

# c1

*Student:* \_\_\_\_\_

1. The simplest structure shared among all living organisms is the
  - A. gut.
  - B. cell.
  - C. photosynthetic chloroplast.
  - D. community.
  - E. nucleus.
  
2. Which of the following is likely NOT a common principle shared among all living organisms?
  - A. All living organisms use energy.
  - B. All living organisms maintain organization.
  - C. All living organisms have evolved over the course of many generations.
  - D. All living organisms maintain some level of homeostasis.
  - E. All living organisms are composed of similar structures.
  
3. All living organisms respond and adjust to their environments. A good example of this would be
  - A. photosynthesis in plants.
  - B. mammals developing a thicker coat in the winter.
  - C. metabolism.
  - D. growth and development of an animal.
  - E. genomics.
  
4. Whether the external temperature is hot or cold, birds maintain an internal body temperature of approximately 40°C. This is an example of \_\_\_\_\_.
  - A. metabolism
  - B. cellular respiration
  - C. growth and development
  - D. homeostasis
  - E. functional proteomics and genomics

5. Which is the best description of the main role of DNA in living organisms?

- A. DNA regulates metabolism.
- B. DNA provides the genetic blueprint for cellular function.
- C. DNA controls macromolecular synthesis.
- D. DNA contains many important genes.
- E. DNA is only important in reproduction and heredity.

6. We maintain a fairly constant body temperature despite exposure to different seasons or external temperatures. This is achieved through our capacity to

- A. adapt to changing environments.
- B. regulate body temperature.
- C. maintain homeostasis.
- D. All of these choices are correct.
- E. None of these choices are correct.

7. All of the chemical reactions used to break down nutrients and build up components within the body are collectively known as

- A. anabolism.
- B. catabolism.
- C. metabolism.
- D. proteolysis.
- E. hydrolysis.

8. Which level of organization includes all others?

- A. cell
- B. tissue
- C. organ
- D. organism
- E. population

9. Which level of organization is required for all others to form?

- A. cell
- B. tissue
- C. organ
- D. organism
- E. population

10. When cells associate with each other they form

- A. atoms.
- B. molecules.
- C. macromolecules.
- D. tissues.
- E. populations.

11. When communities of organisms interact with their physical environment they form a(n)

- A. population.
- B. organism.
- C. community.
- D. ecosystem.
- E. macromolecular community.

12. Which of the following is LEAST likely to be required for the digestion of a meal?

- A. molecules
- B. cells
- C. tissues
- D. organs
- E. populations

13. Which is the simplest of all levels of organization?

- A. atom
- B. cell
- C. organ
- D. organism
- E. population

14. Which level of organization reflects an individual composed of multiple organ systems?

- A. atom
- B. cell
- C. organ
- D. organism
- E. population

15. Which of the following are components of molecules?

- A. atoms
- B. cells
- C. organs
- D. organisms
- E. populations

16. Many people at a wedding ceremony represent which level of organization?

- A. cell
- B. organ
- C. organism
- D. population
- E. ecosystem

17. A flower on a plant represents which level of organization?

- A. atom
- B. cell
- C. organ
- D. organism
- E. population

18. The phenomenon through which populations of organisms change over several generations is termed

- A. homeostasis.
- B. growth and development.
- C. reproduction.
- D. biological evolution.
- E. organization.

19. Changes in \_\_\_\_\_ represent the predominant cause for biological evolution.

- A. homeostasis
- B. growth and development
- C. reproduction
- D. genetic makeup
- E. energy

20. A variety of finch species within the Hawaiian Islands have acquired different types of beaks needed for utilizing specific food resources. The process by which these different species of finches came about is likely to have involved

- A. natural selection.
- B. evolution.
- C. an accumulation of harmful genetic mutations.
- D. both natural selection and evolution.
- E. None of these choices are correct.

21. Which of the following is TRUE of a genetic mutation?

- A. It always produces harmful effects.
- B. It never affects protein structure or function.
- C. It is not a mechanism through which biological evolution occurs.
- D. It happens quite frequently in a population.
- E. It generally produces a change in the DNA sequence of a gene.

22. New species evolve from pre-existing species by the accumulation of

- A. metabolic events.
- B. genetic mutations.
- C. proteomes.
- D. reproductive events.
- E. developmental events.

23. Evolutionary change

- A. occurs through the modification of characteristics in a pre-existing population.
- B. may involve vertical descent with mutation.
- C. may involve horizontal gene transfer.
- D. All of these choices are correct.
- E. None of these choices are correct.

24. In the process of biological evolution, new species may evolve through exchange of genes from one species to another. This process is called

- A. proteome transfer.
- B. horizontal gene transfer.
- C. vertical evolution.
- D. vertical descent with mutation.
- E. genomic sciences.

25. The grouping or classification of species is termed

- A. eukaryotism.
- B. prokaryotism.
- C. genus.
- D. kingdom.
- E. taxonomy.

26. When grouping organisms, which classification is most general for a particular type of organism?

- A. Kingdom
- B. Phylum
- C. Order
- D. Family
- E. Species

27. When grouping organisms, which classification is most specific for a particular type of organism?

- A. Kingdom
- B. Phylum
- C. Order
- D. Family
- E. Species

28. Which Kingdom of organisms is most noted for its ability to carry out photosynthesis?

- A. Animalia
- B. Protista
- C. Fungi
- D. Plantae
- E. Bacteria

29. Biologists use nomenclature or the binomial to provide each species with a unique scientific name. Our species is called *Homo sapiens*. The first word refers to which taxonomical grouping?

- A. Kingdom
- B. Phylum
- C. Order
- D. Genus
- E. Species

30. When considering nomenclature for scientific names, what is the difference between the two primates, *Homo sapiens* and *Homo erectus*?
- A. One is a primate but the other is not.
  - B. They are animals of a different kingdom.
  - C. They are animals of a different order.
  - D. They are animals of a different species.
  - E. They are animals of a different genus.
31. Which of the following is generally more complex than the others?
- A. Archaea
  - B. Bacteria
  - C. Prokarya
  - D. Eukarya
  - E. microorganisms
32. The complete genetic composition of an organism is called its
- A. proteome.
  - B. genome.
  - C. transcriptome.
  - D. phenotype.
  - E. None of these choices are correct.
33. Which is responsible for encoding the proteins found in a cell?
- A. genome
  - B. proteome
  - C. cytoskeleton
  - D. evolution
  - E. extracellular proteins
34. If a scientist were studying the interaction of different proteins in the regulation of insulin secretion from a pancreatic cell, he or she would be studying
- A. genomics.
  - B. proteomics.
  - C. cell biology.
  - D. both genomics and proteomics.
  - E. both proteomics and cell biology.

35. An explanation for a biological process that is substantiated by a large body of evidence is called (a)

- A. hypothesis.
- B. theory.
- C. systems biology.
- D. reductionism.
- E. prediction.

36. Collecting data without a specific hypothesis in mind is called

- A. reductionism.
- B. hypothesis testing.
- C. discovery-based science.
- D. theoretical.
- E. All of these choices are correct.

37. What is the appropriate order of the stages of investigating whether maple trees drop their leaves in the autumn because of colder days?

- (1) Maple trees are grown in 2 greenhouses where the only variable is temperature (15°C vs. 10°C).
- (2) The hypothesis is rejected.
- (3) There is no statistical difference in the number of leaves dropped at 10°C as compared to 15°C.
- (4) The observation is that maple trees drop their leaves in autumn.
- (5) The hypothesis is that maple trees drop their leaves because of colder temperatures.

- A. 1, 2, 3, 4, 5
- B. 3, 4, 5, 1, 2
- C. 1, 3, 4, 2, 5
- D. 4, 5, 1, 3, 2
- E. 3, 4, 2, 1, 5

38. The main difference between a hypothesis and a scientific theory would be that

- A. a hypothesis is a very short statement whereas a theory is usually quite long.
- B. a hypothesis can be disproven whereas a theory cannot be disproven.
- C. theories are constantly changing whereas hypotheses must remain unchanged.
- D. theories are broad explanations based on evidence whereas hypotheses are much more specific.
- E. hypothesis are proven explanations of observations whereas theories are theoretical explanations.



39. Imagine that two species of fish compete for resources in the Arctic Ocean. If water temperatures increase due to climate change, could natural selection affect the long-term survival of either or both species?
- A. No, because natural selection is not affected by man-made environmental changes.
  - B. Yes, although both species would likely evolve to tolerate increased temperatures.
  - C. No, because climate-change is very rapid and natural selection is very slow.
  - D. Yes, if either species is better adapted to warmer conditions, it will have a selective advantage.
  - E. No, because the survival of either species would be due to homeostasis, not natural selection.
40. Concept mapping would best be described as a learning strategy to
- A. memorize the details of scientific phenomena.
  - B. rephrase passages from a text into one's own words.
  - C. show how all biological processes are ultimately related.
  - D. relate all biological concepts to physical and chemical laws.
  - E. graphically organize and associate various concepts and processes.
41. A plant will begin flowering in response to changes in length of daylight, temperature, and light quality. This is an example of which unifying principle of life?
- A. Plants conduct photosynthesis.
  - B. Living organisms maintain homeostasis.
  - C. Living organisms interact with their environment.
  - D. Living organisms grow and develop.
  - E. Populations of organisms evolve from one generation to the next.
42. Boa constrictors on an island are an example of a(n) \_\_\_\_.
- A. cell
  - B. organ
  - C. organism
  - D. population
  - E. ecosystem
43. A wristwatch suddenly stops working. After replacing the battery, the watch starts working again. Which of the following statements correctly describes the situation from the perspective of the scientific method?
- A. This proves that a dead battery was the reason the wristwatch stopped working.
  - B. This substantiates the theory that all wristwatches require functional batteries.
  - C. This is consistent with the hypothesis that a dead battery caused the wristwatch to stop working.
  - D. This leads to the prediction that a battery is required for wristwatch operation.
  - E. This leads to the theory that batteries must have finite lifespans.

44. A researcher decides to test the scientific validity of the common phrase "An apple a day keeps the doctor away." What would be a valid hypothesis to investigate this specific question?

- A. Does one apple every day keep doctor visitation rates to a minimum?
- B. The daily consumption of a single apple does not change the number of visits to the doctor.
- C. Eating one apple every day is good for you.
- D. Apples are high in vitamin C.
- E. Those who consume apples are healthier than those who do not consume apples.

45. A researcher tests the hypothesis that large, daily doses of vitamin C help protect against catching the common cold. What would be the best experimental and control group to test this hypothesis?

- A. Experimental group: takes a large dose of vitamin C daily; Control group: takes nothing
- B. Experimental group: people with a cold are administered vitamin C daily; Control group: people without a cold are not administered vitamin C
- C. Experimental group: takes a large dose of vitamin C daily; Control group: takes a large weekly dose of vitamin C
- D. Experimental group: takes a large, daily dose of vitamin C; Control group: takes a daily dose of a sugar pill disguised as vitamin C
- E. Experimental group: takes a large, daily dose of vitamin C; Control group: takes a small dose of vitamin C daily

46. A researcher hypothesizes that crocodile gender is determined by the incubation temperature of the egg. The hypothesis states that an average nest temperature of 32 - 33°C results in the birth of male crocodiles while cooler and higher incubation temperatures result in female crocodiles. What is a valid, testable prediction based on this hypothesis?

- A. Male crocodiles will prefer temperatures of 32 - 33°C.
- B. Incubation of any crocodile egg at 32°C will result in a male crocodile.
- C. Male eggs will hatch at 32°C while female eggs will not hatch at 32°C.
- D. Male eggs will be more fragile than female eggs.
- E. Crocodiles arrange the gender of offspring by manipulating incubation temperatures.

47. A scientist isolates a single celled organism from the bottom of a sulfur hot spring. When examined under the microscope, it is clear that the cell is very small and contains no nucleus. Based on this evidence alone, in what domain of life is this organism?

- A. Eukarya
- B. Bacteria
- C. Archaea
- D. Either bacteria or Archaea
- E. It is impossible to determine anything based on this evidence alone.

48. All tissues are composed of cells.

True   False

49. The capacity to maintain a fairly constant body temperature is a homeostatic process.

True False

50. A community is composed of different populations of animals and plants.

True False

51. A defining characteristic that distinguishes prokaryotic and eukaryotic organisms is the lack of cell structure in one versus the other.

True False

52. The modification of a limb that was used for walking in a pre-existing ancestor to one that is used as a wing for a species today is called proteomics.

True False

53. A bacterial infection such as pneumonia is most likely caused by organisms derived from the animal kingdom.

True False

54. All genetic mutations are harmful to an organism.

True False

55. Vertical evolution, whereby living organisms evolve from a common ancestor ("tree of life"), is the only mechanism of evolution on Earth.

True False

56. The effects of a genetic mutation are always limited to simply a change in DNA sequence with little consequence to the proteins expressed.

True False

57. The proteome, rather than genome, is most directly responsible for the structure, function, and appearance of organisms.

True False

58. Little scientific evidence is necessary when formulating a theory.

True False

59. The maintenance of cell structure requires energy.

True False

60. Discovery-based science and hypothesis testing are the two major scientific approaches that help us understand biology.

True False

## c1 Key

1. The simplest structure shared among all living organisms is the

- A. gut.
- B. cell.**
- C. photosynthetic chloroplast.
- D. community.
- E. nucleus.

*Blooms: Remember*

*Brooker - Chapter 01 #1*

*Difficulty: Easy*

*Learning Objective: 01-01-01 Describe the principles of biology.*

*Section: 1.1*

*Topic: The Principles of Life and Levels of Biological Organization*

2. Which of the following is likely NOT a common principle shared among all living organisms?

- A. All living organisms use energy.
- B. All living organisms maintain organization.
- C. All living organisms have evolved over the course of many generations.
- D. All living organisms maintain some level of homeostasis.
- E. All living organisms are composed of similar structures.**

*Blooms: Remember*

*Brooker - Chapter 01 #2*

*Difficulty: Easy*

*Learning Objective: 01-01-01 Describe the principles of biology.*

*Section: 1.1*

*Topic: Principles of Life and Levels of Biological Organization*

3. All living organisms respond and adjust to their environments. A good example of this would be

- A. photosynthesis in plants.
- B. mammals developing a thicker coat in the winter.**
- C. metabolism.
- D. growth and development of an animal.
- E. genomics.

*Blooms: Remember*

*Blooms: Understand*

*Brooker - Chapter 01 #3*

*Difficulty: Easy*

*Learning Objective: 01-01-01 Describe the principles of biology.*

*Section: 1.1*

*Topic: Principles of Life and Levels of Biological Organization*

4. Whether the external temperature is hot or cold, birds maintain an internal body temperature of approximately 40°C. This is an example of\_\_\_\_\_.

- A. metabolism
- B. cellular respiration
- C. growth and development
- D. homeostasis**
- E. functional proteomics and genomics

*Blooms: Apply*

*Blooms: Remember*

*Brooker - Chapter 01 #4*

*Difficulty: Easy*

*Learning Objective: 01-01-01 Describe the principles of biology.*

*Section: 1.1*

*Topic: Principles of Life and Levels of Biological Organization*

5. Which is the best description of the main role of DNA in living organisms?

- A. DNA regulates metabolism.
- B. DNA provides the genetic blueprint for cellular function.**
- C. DNA controls macromolecular synthesis.
- D. DNA contains many important genes.
- E. DNA is only important in reproduction and heredity.

*Blooms: Remember*

*Brooker - Chapter 01 #5*

*Difficulty: Moderate*

*Learning Objective: 01-01-01 Describe the principles of biology.*

*Section: 1.1*

*Topic: Principles of Life and Levels of Biological Organization*

6. We maintain a fairly constant body temperature despite exposure to different seasons or external temperatures. This is achieved through our capacity to

- A. adapt to changing environments.
- B. regulate body temperature.
- C. maintain homeostasis.
- D. All of these choices are correct.**
- E. None of these choices are correct.

*Blooms: Understand*

*Brooker - Chapter 01 #6*

*Difficulty: Moderate*

*Learning Objective: 01-01-01 Describe the principles of biology.*

*Section: 1.1*

*Topic: Principles of Life and Levels of Biological Organization*

7. All of the chemical reactions used to break down nutrients and build up components within the body are collectively known as

- A. anabolism.
- B. catabolism.
- C. metabolism.**
- D. proteolysis.
- E. hydrolysis.

*Blooms: Remember*

*Brooker - Chapter 01 #7*

*Difficulty: Easy*

*Learning Objective: 01-01-01 Describe the principles of biology.*

*Section: 1.1*

*Topic: Principles of Life and Levels of Biological Organization*

8. Which level of organization includes all others?

- A. cell
- B. tissue
- C. organ
- D. organism
- E. population**

*Blooms: Remember*

*Brooker - Chapter 01 #8*

*Difficulty: Easy*

*Learning Objective: 01-01-02 Explain how life can be viewed at different levels of biological complexity.*

*Section: 1.1*

*Topic: Principles of Life and Levels of Biological Organization*

9. Which level of organization is required for all others to form?

- A. cell**
- B. tissue
- C. organ
- D. organism
- E. population

*Blooms: Remember*

*Brooker - Chapter 01 #9*

*Difficulty: Easy*

*Learning Objective: 01-01-02 Explain how life can be viewed at different levels of biological complexity.*

*Section: 1.1*

*Topic: Principles of Life and Levels of Biological Organization*

10. When cells associate with each other they form

- A. atoms.
- B. molecules.
- C. macromolecules.
- D. tissues.**
- E. populations.

*Blooms: Remember*

*Brooker - Chapter 01 #10*

*Difficulty: Easy*

*Learning Objective: 01-01-02 Explain how life can be viewed at different levels of biological complexity.*

*Section: 1.1*

*Topic: Principles of Life and Levels of Biological Organization*

11. When communities of organisms interact with their physical environment they form a(n)

- A. population.
- B. organism.
- C. community.
- D. ecosystem.**
- E. macromolecular community.

*Blooms: Remember*

*Brooker - Chapter 01 #11*

*Difficulty: Easy*

*Learning Objective: 01-01-02 Explain how life can be viewed at different levels of biological complexity.*

*Section: 1.1*

*Topic: Principles of Life and Levels of Biological Organization*

12. Which of the following is LEAST likely to be required for the digestion of a meal?

- A. molecules
- B. cells
- C. tissues
- D. organs
- E. populations**

*Blooms: Understand*

*Brooker - Chapter 01 #12*

*Difficulty: Easy*

*Learning Objective: 01-01-02 Explain how life can be viewed at different levels of biological complexity.*

*Section: 1.1*

*Topic: Principles of Life and Levels of Biological Organization*



13. Which is the simplest of all levels of organization?

- A.** atom
- B. cell
- C. organ
- D. organism
- E. population

*Blooms: Remember*

*Brooker - Chapter 01 #13*

*Difficulty: Easy*

*Learning Objective: 01-01-02 Explain how life can be viewed at different levels of biological complexity.*

*Section: 1.1*

*Topic: Principles of Life and Levels of Biological Organization*

14. Which level of organization reflects an individual composed of multiple organ systems?

- A. atom
- B. cell
- C. organ
- D.** organism
- E. population

*Blooms: Understand*

*Brooker - Chapter 01 #14*

*Difficulty: Easy*

*Learning Objective: 01-01-02 Explain how life can be viewed at different levels of biological complexity.*

*Section: 1.1*

*Topic: Principles of Life and Levels of Biological Organization*

15. Which of the following are components of molecules?

- A.** atoms
- B. cells
- C. organs
- D. organisms
- E. populations

*Blooms: Remember*

*Brooker - Chapter 01 #15*

*Difficulty: Easy*

*Learning Objective: 01-01-02 Explain how life can be viewed at different levels of biological complexity.*

*Section: 1.1*

*Topic: Principles of Life and Levels of Biological Organization*

16. Many people at a wedding ceremony represent which level of organization?

- A. cell
- B. organ
- C. organism
- D.** population
- E. ecosystem

*Blooms: Understand*

*Brooker - Chapter 01 #16*

*Difficulty: Easy*

*Learning Objective: 01-01-02 Explain how life can be viewed at different levels of biological complexity.*

*Section: 1.1*

*Topic: Principles of Life and Levels of Biological Organization*

17. A flower on a plant represents which level of organization?

- A. atom
- B. cell
- C.** organ
- D. organism
- E. population

*Blooms: Apply*

*Blooms: Understand*

*Brooker - Chapter 01 #17*

*Difficulty: Easy*

*Learning Objective: 01-01-02 Explain how life can be viewed at different levels of biological complexity.*

*Section: 1.1*

*Topic: Principles of Life and Levels of Biological Organization*

18. The phenomenon through which populations of organisms change over several generations is termed

- A. homeostasis.
- B. growth and development.
- C. reproduction.
- D.** biological evolution.
- E. organization.

*Blooms: Remember*

*Brooker - Chapter 01 #18*

*Difficulty: Easy*

*Learning Objective: 01-02-01 Explain the two basic mechanisms by which evolutionary change occurs: vertical descent with mutation and horizontal gene transfer.*

*Section: 1.2*

*Topic: Unity and Diversity of Life*

19. Changes in \_\_\_\_\_ represent the predominant cause for biological evolution.

- A. homeostasis
- B. growth and development
- C. reproduction
- D. genetic makeup**
- E. energy

*Blooms: Understand*

*Brooker - Chapter 01 #19*

*Difficulty: Moderate*

*Learning Objective: 01-02-01 Explain the two basic mechanisms by which evolutionary change occurs: vertical descent with mutation and horizontal gene transfer.*

*Section: 1.2*

*Topic: Unity and Diversity of Life*

20. A variety of finch species within the Hawaiian Islands have acquired different types of beaks needed for utilizing specific food resources. The process by which these different species of finches came about is likely to have involved

- A. natural selection.
- B. evolution.
- C. an accumulation of harmful genetic mutations.
- D. both natural selection and evolution.**
- E. None of these choices are correct.

*Blooms: Understand*

*Brooker - Chapter 01 #20*

*Difficulty: Moderate*

*Learning Objective: 01-02-01 Explain the two basic mechanisms by which evolutionary change occurs: vertical descent with mutation and horizontal gene transfer.*

*Section: 1.2*

*Topic: Unity and Diversity of Life*

21. Which of the following is TRUE of a genetic mutation?

- A. It always produces harmful effects.
- B. It never affects protein structure or function.
- C. It is not a mechanism through which biological evolution occurs.
- D. It happens quite frequently in a population.
- E. It generally produces a change in the DNA sequence of a gene.**

*Blooms: Understand*

*Brooker - Chapter 01 #21*

*Difficulty: Moderate*

*Learning Objective: 01-02-01 Explain the two basic mechanisms by which evolutionary change occurs: vertical descent with mutation and horizontal gene transfer.*

*Section: 1.2*

*Topic: Unity and Diversity of Life*

22. New species evolve from pre-existing species by the accumulation of

- A. metabolic events.
- B. genetic mutations.**
- C. proteomes.
- D. reproductive events.
- E. developmental events.

*Blooms: Understand*

*Brooker - Chapter 01 #22*

*Difficulty: Moderate*

*Learning Objective: 01-02-01 Explain the two basic mechanisms by which evolutionary change occurs: vertical descent with mutation and horizontal gene transfer.*

*Section: 1.2*

*Topic: Unity and Diversity of Life*

23. Evolutionary change

- A. occurs through the modification of characteristics in a pre-existing population.
- B. may involve vertical descent with mutation.
- C. may involve horizontal gene transfer.
- D. All of these choices are correct.**
- E. None of these choices are correct.

*Blooms: Understand*

*Brooker - Chapter 01 #23*

*Difficulty: Moderate*

*Learning Objective: 01-02-01 Explain the two basic mechanisms by which evolutionary change occurs: vertical descent with mutation and horizontal gene transfer.*

*Section: 1.2*

*Topic: Unity and Diversity of Life*

24. In the process of biological evolution, new species may evolve through exchange of genes from one species to another. This process is called

- A. proteome transfer.
- B. horizontal gene transfer.**
- C. vertical evolution.
- D. vertical descent with mutation.
- E. genomic sciences.

*Blooms: Remember*

*Brooker - Chapter 01 #24*

*Difficulty: Moderate*

*Learning Objective: 01-02-01 Explain the two basic mechanisms by which evolutionary change occurs: vertical descent with mutation and horizontal gene transfer.*

*Section: 1.2*

*Topic: Unity and Diversity of Life*

25. The grouping or classification of species is termed

- A. eukaryotism.
- B. prokaryotism.
- C. genus.
- D. kingdom.
- E.** taxonomy.

*Blooms: Remember*

*Brooker - Chapter 01 #25*

*Difficulty: Easy*

*Learning Objective: 01-02-02 Outline how organisms are classified (taxonomy)*

*Section: 1.2*

*Topic: Unity and Diversity of Life*

26. When grouping organisms, which classification is most general for a particular type of organism?

- A.** Kingdom
- B. Phylum
- C. Order
- D. Family
- E. Species

*Blooms: Remember*

*Brooker - Chapter 01 #26*

*Difficulty: Easy*

*Learning Objective: 01-02-02 Outline how organisms are classified (taxonomy)*

*Section: 1.2*

*Topic: Unity and Diversity of Life*

27. When grouping organisms, which classification is most specific for a particular type of organism?

- A. Kingdom
- B. Phylum
- C. Order
- D. Family
- E.** Species

*Blooms: Remember*

*Brooker - Chapter 01 #27*

*Difficulty: Easy*

*Learning Objective: 01-02-02 Outline how organisms are classified (taxonomy)*

*Section: 1.2*

*Topic: Unity and Diversity of Life*

28. Which Kingdom of organisms is most noted for its ability to carry out photosynthesis?

- A. Animalia
- B. Protista
- C. Fungi
- D. Plantae**
- E. Bacteria

*Blooms: Remember*

*Brooker - Chapter 01 #28*

*Difficulty: Easy*

*Learning Objective: 01-02-02 Outline how organisms are classified (taxonomy)*

*Section: 1.2*

*Topic: Unity and Diversity of Life*

29. Biologists use nomenclature or the binomial to provide each species with a unique scientific name. Our species is called *Homo sapiens*. The first word refers to which taxonomical grouping?

- A. Kingdom
- B. Phylum
- C. Order
- D. Genus**
- E. Species

*Blooms: Understand*

*Brooker - Chapter 01 #29*

*Difficulty: Easy*

*Learning Objective: 01-02-02 Outline how organisms are classified (taxonomy)*

*Section: 1.2*

*Topic: Unity and Diversity of Life*

30. When considering nomenclature for scientific names, what is the difference between the two primates, *Homo sapiens* and *Homo erectus*?

- A. One is a primate but the other is not.
- B. They are animals of a different kingdom.
- C. They are animals of a different order.
- D. They are animals of a different species.**
- E. They are animals of a different genus.

*Blooms: Understand*

*Brooker - Chapter 01 #30*

*Difficulty: Easy*

*Learning Objective: 01-02-02 Outline how organisms are classified (taxonomy)*

*Section: 1.2*

*Topic: Unity and Diversity of Life*

31. Which of the following is generally more complex than the others?

- A. Archaea
- B. Bacteria
- C. Prokarya
- D. Eukarya**
- E. microorganisms

*Blooms: Understand*

*Brooker - Chapter 01 #31*

*Difficulty: Easy*

*Learning Objective: 01-02-02 Outline how organisms are classified (taxonomy)*

*Section: 1.2*

*Topic: Unity and Diversity of Life*

32. The complete genetic composition of an organism is called its

- A. proteome.
- B. genome.**
- C. transcriptome.
- D. phenotype.
- E. None of these choices are correct.

*Blooms: Remember*

*Brooker - Chapter 01 #32*

*Difficulty: Easy*

*Learning Objective: 01-02-02 Outline how organisms are classified (taxonomy)*

*Section: 1.2*

*Topic: Unity and Diversity of Life*

33. Which is responsible for encoding the proteins found in a cell?

- A. genome**
- B. proteome
- C. cytoskeleton
- D. evolution
- E. extracellular proteins

*Blooms: Remember*

*Brooker - Chapter 01 #33*

*Difficulty: Easy*

*Learning Objective: 01-02-02 Outline how organisms are classified (taxonomy)*

*Section: 1.2*

*Topic: Unity and Diversity of Life*

34. If a scientist were studying the interaction of different proteins in the regulation of insulin secretion from a pancreatic cell, he or she would be studying

- A. genomics.
- B. proteomics.
- C. cell biology.
- D. both genomics and proteomics.
- E. both proteomics and cell biology.**

*Blooms: Understand*

*Brooker - Chapter 01 #34*

*Difficulty: Moderate*

*Learning Objective: 01-02-03 Describe how changes in genomes and proteomes underlie evolutionary changes.*

*Section: 1.2*

*Topic: Unity and Diversity of Life*

35. An explanation for a biological process that is substantiated by a large body of evidence is called (a)

- A. hypothesis.
- B. theory.**
- C. systems biology.
- D. reductionism.
- E. prediction.

*Blooms: Remember*

*Brooker - Chapter 01 #35*

*Difficulty: Easy*

*Learning Objective: 01-03-01 Explain how researchers study biology at different levels; ranging from molecules to ecosystems.*

*Section: 1.3*

*Topic: Biology as a Scientific Discipline*

36. Collecting data without a specific hypothesis in mind is called

- A. reductionism.
- B. hypothesis testing.
- C. discovery-based science.**
- D. theoretical.
- E. All of these choices are correct.

*Blooms: Remember*

*Brooker - Chapter 01 #36*

*Difficulty: Easy*

*Learning Objective: 01-03-02 Compare and contrast discovery-based science and hypothesis testing; and describe the scientific method.*

*Section: 1.3*

*Topic: Biology as a Scientific Discipline*



37. What is the appropriate order of the stages of investigating whether maple trees drop their leaves in the autumn because of colder days?

- (1) Maple trees are grown in 2 greenhouses where the only variable is temperature (15°C vs. 10°C).
  - (2) The hypothesis is rejected.
  - (3) There is no statistical difference in the number of leaves dropped at 10°C as compared to 15°C.
  - (4) The observation is that maple trees drop their leaves in autumn.
  - (5) The hypothesis is that maple trees drop their leaves because of colder temperatures.
- A. 1, 2, 3, 4, 5
  - B. 3, 4, 5, 1, 2
  - C. 1, 3, 4, 2, 5
  - D.** 4, 5, 1, 3, 2
  - E. 3, 4, 2, 1, 5

*Blooms: Apply*

*Blooms: Remember*

*Brooker - Chapter 01 #37*

*Difficulty: Moderate*

*Learning Objective: 01-03-02 Compare and contrast discovery-based science and hypothesis testing; and describe the scientific method.*

*Section: 1.3*

*Topic: Biology as a Scientific Discipline*

38. The main difference between a hypothesis and a scientific theory would be that

- A. a hypothesis is a very short statement whereas a theory is usually quite long.
- B. a hypothesis can be disproven whereas a theory cannot be disproven.
- C. theories are constantly changing whereas hypotheses must remain unchanged.
- D.** theories are broad explanations based on evidence whereas hypotheses are much more specific.
- E. hypothesis are proven explanations of observations whereas theories are theoretical explanations.

*Blooms: Remember*

*Brooker - Chapter 01 #38*

*Difficulty: Moderate*

*Learning Objective: 01-03-02 Compare and contrast discovery-based science and hypothesis testing; and describe the scientific method.*

*Section: 1.3*

*Topic: Biology as a Scientific Discipline*

39. Imagine that two species of fish compete for resources in the Arctic Ocean. If water temperatures increase due to climate change, could natural selection affect the long-term survival of either or both species?

- A. No, because natural selection is not affected by man-made environmental changes.
- B. Yes, although both species would likely evolve to tolerate increased temperatures.
- C. No, because climate-change is very rapid and natural selection is very slow.
- D.** Yes, if either species is better adapted to warmer conditions, it will have a selective advantage.
- E. No, because the survival of either species would be due to homeostasis, not natural selection.

*Blooms: Apply*

*Brooker - Chapter 01 #39*

*Difficulty: Difficult*

*Learning Objective: 01-03-02 Compare and contrast discovery-based science and hypothesis testing; and describe the scientific method.*

*Section: 1.3*

*Topic: Biology as a Scientific Discipline*

40. Concept mapping would best be described as a learning strategy to
- A. memorize the details of scientific phenomena.
  - B. rephrase passages from a text into one's own words.
  - C. show how all biological processes are ultimately related.
  - D. relate all biological concepts to physical and chemical laws.
  - E. graphically organize and associate various concepts and processes.**

*Blooms: Remember*

*Brooker - Chapter 01 #40*

*Difficulty: Easy*

*Learning Objective: 01-04-02 Apply the principles of concept mapping to link and explore concepts and their interrelationships.*

*Section: 1.4*

*Topic: Making Sense of Biology: Learning Strategies*

41. A plant will begin flowering in response to changes in length of daylight, temperature, and light quality. This is an example of which unifying principle of life?
- A. Plants conduct photosynthesis.
  - B. Living organisms maintain homeostasis.
  - C. Living organisms interact with their environment.**
  - D. Living organisms grow and develop.
  - E. Populations of organisms evolve from one generation to the next.

*Blooms: Apply*

*Brooker - Chapter 01 #41*

*Difficulty: Moderate*

*Learning Objective: 01-01-01 Describe the principles of biology.*

*Section: 1.1*

*Topic: Principles of Life and Levels of Biological Organization*

42. Boa constrictors on an island are an example of a(n) \_\_\_\_.
- A. cell
  - B. organ
  - C. organism
  - D. population**
  - E. ecosystem

*Blooms: Apply*

*Brooker - Chapter 01 #42*

*Difficulty: Easy*

*Learning Objective: 01-01-02 Explain how life can be viewed at different levels of biological complexity.*

*Section: 1.1*

*Topic: Principles of Life and Levels of Biological Organization*

43. A wristwatch suddenly stops working. After replacing the battery, the watch starts working again. Which of the following statements correctly describes the situation from the perspective of the scientific method?
- A. This proves that a dead battery was the reason the wristwatch stopped working.
  - B. This substantiates the theory that all wristwatches require functional batteries.
  - C.** This is consistent with the hypothesis that a dead battery caused the wristwatch to stop working.
  - D. This leads to the prediction that a battery is required for wristwatch operation.
  - E. This leads to the theory that batteries must have finite lifespans.

*Blooms: Apply*

*Brooker - Chapter 01 #43*

*Difficulty: Moderate*

*Learning Objective: 01-03-02 Compare and contrast discovery-based science and hypothesis testing; and describe the scientific method.*

*Section: 1.3*

*Topic: Biology as a Scientific Discipline*

44. A researcher decides to test the scientific validity of the common phrase "An apple a day keeps the doctor away." What would be a valid hypothesis to investigate this specific question?
- A. Does one apple every day keep doctor visitation rates to a minimum?
  - B.** The daily consumption of a single apple does not change the number of visits to the doctor.
  - C. Eating one apple every day is good for you.
  - D. Apples are high in vitamin C.
  - E. Those who consume apples are healthier than those who do not consume apples.

*Blooms: Apply*

*Brooker - Chapter 01 #44*

*Difficulty: Moderate*

*Learning Objective: 01-03-02 Compare and contrast discovery-based science and hypothesis testing; and describe the scientific method.*

*Section: 1.3*

*Topic: Biology as a Scientific Discipline*

45. A researcher tests the hypothesis that large, daily doses of vitamin C help protect against catching the common cold. What would be the best experimental and control group to test this hypothesis?
- A. Experimental group: takes a large dose of vitamin C daily; Control group: takes nothing
  - B. Experimental group: people with a cold are administered vitamin C daily; Control group: people without a cold are not administered vitamin C
  - C. Experimental group: takes a large dose of vitamin C daily; Control group: takes a large weekly dose of vitamin C
  - D.** Experimental group: takes a large, daily dose of vitamin C; Control group: takes a daily dose of a sugar pill disguised as vitamin C
  - E. Experimental group: takes a large, daily dose of vitamin C; Control group: takes a small dose of vitamin C daily

*Blooms: Evaluate*

*Brooker - Chapter 01 #45*

*Difficulty: Moderate*

*Learning Objective: 01-03-02 Compare and contrast discovery-based science and hypothesis testing; and describe the scientific method.*

*Section: 1.3*

*Topic: Biology as a Scientific Discipline*

46. A researcher hypothesizes that crocodile gender is determined by the incubation temperature of the egg. The hypothesis states that an average nest temperature of 32 - 33°C results in the birth of male crocodiles while cooler and higher incubation temperatures result in female crocodiles. What is a valid, testable prediction based on this hypothesis?

- A. Male crocodiles will prefer temperatures of 32 - 33°C.
- B. Incubation of any crocodile egg at 32°C will result in a male crocodile.**
- C. Male eggs will hatch at 32°C while female eggs will not hatch at 32°C.
- D. Male eggs will be more fragile than female eggs.
- E. Crocodiles arrange the gender of offspring by manipulating incubation temperatures.

*Blooms: Evaluate*

*Brooker - Chapter 01 #46*

*Difficulty: Moderate*

*Learning Objective: 01-03-02 Compare and contrast discovery-based science and hypothesis testing; and describe the scientific method.*

*Section: 1.3*

*Topic: Biology as a Scientific Discipline*

47. A scientist isolates a single celled organism from the bottom of a sulfur hot spring. When examined under the microscope, it is clear that the cell is very small and contains no nucleus. Based on this evidence alone, in what domain of life is this organism?

- A. Eukarya
- B. Bacteria
- C. Archaea
- D. Either bacteria or Archaea**
- E. It is impossible to determine anything based on this evidence alone.

*Blooms: Apply*

*Brooker - Chapter 01 #47*

*Difficulty: Moderate*

*Learning Objective: 01-02-02 Outline how organisms are classified (taxonomy)*

*Section: 1.2*

*Topic: Unity and Diversity of Life*

48. All tissues are composed of cells.

**TRUE**

*Blooms: Understand*

*Brooker - Chapter 01 #48*

*Difficulty: Easy*

*Learning Objective: 01-01-01 Describe the principles of biology.*

*Section: 1.1*

*Topic: Principles of Life and Levels of Biological Organization*

49. The capacity to maintain a fairly constant body temperature is a homeostatic process.

**TRUE**

*Blooms: Understand*

*Brooker - Chapter 01 #49*

*Difficulty: Easy*

*Learning Objective: 01-01-01 Describe the principles of biology.*

*Section: 1.1*

*Topic: Principles of Life and Levels of Biological Organization*

50. A community is composed of different populations of animals and plants.

**TRUE**

*Blooms: Understand*

*Brooker - Chapter 01 #50*

*Difficulty: Easy*

*Learning Objective: 01-01-02 Explain how life can be viewed at different levels of biological complexity.*

*Section: 1.1*

*Topic: Principles of Life and Levels of Biological Organization*

51. A defining characteristic that distinguishes prokaryotic and eukaryotic organisms is the lack of cell structure in one versus the other.

**TRUE**

*Blooms: Understand*

*Brooker - Chapter 01 #51*

*Difficulty: Easy*

*Learning Objective: 01-02-02 Outline how organisms are classified (taxonomy)*

*Section: 1.2*

*Topic: Unity and Diversity of Life*

52. The modification of a limb that was used for walking in a pre-existing ancestor to one that is used as a wing for a species today is called proteomics.

**FALSE**

*Blooms: Understand*

*Brooker - Chapter 01 #52*

*Difficulty: Moderate*

*Learning Objective: 01-02-01 Explain the two basic mechanisms by which evolutionary change occurs: vertical descent with mutation and horizontal gene transfer.*

*Section: 1.2*

*Topic: Unity and Diversity of Life*

53. A bacterial infection such as pneumonia is most likely caused by organisms derived from the animal kingdom.

**FALSE**

*Blooms: Understand*

*Brooker - Chapter 01 #53*

*Difficulty: Easy*

*Learning Objective: 01-02-02 Outline how organisms are classified (taxonomy)*

*Section: 1.2*

*Topic: Unity and Diversity of Life*

54. All genetic mutations are harmful to an organism.

**FALSE**

*Blooms: Understand*

*Brooker - Chapter 01 #54*

*Difficulty: Easy*

*Learning Objective: 01-02-01 Explain the two basic mechanisms by which evolutionary change occurs: vertical descent with mutation and horizontal gene transfer.*

*Section: 1.2*

*Topic: Unity and Diversity of Life*

55. Vertical evolution, whereby living organisms evolve from a common ancestor ("tree of life"), is the only mechanism of evolution on Earth.

**FALSE**

*Blooms: Understand*

*Brooker - Chapter 01 #55*

*Difficulty: Easy*

*Learning Objective: 01-02-01 Explain the two basic mechanisms by which evolutionary change occurs: vertical descent with mutation and horizontal gene transfer.*

*Section: 1.2*

*Topic: Unity and Diversity of Life*

56. The effects of a genetic mutation are always limited to simply a change in DNA sequence with little consequence to the proteins expressed.

**FALSE**

*Blooms: Understand*

*Brooker - Chapter 01 #56*

*Difficulty: Moderate*

*Learning Objective: 01-02-03 Describe how changes in genomes and proteomes underlie evolutionary changes.*

*Section: 1.2*

*Topic: Unity and Diversity of Life*

57. The proteome, rather than genome, is most directly responsible for the structure, function, and appearance of organisms.

**TRUE**

*Blooms: Remember*

*Brooker - Chapter 01 #57*

*Difficulty: Easy*

*Learning Objective: 01-02-03 Describe how changes in genomes and proteomes underlie evolutionary changes.*

*Section: 1.2*

*Topic: Unity and Diversity of Life*

58. Little scientific evidence is necessary when formulating a theory.

**FALSE**

*Blooms: Understand*

*Brooker - Chapter 01 #58*

*Difficulty: Easy*

*Learning Objective: 01-03-02 Compare and contrast discovery-based science and hypothesis testing; and describe the scientific method.*

*Section: 1.3*

*Topic: Biology as a Scientific Discipline*

59. The maintenance of cell structure requires energy.

**TRUE**

*Blooms: Understand*

*Brooker - Chapter 01 #59*

*Difficulty: Easy*

*Learning Objective: 01-01-01 Describe the principles of biology.*

*Section: 1.1*

*Topic: Principles of Life and Levels of Biological Organization*

60. Discovery-based science and hypothesis testing are the two major scientific approaches that help us understand biology.

**TRUE**

*Blooms: Understand*

*Brooker - Chapter 01 #60*

*Difficulty: Easy*

*Learning Objective: 01-03-02 Compare and contrast discovery-based science and hypothesis testing; and describe the scientific method.*

*Section: 1.3*

*Topic: Biology as a Scientific Discipline*

## c1 Summary

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