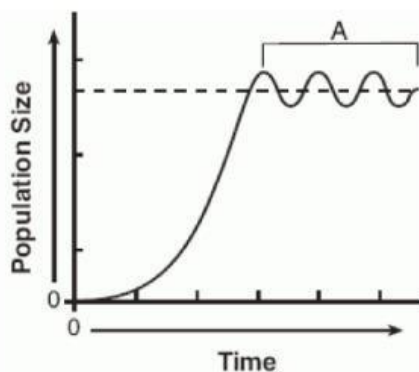


1. Draw a dotted line to represent the carrying capacity on the graph above.
2. Identify an **Abiotic** factor that could serve as a limiting factor for the beetles: \_\_\_\_\_
3. Identify a **Biotic** factor that could serve as a limiting factor for the beetles: \_\_\_\_\_
4. How many days does it take for the beetle population to reach it's carrying capacity?  
\_\_\_\_\_
5. How many beetles can survive in this population (at the carrying capacity)? \_\_\_\_\_
6. When happens when the beetle population goes above it's carrying capacity? \_\_\_\_\_  
\_\_\_\_\_
7. Why does the population fluctuate above and below the carrying capacity? \_\_\_\_\_  
\_\_\_\_\_

### Questions:

- \_\_\_\_\_ 1. One **biotic** factor that limits the carrying capacity of any habitat is the
- A. Availability of water
  - B. Level of atmospheric oxygen
  - C. Activity of Decomposers
  - D. Amount of Soil
- \_\_\_\_\_ 2. The reason that organisms **cannot** produce populations of unlimited size is that
- A. The resources of Earth are finite (limited)
  - B. There is no carrying capacity on Earth
  - C. Species rarely compete with one another
  - D. Interactions between organisms are unchanging
- \_\_\_\_\_ 3. **Abiotic factors** that could affect the stability of an ecosystem could include
- A. Hurricanes, packs of wolves, and temperature
  - B. Blizzards, heat waves, and swarms of grasshoppers
  - C. Droughts, floods, and heat waves
  - D. Species of fish, number of decomposers, and supply of algae

Use the graph below to answer questions 4 & 5. The graph shows a fish population over time:



4. What does the dashed line represent?

5. What happens when the population goes above the dashed line?

- \_\_\_\_\_ 5. Which graph correctly shows a population that has reached its carrying capacity?

