

5-1 How Populations Grow



Characteristics of Populations



Three important characteristics of a population are its:

- **geographic distribution**
- **density**
- **growth rate**

Geographic distribution, or range, describes the area inhabited by a population.

Population density is the number of individuals per unit area.

Growth rate is the increase or decrease of the number of individuals in a population over time.

Population Growth



Three factors can affect population size:

- **the number of births**
- **the number of deaths**
- **the number of individuals that enter or leave the population**

A population can grow when its birthrate is greater than its death rate.

Immigration, the movement of individuals into an area, is another factor that can cause a population to grow.

Populations can increase by immigration as animals in search of mates or food arrive from outside.

Emigration, the movement of individuals out of an area, can cause a population to decrease in size.

Emigration can occur when animals leave to find mates and establish new territories.

A shortage of food in one area may also lead to emigration.

Exponential Growth



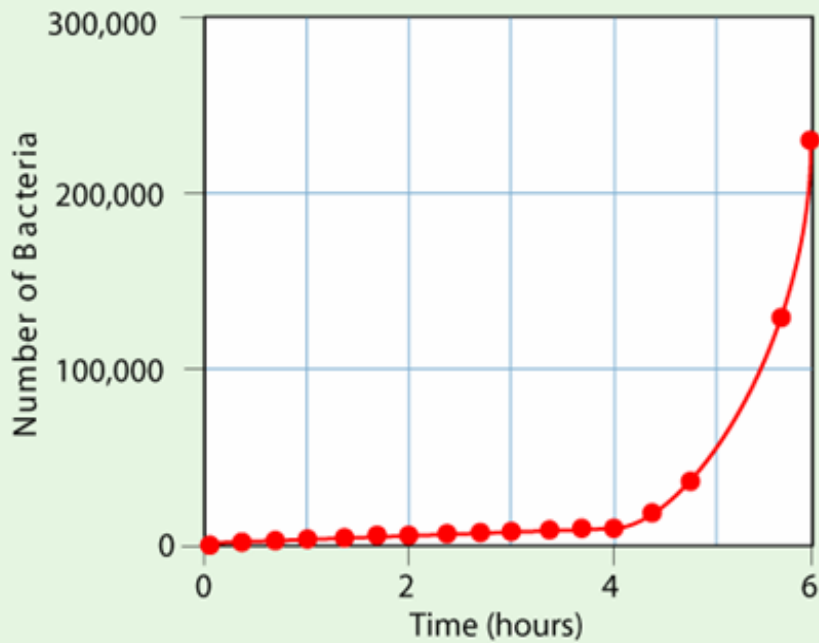
Under ideal conditions with unlimited resources, a population will grow exponentially.

Exponential growth occurs when the individuals in a population reproduce at a constant rate.

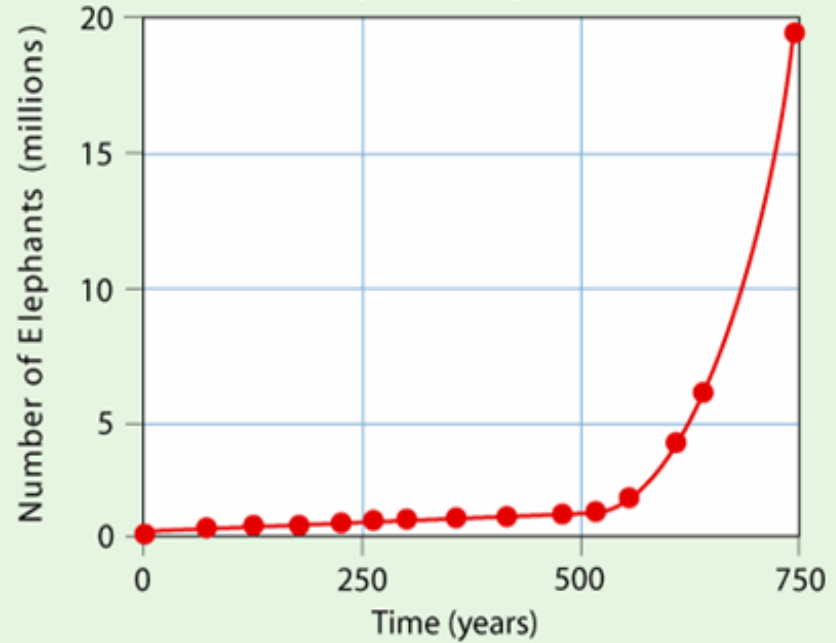
The population becomes larger and larger until it approaches an infinitely large size.

Exponential Growth

Growth of Bacterial Population



Growth of Elephant Population



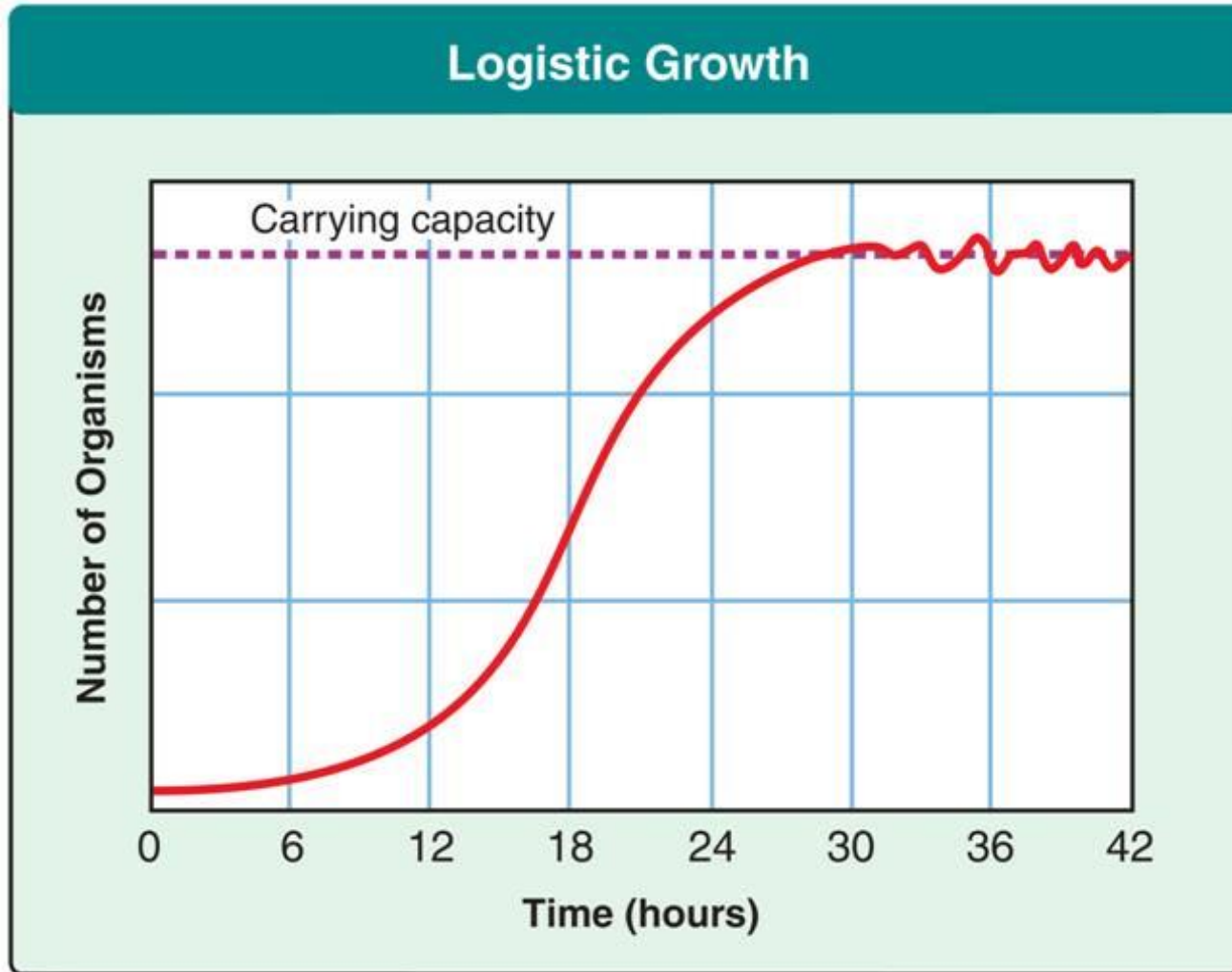
Logistic Growth

In nature, exponential growth does not continue in a population for very long.

As resources become less available, the growth of a population slows or stops.

Logistic growth occurs when a population's growth slows or stops following a period of exponential growth.

Logistic growth is characterized by an S-shaped curve.



Carrying Capacity

The largest number of individuals of a population that a given environment can support is called its **carrying capacity**.

When a population reaches the carrying capacity of its environment, its growth levels off. The average growth rate is zero.

5-1 Section QUIZ

Continue to:

Section QUIZ

- or -

Click to Launch:



5-1 Section QUIZ

- 1 Population density is the number of individuals
- a. that are born each year.
 - A** b. per unit area.
 - c. that immigrate.
 - d. that emigrate.

5-1 Section QUIZ

2 When the birthrate of a population exceeds its death rate, the population

a. decreases.

A b. increases.

c. stays the same.

d. increases then decreases.

5-1 Section QUIZ

3 An S-shaped curve on a graph of population growth is characteristic of

a. exponential growth.

A b. logistic growth.

c. carrying capacity.

d. delayed growth.

5-1 Section QUIZ

4 Exponential growth in a population slows down or stops as

- A** a. resources become limited.
- b. rate of immigration increases.
- c. rate of emigration decreases.
- d. birth rate increases.

5-1 Section QUIZ

- 5** Exponential growth rate means that each new generation of a population
- a. adds the same number of new individuals as the previous generation did.
 - A** b. increases at the same rate as the previous generation.
 - c. is the same size as the generation before.
 - d. increases by a varying amount.