



Chapter 1 Exercises

Review Questions

- The first forms of life on Earth were _____.
 - plants
 - microorganisms
 - birds
 - dinosaurs
- A suggested and testable explanation for an event is called a _____.
 - hypothesis
 - variable
 - theory
 - control
- Which of the following sciences is not considered a natural science?
 - biology
 - astronomy
 - physics
 - computer science
- The type of logical thinking that uses related observations to arrive at a general conclusion is called _____.
 - deductive reasoning
 - the scientific method
 - hypothesis-based science
 - inductive reasoning
- The process of _____ helps to ensure that a scientist's research is original, significant, logical, and thorough.
 - publication
 - public speaking
 - peer review
 - the scientific method
- Farah notices that houseplants that are regularly exposed to music seem to grow more quickly than those in rooms with no music. As a result, Farah determines that plants grow better when exposed to music. This example most closely resembles which type of reasoning?
 - inductive reasoning
 - deductive reasoning
 - neither because no hypothesis was made
 - both inductive and deductive reasoning
- The smallest unit of biological structure that meets the functional requirements of "living" is the _____.
 - organ
 - organelle
 - cell
 - macromolecule
- Viruses are not considered living because they _____.
 - are not made of cells
 - lack cell nuclei
 - do not contain DNA or RNA
 - cannot reproduce
- The presence of a membrane-enclosed nucleus is a characteristic of _____.
 - prokaryotic cells
 - eukaryotic cells
 - living organisms
 - bacteria
- A group of individuals of the same species living in the same area is called a(n) _____.
 - family
 - community
 - population
 - ecosystem
- Which of the following sequences represents the hierarchy of biological organization from the most inclusive to the least complex level?
 - organelle → tissue → biosphere → ecosystem → population
 - organ → organism → tissue → organelle → molecule
 - organism → community → biosphere → molecule → tissue → organ
 - biosphere → ecosystem → community → population → organism

12. Where in a phylogenetic tree would you expect to find the organism that had evolved most recently?
- a. at the base
 - b. within the branches
 - c. at the nodes
 - d. at the branch tips

Critical Thinking Questions

13. Although the scientific method is used by most of the sciences, it can also be applied to everyday situations. Think about a problem that you may have at home, at school, or at work, and apply the scientific method to solve it.
14. Give an example of how applied science has had a direct effect on your daily life.
15. Name two topics that are likely to be studied by biologists, and two areas of scientific study that would fall outside the realm of biology.
16. Considering the topic of cancer, write a basic science question and an applied science question that a researcher interested in this topic might ask.
17. Select two items that biologists agree are necessary in order to consider an organism “alive.” For each, give an example of a nonliving object that otherwise fits the definition of “alive.”
18. Consider the levels of organization of the biological world, and place each of these items in order from smallest level of organization to most encompassing: skin cell, elephant, water molecule, planet Earth, tropical rainforest, hydrogen atom, wolf pack, liver.
19. You go for a long walk on a hot day. Give an example of a way in which homeostasis keeps your body healthy.
20. Using examples, explain how biology can be studied from a microscopic approach to a global approach.