

Define the following terms.

1. data
2. control group
3. dependent variable
4. independent variable
5. theory

Circle the correct answer

6. A field biologist who studies the behavior of birds in a rain forest most likely collects data through
a. experimenting. b. modeling. c. observing. d. inferring.
7. Constructing a graph is an example of
a. measuring. b. organizing data. c. observing. d. predicting.
8. Of the following steps in a scientific investigation, the last to be done is usually
a. experimenting. b. observing c. producing a model. d. hypothesizing.
9. A statement that explains observations and can be tested is called
a. a hypothesis. b. an inference. c. a theory. d. a model.
10. A visual, verbal, or mathematical explanation that is supported by data is called
a. a hypothesis. b. an inference. c. a theory. d. a model.
11. What are quantitative data? Give two examples of quantitative data.
12. What two features must a sample have if it is to accurately represent a population?
13. How are a hypothesis, a prediction, and an experiment related?
14. What are some of the things scientists might do to analyze data?

A scientist wanted to study the effect of a drug on the blood pressure of rats. She set up an experiment in which the experimental group consisted of rats that were injected with a salt solution containing the drug.

15. What should the control group have consisted of?
16. What were the dependent and independent variables in her experiment?

UNDERSTANDING POPULATIONS

Contrast the following terms.

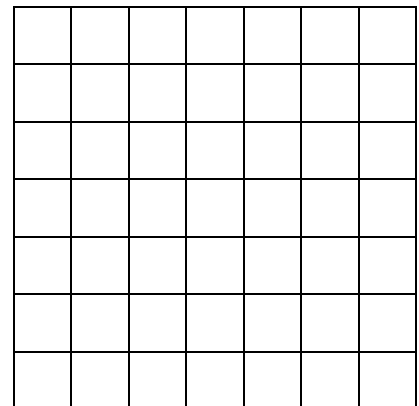
- 1. population density, emigration
- 2. mortality rate, life expectancy

Circle the correct answer

- 3. Although the United States has a larger total population than Japan, population density is greater in Japan because the
 - a. people in the United States have less education and medical care.
 - b. people in Japan all live in the cities.
 - c. geographical area is greater in the United States.
 - d. birth rate is lower than the death rate in Japan.
- 4. A population is likely to grow most rapidly if it has
 - a. a high percentage of old individuals.
 - b. a high percentage of young individuals.
 - c. about the same percentage of individuals in each age range.
 - d. individuals with a low birth rate.

1. Plot the following points on your graph:

- (1800, 1 billion people)
- (1930, 2 billion people)
- (1960, 3 billion people)
- (1975, 4 billion people)
- (1987, 5 billion people)
- (1999, 6 billion people)



2. Draw a line connecting the points.

Answer the following questions.

3. What does the curve that you have drawn indicate about human population growth?

Year

4. Do you think the human population can continue to grow indefinitely? Why or why not?

Thinking Critically

Demographers often use mathematical formulas to predict population changes, but demography actually has more to do with understanding human behavior. Predicting demographic trends is as difficult as predicting human behavior. A family choosing to abandon the city rat race and move to a small town, or a young woman waiting until after college to marry and have children—these are the stories behind the statistics. It's hard to predict the exact patterns of America's future population, but we know the pattern will be formed from the individual choices of millions of human beings. To understand population, you have to understand people.

1. People from other countries still immigrate to the United States each year. What direct and indirect effects does this have on the population?
2. What do you think will be the main factors influencing the number of children born to people of your generation?
3. What features characterize most developing countries?

Explain the relationship between the terms in each of the following groups of terms.

1. Growth rate, birth rate, death rate
2. Exponential growth, limiting factor

Circle the correct answer

1. The exponential model of population growth applies
 - a. when there are no limiting factors.
 - b. if the birth rate increases as the population grows.
 - c. when the population size exceeds the carrying capacity.
 - d. to all real populations that exist in nature.
2. Observing and experimenting are two ways that ecologists can answer scientific questions. What are some differences between these two approaches?

Define the following terms.

1. hunter-gatherer lifestyle

2. agricultural revolution

3. developed country

4. developing country

Applying Concepts

A student sits down at a computer and presses the power button. The computer does not turn on. What is a logical explanation as to why the computer does not work? How would the student test that idea?

What is the difference between observation and inference?

Matching On the lines provided, write the letter of the term on the right that best matches each description.

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| _____ 1. Groups of individuals that belong to the same species and live together | a. population |
| _____ 2. Different populations that live in a defined area | b. biosphere |
| _____ 3. All organisms in an area, including the non-living parts of their environment | c. ecosystem |
| _____ 4. A geographical region containing several ecosystems with the same climate and communities | d. biome |
| _____ 5. The combined portions of the planet in which all life exists | e. community |