Multiple Choice

____ 1. Science differs from other disciplines, such as history and the arts, because science relies on
   a. facts.
   b. testing explanations.
   c. observations.
   d. theories.

____ 2. Measurements made while observing a plant grow 3 cm over a two-week period are called
   a. inferences.
   b. variables.
   c. hypotheses.
   d. data.

____ 3. Based on your observations, you suggest that the presence of water could accelerate the
   growth of bread mold. This is
   a. a conclusion.
   b. a hypothesis.
   c. an experiment.
   d. an analysis.

____ 4. Suppose that a scientist proposes a hypothesis about how a newly discovered virus affects
   humans. Other virus researchers would likely
   a. reject the hypothesis right away.
   b. change the hypothesis to fit their own findings.
   c. design new experiments to test the proposed hypothesis.
   d. assume that the hypothesis is true for all viruses.

____ 5. Why is creativity considered a scientific attitude?
   a. Scientists need creativity to make good posters to explain their ideas.
   b. Creativity helps scientists come up with different experiments.
   c. Creative scientists imagine the results of experiments without doing them.
   d. Scientists who are creative are better at handling and training animals.

____ 6. Who reviews articles for peer-reviewed journals?
   a. friends of the scientists who wrote the articles
   b. anonymous and independent experts
   c. the scientists who did the experiments
   d. people who paid for the experiments

____ 7. How does sharing ideas through peer-reviewed articles help advance science?
   a. Peer-reviewed articles are published only when the ideas they contain have been
      accepted by most scientists.
   b. Experiments in peer-reviewed articles do not need to be repeated.
   c. Scientists reading the articles may come up with new questions to study.
   d. Ideas in the articles always support and strengthen dominant theories.
8. Suppose that a scientific idea is well-tested and can be used to make predictions in numerous new situations, but cannot explain one particular event. This idea is a
a. hypothesis that is incorrect.
b. hypothesis that must be retested.
c. theory that should be discarded.
d. theory that may need revision.

9. How do scientific theories compare to hypotheses?
   a. Theories are the same as hypotheses.
   b. Theories unify a broad range of observations and hypotheses.
   c. Hypotheses combine the ideas of several theories to explain events.
   d. Hypotheses are the dominant view among scientists.

10. Which of the following is NOT a way that science influences society?
    a. Science provides answers to some of society’s practical problems.
    b. Science gives society answers to difficult ethical issues.
    c. Science advances technology that is useful to society.
    d. Science increases society’s understanding of how people affect the environment.

11. Cells in multicellular organisms have many different sizes and shapes. These differences in cells are part of cell specialization. Cell specialization allows cells to
    a. reproduce.  
    b. perform different functions.  
    c. respond to their environment.  
    d. be less complex.

12. Which big idea in biology is MOST concerned with DNA?
    a. information and heredity  
    b. cellular basis of life  
    c. matter and energy  
    d. interdependence in nature

13. What are the smallest objects that biologists study?
    a. cells  
    b. body organs  
    c. molecules  
    d. organisms

14. The basic unit of length in the metric system is the
    a. gram.  
    b. liter.  
    c. yard.  
    d. meter.

15. How many meters are in 2.4 km?
    a. 240  
    b. 2400  
    c. 24,000  
    d. 240,000
Completion

Complete each statement on the line provided.

16. An experiment in which only one variable is changed is a(an) ________________ experiment.

17. A biologist reads about a study in a peer-reviewed journal where the results do not agree with her research. This scientist must remain ________________ and think about how those results might affect her own work.

18. An article that is undergoing ________________ is read carefully and checked by other scientists.

19. Every living thing is made up of a set of body parts. Each body part, or structure, has a certain job or ________________.

20. A mass of 3000 g is equal to ________________ kg.

Short Answer

In complete sentences, write the answers to the questions on the lines provided.

21. Why do reviewers of scientific papers have to be anonymous and independent?

__________________________________________________________________________
__________________________________________________________________________

22. Some opponents of the theory of evolution dismiss the idea as being “just a theory.” Why is this NOT a very good argument against the theory of evolution?

__________________________________________________________________________
__________________________________________________________________________

23. What is a bias?

__________________________________________________________________________
__________________________________________________________________________

24. Give an example of a question that society might have that can be answered by science.

__________________________________________________________________________
__________________________________________________________________________

25. Which characteristic of living things is important to the survival of a group of animals rather than an individual member of this group? Why?

__________________________________________________________________________
__________________________________________________________________________
Using Science Skills

Use the diagram below to answer the following questions on the lines provided.

A scientist conducted an experiment to determine the effect of environment on the fur color of a Himalayan rabbit. The Himalayan rabbit typically has a white coat except for its colder nose, feet, tail, and ears, which are black. The scientist shaved an area of hair on the back of each rabbit, then placed an ice pack over the shaved area on one rabbit (A).

26. **Interpret Visuals** In Figure 1–1, which rabbit is the control?

27. **Interpret Visuals** In Figure 1–1, what is the variable in this experiment?

28. **Form a Hypothesis** Before completing the experiment in Figure 1–1, the scientist made a hypothesis. What is the hypothesis she is testing?

29. **Apply Concepts** Why is Rabbit B essential to the experiment in Figure 1–1?

30. **Draw Conclusions** Based on your observations of Figure 1–1, conclude what effect temperature has on Himalayan rabbits.
Essay

Write the answer to each question in the space provided.

31. What is a goal of science?

32. Can a theory change over time? Explain your answer.

33. How would you determine whether something is living or nonliving?
34. Two big ideas in biology are structure and function and the unity and diversity of life. Analyze the images in Figure 1–2 in terms of these two big ideas. What are the functions of these structures? How are they similar and how are they different? List four of each.

35. What is meant by a population of organisms? Describe two examples.

Congratulations! You made it to the end!!!