

Chapter 5**Populations****Section 5-1 How Populations Grow (pages 119–123)**

This section identifies the characteristics used to describe a population. It also describes factors that affect population size and explains what exponential growth and logistic growth are.

Characteristics of Populations (page 119)

- What are the four main characteristics of a population?
 - _____
 - _____
 - _____
 - _____
- What is a population's geographic distribution? _____

- Another term for geographic distribution is _____.
- What is population density? _____

- What is the equation with which you can calculate population density? _____

Population Growth (page 120)

- Circle the letter of each sentence that is true about populations.
 - They can grow rapidly.
 - They can decrease in size.
 - They may stay the same size from year to year.
 - They stay the same size until they disappear.
- What three factors can affect population size?
 - _____
 - _____
 - _____
- If more individuals are born than die in any period of time, how will the population change? _____
- Complete the table about changes in population.

CHANGES IN POPULATION

Type of Change	Definition	Resulting Change in Size
Immigration		
Emigration		

Exponential Growth (page 121)

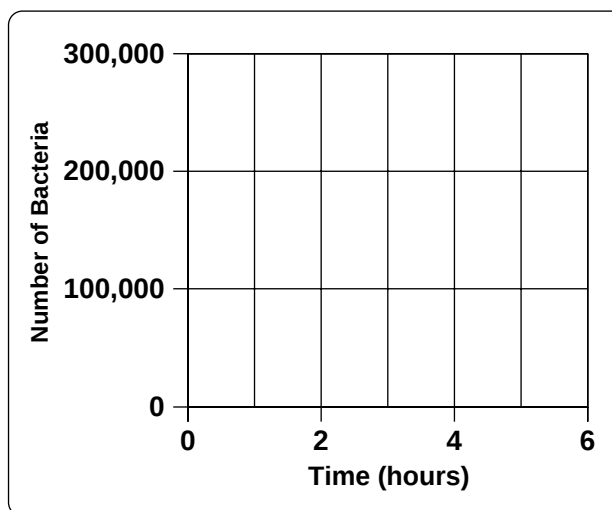
10. How will a population change if there is abundant space and food and if the population is protected from predators and disease? _____

11. When does exponential growth occur? _____

12. What are three ways that a growth rate may be stated, or expressed? _____

13. Under ideal conditions with unlimited resources, how will a population grow? _____
14. Complete the graph by drawing the characteristic shape of exponential population growth.

Exponential Growth of Bacterial Population



15. Is the following sentence true or false? Elephants never grow exponentially because their rate of reproduction is so slow.

Logistic Growth (page 122)

16. Circle each sentence that is true about exponential growth.
 - a. It continues until the organism covers the planet.
 - b. It continues at the same rate as resources become less available.
 - c. It does not continue in natural populations for very long.
 - d. It continues in natural populations until the birthrate increases.
17. When resources become less available, how does population growth change? _____

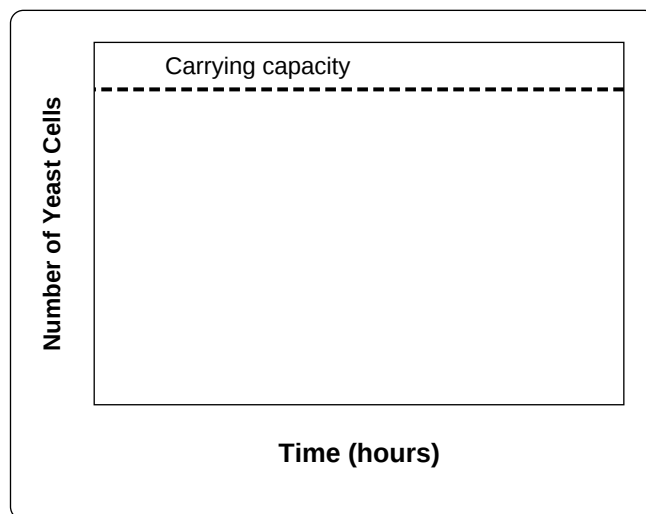
Chapter 5, Populations *(continued)*

18. When does logistic growth occur? _____

19. Circle the letter of each instance when a population's growth will slow down.
- a. The birthrate and death rate are the same.
 - b. The birthrate is greater than the death rate.
 - c. The rate of immigration is equal to the rate of emigration.
 - d. The rate of emigration is less the that rate of immigration.
20. What is the carrying capacity of the environment for a particular species? _____

21. Complete the graph by drawing the characteristic shape of logistic population growth.

Logistic Growth of Yeast Population



Section 5–2 Limits to Growth (pages 124–127)

This section describes what factors limit population growth.

Limiting Factors (page 124)

1. What is a limiting factor? _____

2. How do different limiting factors affect populations? _____

Density-Dependent Factors (pages 125–126)

3. What is a density-dependent limiting factor? _____

4. When do density-dependent factors become limiting? _____

5. When do density-dependent factors operate most strongly? _____

6. What are four density-dependent limiting factors?
 a. _____ c. _____
 b. _____ d. _____
7. When populations become crowded, what do organisms compete with one another for? _____

8. The mechanism of population control in which a population is regulated by predation is called a(an) _____.
9. What are the prey and what are the predators in the predator-prey relationship on Isle Royale? _____

10. Why does the wolf population on Isle Royale decline following a decline in the moose population? _____

11. How are parasites like predators? _____

Density-Independent Factors (page 127)

12. A limiting factor that affects all populations in similar ways, regardless of population size, is called a(an) _____.
13. What are examples of density-independent limiting factors? _____

14. Circle the letter of each sentence that is true about changes caused by density-independent factors.
 - a. Most populations can adapt to a certain amount of change.
 - b. Periodic droughts can affect entire populations of grasses.
 - c. Populations never build up again after a crash in population size.
 - d. Major upsets in an ecosystem can lead to long-term declines in certain populations.

Chapter 5, Populations *(continued)*

15. What is the characteristic response in the population size of many species to a density-independent limiting factor? _____
- _____

Reading Skill Practice

A graph can help you understand comparisons of data at a glance. By looking carefully at a graph in a textbook, you can help yourself understand better what you have read. Look carefully at the graph in Figure 5–7 on page 126. What important concept does this graph communicate?

Section 5–3 Human Population Growth (pages 129–132)

This section describes how the size of the human population has changed over time. It also explains why population growth rates differ in countries throughout the world.

Historical Overview (page 129)

1. How does the size of the human population change with time? _____
2. Why did the population grow slowly for most of human existence? _____
3. Circle the letter of each reason why the human population began to grow more rapidly about 500 years ago.
 - a. Improved sanitation and health care reduced the death rate.
 - b. Industry made life easier and safer.
 - c. The world's food supply became more reliable.
 - d. Birthrates in most places remained low.

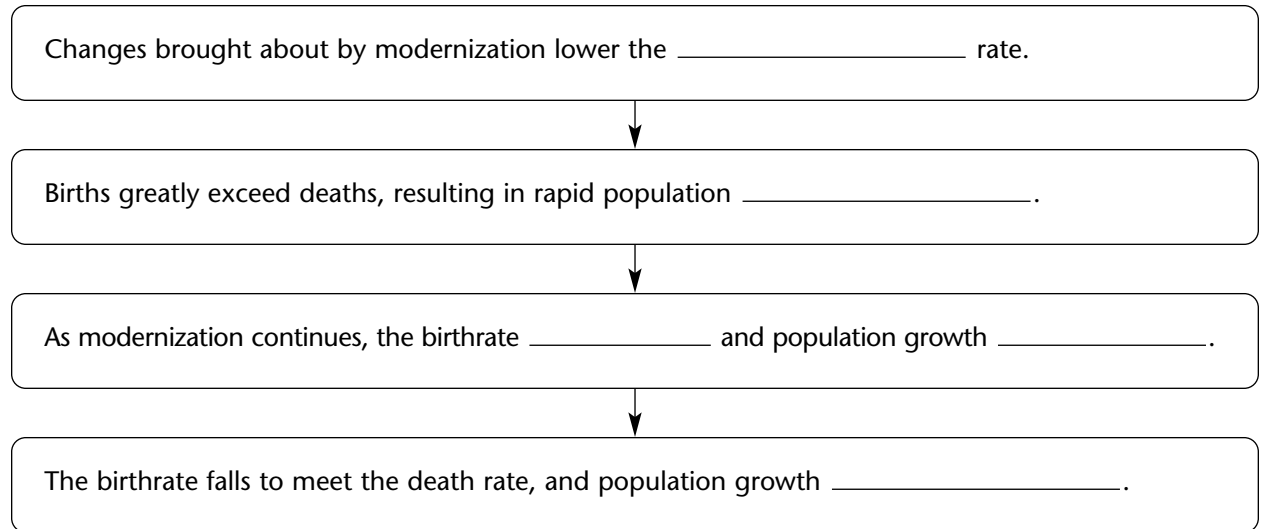
Patterns of Population Growth (pages 130–131)

4. Why can't the human population keep growing exponentially forever? _____
5. What is demography? _____
6. What factors help predict why the populations of some countries grow faster than others? _____

7. The hypothesis that explains why population growth has slowed dramatically in the United States, Japan, and much of Europe is called the _____.
8. Throughout much of human history, what have been the levels of birthrates and death rates in human societies? _____

9. What factors lower the death rate? _____

10. Complete the flowchart about the demographic transition.



11. Circle the letter of each sentence that is true about human population growth.
 - a. The demographic transition is complete in China and India.
 - b. The worldwide human population is still growing exponentially.
 - c. Most people live in countries that have not yet completed the demographic transition.
 - d. The demographic transition has happened in the United States.
12. Is the following sentence true or false? Population growth depends, in part, on how many people of different ages make up a given population. _____
13. What do age-structure diagrams graph? _____

14. What do the age structures of the United States and of Rwanda predict about the population growth of each country? _____

Chapter 5, Populations (continued)

Future Population Growth (page 132)

15. By 2050, the world's population may reach how many people? _____

16. What may cause the growth rate of the world population to level off, or even slow down? _____

17. What do many ecologists suggest will happen if the growth in human population does not slow down? _____

WordWise

Use the clues to help you write the vocabulary terms from Chapter 5 in the blanks. Then, put the numbered letters in order to find the answer to the riddle.

What kind of limiting factor depends on population size?

_____ 1 _____

What occurs when the individuals in a population reproduce at a constant rate?

_____ 2 _____

What is the movement of individuals into an area called?

_____ 3 _____ 4 _____

What occurs when a population's growth slows or stops following a period of exponential growth?

_____ 5 _____ 6 _____

What is a mechanism of population control in which a population is regulated by predation?

_____ 7 _____ 8 _____

What is the tendency of a population to shift from high birth and death rates to low birth and death rates called?

_____ 9 _____

What is the largest number of individuals a given environment can support called?

_____ 10 _____

Riddle: What is the scientific study of human populations called?

Answer: 1 2 3 4 5 6 7 8 9 10