

Choices of Two

- _____ The most difficult dispersion pattern to find in nature is the _____ (regular / random) dispersion pattern.
- _____ The innate capacity for growth for any population is _____ (arithmetic / exponential).
- _____ The number of individuals in a population that can be supported over long periods of time is _____ (cc / K).
- _____ Carrying capacity is a _____ (dynamic / stable) number.
- _____ Intraspecies competition for a natural resource is a density _____ (dependent / independent) factor limiting population growth.
- _____ The best time to harvest a plant or animal population is at (in) the _____ (beginning / middle) of the growth curve.
- _____ The larger population is usually found in the _____ (predator / prey) species.

Vocab.

- _____ The study of the interrelationships between plants, animals, and the physical components of their environment.
- _____ All the ecosystems visible as one scans the horizon.
- _____ The largest of the ecological levels of organization.
- _____ Woodland, bog, and fen are all examples of an _____.
- _____ A group of interacting populations is a _____.
- _____ The most probable organism distribution pattern in nature is _____.
- _____ $\Delta N / \Delta t = \text{___} + \text{___} - \text{___} - \text{___}$
- _____ A rapidly reproducing species is a(n) _____ strategy species.
- _____ The statistical study of populations is the study known as _____.
- _____ Zebra mussels originally came to us from the _____ Sea.
- _____ The factors that impede a population's ability to reach its maximum potential are called _____ factors.

Density-Dependent (D) or Density- Independent (I) Factors Limiting Population Growth

- _____ Hurricanes.
- _____ A virus spread by contact.
- _____ Food availability.
- _____ The autumn's first frost.
- _____ A field fire.
- _____ Spraying a field with an herbicide.
- _____ Competition between plants for phosphorus in the soil.
- _____ Competition between the leaves in a tree for sunlight.
- _____ Competition for moose among the Isle Royale wolves.

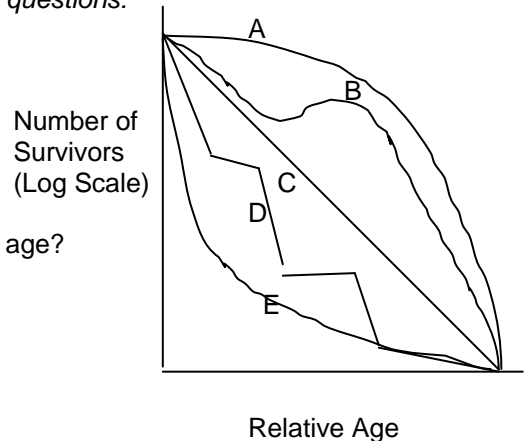
Fill-In The Circle To Identify The Correct Answer In The Shrunken Multiple Choice Questions

1. _____ All the populations of different species that occupy and are adapted to a given area are referred to as a(n) _____.
- A. biosphere B. community C. ecosystem D. niche

2. _____ is the *least* influential in determining the distribution of terrestrial biomes.
 A. light intensity B. rainfall C. salinity D. temperature
3. _____ What is the term for the maximum number of individuals that an area can support indefinitely?
 A. biotic potential B. carrying capacity C. niche D. maximum density
4. _____ Which of the following represents the most complex level?
 A. community B. species C. ecosystem D. population
5. _____ Which of the following lists include only abiotic environmental factors?
 A. food, temperature, fire, wind B. soil minerals, oxygen level, light, predators
 C. wind, rainfall, temperature, soil minerals D. light, food, predators, competitors
6. _____ In whitetail deer populations in Michigan, individuals most often show a _____ pattern of dispersion.
 A. clumped B. uniform C. random
7. _____ A population is correctly defined as having which of the following characteristics?
 I. inhabiting the same general area
 II. individuals belonging to the same species
 III. possessing a constant and uniform density and dispersion
 A. I only B. III only C. I and II only D. II and III only I, II, and III
8. _____ A biologist reported that a sample of ocean water had 5 million diatoms of the species *Coscinodiscus centralis* per cubic meter. What was the biologist measuring?
 A. density B. dispersion C. carrying capacity D. quadrants E. range
9. _____ All of the following phrases could characterize a population *except*:
 A. interacting individuals B. dispersion C. density D. several species E. boundaries
10. _____ to measure the population density of monarch butterflies occupying a particular park, 100 butterflies are captured, marked with a small dot on a wing, and then released. The next day, another 100 butterflies are captured, including the recapture of 20 marked butterflies. One would correctly estimate the population to be:
 A. 200 B. 500 C. 1,000 D. 10,000 E. 900,000
11. _____ How would the dispersion of humans in the United States be described?
 A. dense B. clumped C. random D. intrinsic E. uniform
12. _____ The pattern of dispersion for a certain species of kelp is clumped. The pattern of dispersion for a certain species of snail that lives only on this kelp would likely be:
 A. absolute B. clumped C. demographic D. random E. uniform
13. _____ Uniform spacing patterns in plants such as the creosote bush are most often associated with which of the following?
 A. chance B. patterns of high humidity C. the random distribution of seeds
 D. antagonistic interactions among individuals in a population
 E. the concentration of resources within the population's range
14. _____ Which of the following would be most likely to exhibit uniform dispersion?
 A. red squirrels, which hide food and actively defend territories
 B. cattails, which grow primarily at edges of lakes and streams
 C. dwarf mistletoes, which parasitize particular species of forest trees
 D. tassel-eared squirrels, which are nonterritorial
 E. lake trout, which seek out deep water

Use the survivorship curve drawn to the right to answer the following questions:

15. _____ Which curve best describes survivorship in oysters?
16. _____ Elephants?
17. _____ A marine crustacean that molts?
18. _____ Humans in developed nations?
19. _____ Which curve is impossible?
20. _____ Which curve describes survivorship that is independent of age?



21. _____ Natural selection has led to the evolution of diverse natural history strategies which have in common:
 - A. many offspring per reproductive episode
 - B. limitation by density-dependent limiting factors
 - C. adaptation to stable environments
 - D. maximum lifetime reproductive success
 - E. relatively large offspring
22. _____ A population of ground squirrels has an annual per capita birth rate of 0.06 and an annual per capita death rate of 0.02. Estimate the number of individuals added to a population of 1000 individuals in one year.
 - A. 120 individuals added
 - B. 40 individuals added
 - C. 20 individuals added
 - D. 400 individuals added
 - E. 20 individuals lost
23. _____ In which of the following habitats would you expect to find the largest number of K-strategists?
 - A. an abandoned field in Ohio
 - B. the sand dunes south of Lake Michigan
 - C. the rain forests of Brazil
 - D. south Florida after a hurricane
 - E. a newly emergent volcanic island
24. _____ All of the following characteristics are typical of an r-strategy population except one:
 - A. occurs in variable environments
 - B. a high intrinsic rate of growth
 - C. onset of reproduction at an early age
 - D. extensive parental care of offspring
25. _____ Which of the following characterizes K-strategy species?
 - A. offspring with good chances of survival
 - B. many offspring per reproductive episode
 - C. small offspring
 - D. a high intrinsic rate of increase
 - E. early parental reproduction