

Name _____

POPULATION BIOLOGY

Understanding Concepts

In the space at the left, write the letter of the phrase from Column B that best matches the term in column A.

Column A

- _____ 1. social hierarchy
- _____ 2. biotic potential
- _____ 3. population density
- _____ 4. interspecific competition
- _____ 5. intraspecific competition
- _____ 6. limiting factors
- _____ 7. carrying capacity
- _____ 8. population growth curve
- _____ 9. emigration
- _____ 10. predation

Column B

- a. a population graph having an S shape
- b. competition among populations of different species
- c. the feeding of one organism on another
- d. the maximum number of individuals in a given population that the environment can support
- e. the size of a population that occupies a given area at any given point in time
- f. circumstances that prevent organisms from reaching their biotic potential
- g. a designated chain of command based on dominance
- h. the moving of a population out of an area
- i. the highest rate of reproduction under ideal conditions
- j. competition between members of the same species

Write the word or phrase that best completes the statement.

11. _____ is a condition in which the birthrate equals the death rate and the population is not growing in size.
12. Social hierarchy is also known as a _____ .
13. _____ occurs when a species dies out due to competition with a different species for the same resources.
14. Food supply and living space are examples of _____ limiting factors.
15. The swarming of bees from an overcrowded hive to a new location is an example of _____ .

Interpreting and Applying Concepts

Each of the graphs in Figure 27-1 shows a relationship between change in population size and time. Refer to the graphs as you answer the following questions.

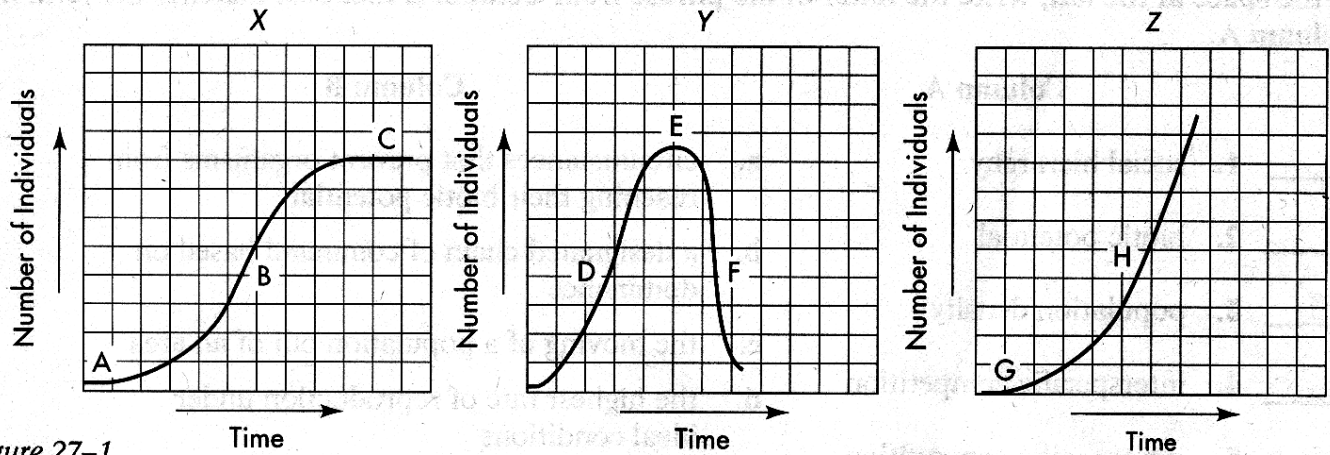


Figure 27-1

Figure 27-1

1. Which graph represents growth under ideal conditions? How do you know?

Time

2. Describe what is happening in graph Y to the population size at point F.

3. In graph X, what is happening to the population size at points A, B, and C?

4. How does the birthrate of the organisms compare with the death rate at point C? At point F?

5. If each graph were extended beyond the time limits shown, which would show a continued growth in population size?

6. The curve of which graph most closely resembles that expected for a frog population in a pond? For a lightning bug population?

7. Which graph shows the effects of density-dependent limiting factors on population size? What might some of those limiting factors be?

Interpreting and Applying Concepts continued

Answer the following questions in complete sentences.

8. Both interspecific competition and intraspecific competition are density-dependent limiting factors. Why is extinction a possible outcome of interspecific competition, but not of intraspecific competition?

Questions 9 and 10 are related questions. Where appropriate, use the terms limiting factors, carrying capacity, and population density in your answer.

9. Suppose you were to place several mating pairs of rabbits on a small island having ample vegetation and no predators. Describe the changes you would expect to see in the rabbit population over time. Include a discussion of any limiting factors in your description.

10. Once the island's carrying capacity for rabbits is reached, several mating pairs of foxes are introduced to the island. What effect will this have on the rabbit population of the island? Describe the changes in rabbit and fox populations you would expect to take place over time.

Interpreting and Applying Concepts continued

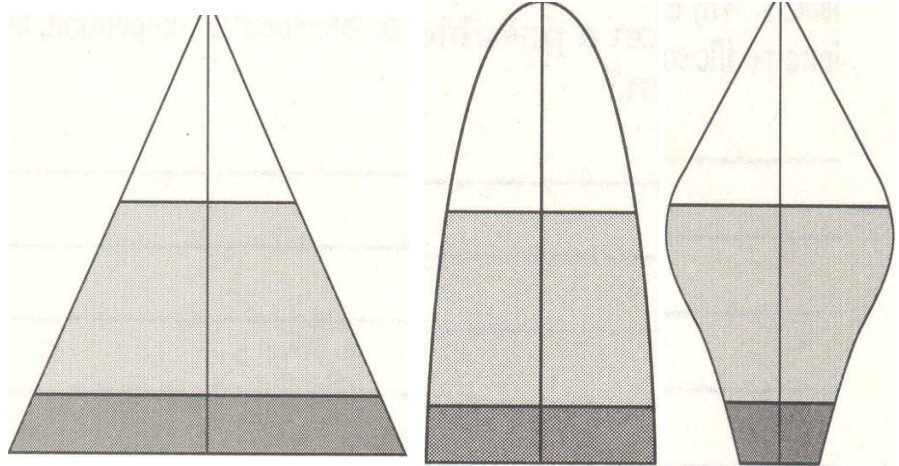
The age structure diagrams in Figure 27-2 show how individuals are distributed at each age level for different human populations. Study the diagrams and then answer the questions.

Figure 27-2

No shading 45-75 years

Partial shading 15-44 years

Darkest shading 0- 14 years



11. Based on what you know about average reproductive age for humans, which graph do you think represents a rapidly expanding population? Explain.
12. Describe the types of populations represented by the two graphs you did not name in your answer to Question 11.