

Test Your Knowledge

Multiple Choice

- All organisms have which of the following in common?
 - They respond to stimuli.
 - They store genetic information in DNA molecules.
 - They utilize energy.
 - They reproduce.
 - all of the above
- Extrapolating from general premises to specific results is a kind of logic called
 - inductive reasoning.
 - synthesis.
 - deductive reasoning.
 - experimentation.
 - observation.
- Biologists group living things into ___ domains.
 - 2
 - 3
 - 4
 - 5
 - about 10
- A bacterium and an amoeba are placed in different domains because
 - a bacterium is single-celled.
 - an amoeba is photosynthetic.
 - an amoeba can move.
 - a bacterial cell is much simpler.
 - an amoeba is single-celled.
- Almost all of the organisms in Kingdom ___ are photosynthetic.
 - Animalia
 - Archaea
 - Plantae
 - Fungi
 - Eukarya
- At the most fundamental level in life's hierarchy, all living things contain the same basic kinds of
 - cells.
 - organs.
 - molecules.
 - tissues.
 - systems.
- An educated guess posed as a tentative explanation is called a
 - theory.
 - control.
 - variable.
 - prediction.
 - hypothesis.
- The information in ___ underlies all of the properties that distinguish life from nonlife.
 - carbon
 - DNA
 - proteins
 - populations
 - chemical nutrients
- The ___ is the highest level in life's structural hierarchy.
 - ecosystem
 - cell
 - organism
 - population
 - biosphere
- There are many interdependencies in an ecosystem. Prokaryotes and fungi play an important role in the ecosystem primarily because they
 - cause diseases that keep populations in check.
 - trap water, which is then used by other organisms.
 - decompose the remains of dead organisms.
 - are responsible for producing energy.
 - carry out photosynthesis, which makes food for other species.

Essay

- Name the three domains of life and briefly describe their distinguishing characteristics.
- Name the kingdoms of Domain Eukarya, identify the organisms in each, and briefly describe the criteria that separate each kingdom from the others.
- What kinds of questions can be answered and what kinds of problems can be solved by science? What kinds of questions are outside the realm of science?
- Explain how the information in DNA relates to the common features that characterize life.

Applying The Concepts

Multiple Choice

- A crop scientist noted that, over a period of 10 years, a beetle species that feeds on rice gradually became resistant to insecticide. Which of the following best explains this in terms of natural selection?

 - The insecticide mutated the beetles exposed to the biggest doses.
 - Some beetles learned to tolerate the insecticide and passed this ability to their offspring.
 - Beetles learned to avoid the spray and passed the knowledge to their offspring.
 - The insecticide caused the beetles to reproduce more quickly than normal.
 - Those beetles with natural resistance to the insecticide had the most offspring.
- Researchers testing new drugs usually give the drug to one group of people and give placebos, "sugar pills," to another group. The group receiving the sugar pills

 - constitutes the experimental group.
 - is needed so that the test will be repeated enough times.
 - is the control group.
 - is a backup in case some of the people getting the drug drop out of the test.
 - is the experimental variable.
- _____ has characteristics that result from the organization of its component _____.

 - A population . . . ecosystems
 - A tissue . . . organs
 - A cell . . . tissues
 - An organism . . . organ systems
 - A molecule . . . cells
- An ecologist studied the effect of nutrients and predators on the population growth of bacteria on the bottom of a pond. His study of bacteria could not involve which of the following levels in life's structural hierarchy?

 - ecosystem
 - organ
 - organism
 - population
 - molecule
- A rain forest primate called an aye-aye has a long middle finger that it uses to probe for insects in cracks and crevices in tree bark. This connection between structure and function developed gradually as a result of

 - reproduction.
 - population growth.
 - natural selection.
 - DNA replication.
 - energy exchange.
- Which of the following does *not* illustrate technology?

 - DNA research is used to cure an inherited disease.
 - Scientists develop a bacterium that destroys toxic wastes.
 - A biologist identifies a new species of monkey.
 - A chemical that slows cell division is used to treat cancer.
 - Biologists breed a disease-resistant kind of corn.
- Which of the following illustrates *discovery* science?

 - cataloging all the species in a tide pool
 - trying to find a connection between dietary fat and heart disease
 - testing a new blood-pressure drug
 - determining whether higher temperatures slow or speed plant growth
 - all of the above
- You have probably seen pictures of the diverse communities flourishing in the dark depths around hydrothermal vents on the ocean floor. Scientists were at first surprised to find that the vents support such thriving ecosystems, because in such an environment, you wouldn't think there could be very many

 - consumers
 - bacteria
 - producers
 - decomposers
 - nutrients