

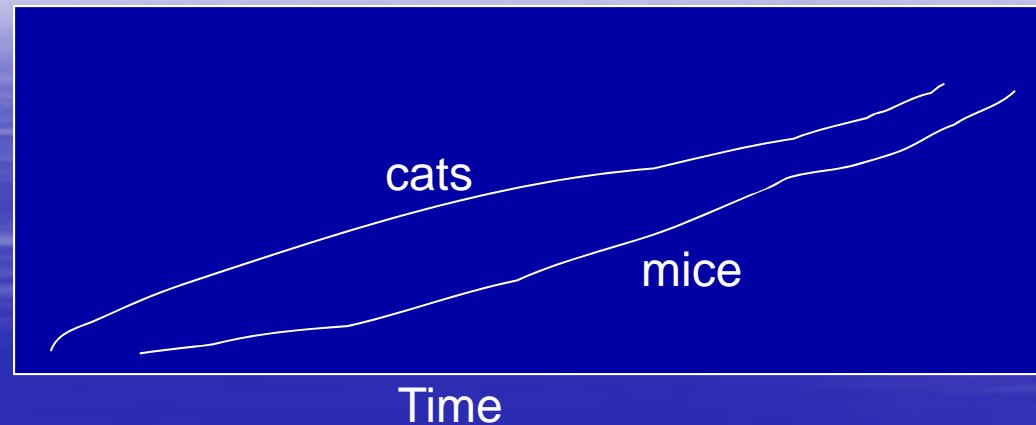
Sample Exam Question

- **1.) UMassBoston**
- A fluke earthquake levels UMassBoston to rubble. The Board of Trustees decide that rather than rebuild the University, it is to be relocated.
- a.) Plot the population of mice and cats over time from 0-100 years at the destroyed site. Be sure to label your axes. (4 points)
- b.) Explain the trends in your graphs. (3 points)
- c.) What factors control the carrying capacity of this site? (4 points)

2 Point Answer

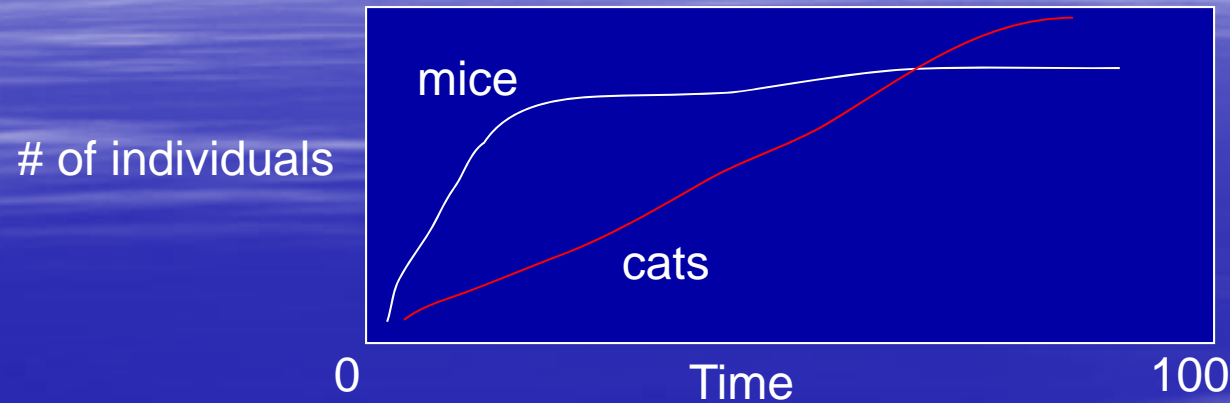
A)

Population



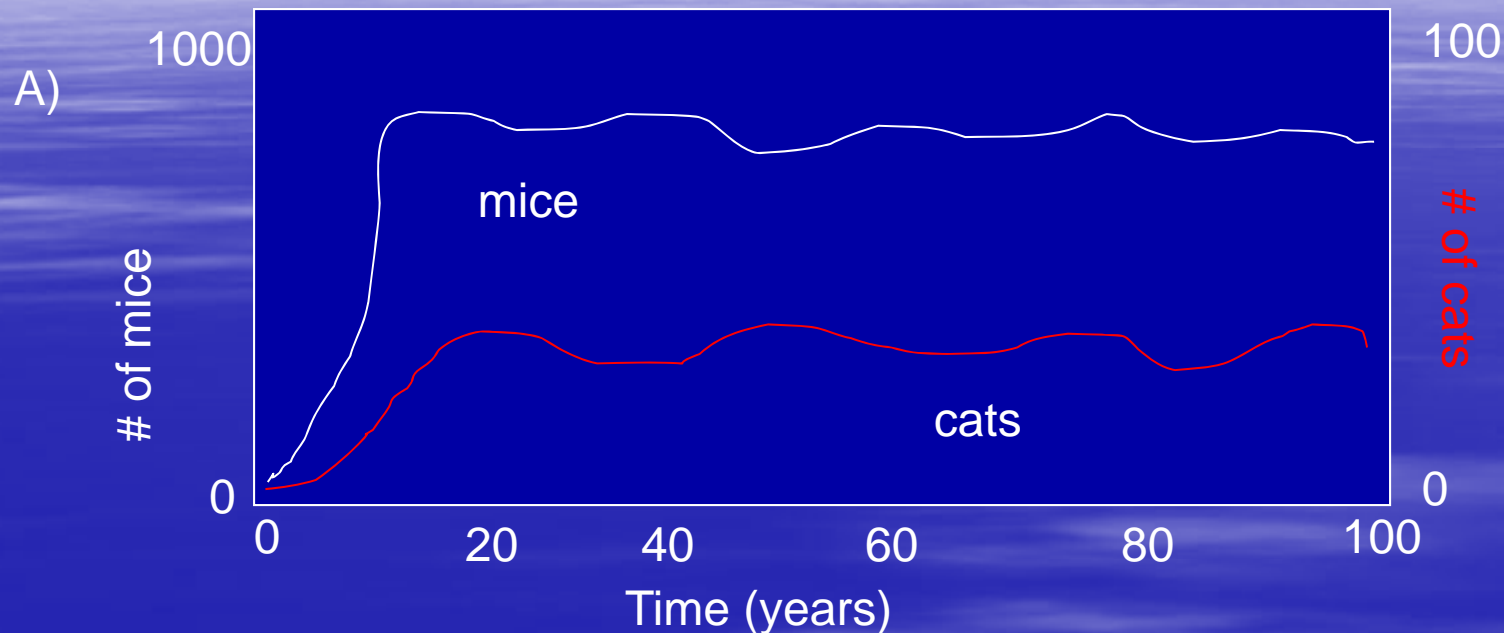
- B) Cats and mice will go up over time
- C) Carrying capacity is the number of individuals in an ecosystem

6 Point Answer



- B) Mice go up fast as they reproduce fast. Cats go up slower because they grow slower
- C) Mice run out of food eventually

10 Point Answer



- B) # of mice increase exponentially in a few years due to new resource and plenty of food. # of cats increases exponentially due to increase in prey species (mice), but slower increase due to longer reproduction time. Slight variations in carrying capacity due to variations in environmental variables.
- C) Carrying capacity of mice controlled by food source, cat predators, habitat area, and environmental variables such as weather, sunlight, temperature. Carrying capacity of cats controlled by food source (mice), habitat area, environmental variables, maybe other predators competing for same food source, and maybe a predator that eats cats.