

Life Science; Ch. 1 Practice Test; Introduction to Life Science

Multiple Choice

Identify the choice that best completes the statement or answers the question.

- _____ 1. Using one or more of your senses to gather information is called
 - a. observing.
 - b. inferring.
 - c. predicting.
 - d. classifying.
- _____ 2. Observations that deal with a number or amount are called
 - a. manipulated observations.
 - b. quantitative observations.
 - c. qualitative observations.
 - d. operational observations.
- _____ 3. Observations that deal with descriptions that cannot be expressed in numbers are called
 - a. manipulated observations.
 - b. quantitative observations.
 - c. qualitative observations.
 - d. operational observations.
- _____ 4. Explaining or interpreting the things you observe based on reasoning from what you already know is called
 - a. observing.
 - b. inferring.
 - c. predicting.
 - d. classifying.
- _____ 5. Making a forecast of what will happen in the future based on past experience or evidence is called
 - a. observing.
 - b. inferring.
 - c. predicting.
 - d. classifying.
- _____ 6. When scientists put things into categories or group together items that are alike in some way, they are
 - a. inferring.
 - b. predicting.
 - c. classifying.
 - d. making models.
- _____ 7. When scientists create a representation of a complex process, they are
 - a. inferring.
 - b. predicting.
 - c. classifying.
 - d. making models.
- _____ 8. Grocery stores organize food according to food type—diary, frozen, bakery, and so on. This is an example of

- a. observation.
- b. posing questions.
- c. classifying.
- d. inferences.

- _____ 9. Trying to explain why a cactus needs little water to survive is an example of
- a. a prediction.
 - b. drawing a conclusion.
 - c. scientific inquiry.
 - d. classification.
- _____ 10. In a scientific experiment, a statement that describes how to measure a particular variable or define a particular term is a(n)
- a. hypothesis.
 - b. manipulated variable.
 - c. operational definition.
 - d. responding variable.
- _____ 11. Scientists can communicate their results
- a. at scientific meetings.
 - b. in scientific journals.
 - c. by exchanging information on the Internet.
 - d. all of the above
- _____ 12. To reveal trends in data, the data should be presented in a(n)
- a. hypothesis.
 - b. graph.
 - c. operational definition.
 - d. scientific investigation.
- _____ 13. What are some reasonable safety precautions for field investigations?
- a. None; there are no hazards in the field.
 - b. Always wear goggles and aprons.
 - c. Be prepared and use common sense.
 - d. Always go into the field alone.
- _____ 14. Knowing how to use lab equipment is an example of
- a. good lab preparations.
 - b. performing a lab.
 - c. being in the field.
 - d. completing a lab.
- _____ 15. What is the first thing you should do if an accident occurs?
- a. Find the emergency equipment.
 - b. Notify your teacher.
 - c. Go to the nearest hospital.
 - d. Start first aid treatment.
- _____ 16. If a beaker breaks, the first thing you should do is
- a. clean up the broken glass.
 - b. ask a classmate for help.
 - c. read safety symbols for the lab.
 - d. notify your teacher.

- _____ 17. A representation of an animal cell in which all of the parts are shown in the proper proportions is an example of a(n)
 - a. inference.
 - b. observation.
 - c. operational definition.
 - d. scale model.
- _____ 18. Processes that enable an organism to survive are
 - a. developments.
 - b. functions.
 - c. principles.
 - d. structures.
- _____ 19. Genetics, the study of how physical characteristics are passed from parents to offspring, is a branch of
 - a. biology.
 - b. physics.
 - c. chemistry.
 - d. Earth science.
- _____ 20. Noticing that sugar tastes sweet is a(n)
 - a. hypothesis.
 - b. inference.
 - c. qualitative observation.
 - d. quantitative observation.
- _____ 21. Counting the number of cookies on a plate is a(n)
 - a. hypothesis.
 - b. inference.
 - c. qualitative observation.
 - d. quantitative observation.
- _____ 22. During an experiment, which factors must be controlled so that researchers can draw a logical conclusion from the experiment?
 - a. variables
 - b. hypotheses
 - c. inquiries
 - d. theories
- _____ 23. Which of the following is a branch of life science?
 - a. physiology
 - b. cell biology
 - c. plant biology
 - d. all of the above
- _____ 24. The field of entomology involves the study of
 - a. vertebrates.
 - b. humans.
 - c. insects.
 - d. fishes.
- _____ 25. A species of animal develops a specialized eye structure that enables the species to see better in its environment. The big idea in life science best described by this example is that organisms

- a. are diverse yet similar.
 - b. operate on the same set of rules as the rest of the natural world.
 - c. change over time.
 - d. have structures and functions that are complementary.
- _____ 26. A group of scientists are studying various types of soundwaves in order to learn how animals' ears detect noise. Which big idea in life science are the scientists applying?
- a. Organisms change over time.
 - b. Organisms are diverse yet similar.
 - c. Organisms have complementary structure and function.
 - d. Organisms operate on the same set of physical principles as the rest of the natural world.
- _____ 27. In scientific inquiry, questions that are posed
- a. are based on opinions.
 - b. can be answered through investigation.
 - c. always lead to a correct conclusion.
 - d. always involve numerical data that can be graphed.
- _____ 28. Signs in the laboratory and in printed lab procedures that warn of possible dangers such as poisonous chemicals or electrical shock are called
- a. field guides.
 - b. safety symbols.
 - c. lab warnings.
 - d. traffic symbols.
- _____ 29. At the end of a lab, you should
- a. put your equipment away.
 - b. clean your work surface.
 - c. wash your hands.
 - d. do all of the above.
- _____ 30. An important discovery about the interaction of grizzly bears in their environment might contribute to both
- a. molecular biology and genetics.
 - b. genetics and physiology.
 - c. ecology and biology.
 - d. microbiology and biology.

Modified True/False

Indicate whether the statement is true or false. If false, change the identified word or phrase to make the statement true.

- _____ 31. Counting ten bikes on a bike rack is an example of a qualitative observation.

- _____ 32. Thinking and questioning is the start of the scientific inquiry process.

- _____ 33. A(n) hypothesis is a statement that describes how to measure a particular variable or define a particular term. _____

- ____ 34. A model is a good way for scientists to look for patterns or trends in data.

- ____ 35. Safety symbols alert you to possible dangers and identify safety equipment you should use.

- ____ 36. When you do field work, you should never tell an adult where you will be.

- ____ 37. In a scientific experiment, the one variable that is purposely changed to test a hypothesis is called the manipulated variable. _____
- ____ 38. Growth is the process of change that occurs during an organism's life to produce a more complex organism. _____
- ____ 39. In a controlled experiment, the operational definition is the part of the experiment to which you compare the results of the other tests. _____
- ____ 40. Frogs are a diverse group of organisms, but all have life cycles that follow approximately the same pattern, showing that all frogs share different characteristics.

Completion

Complete each statement.

41. _____, which is the process of grouping together items that are alike in some way, helps a scientist organize information.
42. Scientific _____ refers to the diverse ways in which scientists study the natural world and propose explanations based on the evidence they gather.
43. After interpreting data, a scientist will draw _____ about their results.
44. In science, a hypothesis must be _____.
45. An experiment in which only one variable is manipulated at a time is called a(n) _____ experiment.
46. Just as in the lab, safety is also important when doing activities in the _____.
47. The factors that can change in an experiment are called _____.
48. When a molecular biologist studies the chemical building blocks of cells and a physiologist studies the structure and function of an organism, both scientists are studying a science that is part of the field of _____ science.
49. _____ is the study of how organisms interact with each other and with their surroundings.
50. The changes in physical size that occur during an organism's lifetime are called _____.
51. Nancy observes that most of the birds in her yard stay near one tree, and she wonders why this is the case. She can use the process of _____ to help find an explanation.

52. One way in which all living things are similar is that they are all made of tiny building blocks called _____.
53. _____ are processes that enable organisms to survive, whereas structure is the way an organism is put together.
54. All of the ways scientists study the natural world are forms of scientific _____.
55. The process of change over time in an individual is known as _____, while the process of change over time in a species is known as evolution.
56. Different kinds of organisms are composed of cells containing the same sets of organelles. This fact illustrates the principle that, although organisms are diverse, they share similar _____.
57. In order to understand the structure and function of the chimpanzees she studied, Jane Goodall had to have an understanding of physiology. To understand the interactions between the chimpanzees and their environment, she had to understand _____.
58. Jane Goodall had to use caution when working in the field with chimpanzees because chimpanzees are wild animals and are a potential safety _____.
59. An ecologist would most likely gather samples in the field but study and analyze the samples in a _____.
60. To investigate how DNA affects the characteristics of organisms, a scientist would have to understand both genetics and _____.

Short Answer

Use the diagram to answer each question.

Chimpanzee Diet in November	
Food	Percent of Diet
Fruit	62%
Insects	16%
Leaves	16%
Miscellaneous	6%

61. Explain how researchers might have obtained the data shown in the table.
62. Describe how the chimpanzee's diet has been classified.
63. Do the data in this table represent quantitative observations or qualitative observations? Explain.
64. How does the data provide an example of scientific inquiry?
65. Explain how the data in the chart about chimpanzee diet might be used differently by an ecologist and a physiologist.
66. Describe another method for presenting the data in the table above and explain the method's benefits.

Use the diagram to answer each question.

Number of Chirps per Minute			
<i>Cricket</i>	<i>15°C</i>	<i>20°C</i>	<i>25°C</i>
1	91	135	180
2	80	124	169
3	89	130	176
4	78	125	158
5	77	121	157
<i>Average</i>	<i>83</i>	<i>127</i>	<i>168</i>

67. What is the purpose of recording data in a table like the one above?
68. Is there a relationship between the number of chirps per minute and the temperature? If so, describe the relationship.
69. What hypothesis might this experiment be designed to test?
70. Identify the manipulated variable and the responding variable in this experiment. Explain.
71. State a conclusion based on the data from this experiment.
72. Using the information in the table, create a simple model of the relationship between cricket chirps and temperature. Explain how you created your model and what you could use the model to predict.

Essay

73. Compare and contrast the skills of inferring and predicting.
74. Identify the six major stages of the process of scientific inquiry and explain why the process is not a rigid sequence of steps.
75. Suppose you want to find out the effects of light on the growth of tomatoes. What variables would you need to control in your experiment?
76. Give an example of how scientists record qualitative and quantitative data differently. How do they interpret and share their data?
77. When an organism develops it changes and becomes more complex during its lifetime. How is this process different from the big idea in life science of “change over time”?
78. Your lab partner accidentally causes a small chemical spill on your lab table. He tears off a piece of paper towel from a nearby counter and wipes up the spill. Did your partner respond properly to the accident? Why or why not?
79. Explain how investigations of photosynthesis have shown that living things abide by the same physical principles as the rest of the natural world. What fields of life science are involved in understanding photosynthesis?

80. Explain how the big ideas of life science relate to the different fields of life science.

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Answer Section

MULTIPLE CHOICE

1. ANS: A PTS: 1 DIF: L1
OBJ: CaLS.1.1.1 Identify skills scientists use to learn about the world.
STA: S 7.7 BLM: knowledge
2. ANS: B PTS: 1 DIF: L1
OBJ: CaLS.1.1.1 Identify skills scientists use to learn about the world.
STA: S 7.7 BLM: knowledge
3. ANS: C PTS: 1 DIF: L1
OBJ: CaLS.1.1.1 Identify skills scientists use to learn about the world.
STA: S 7.7 BLM: knowledge
4. ANS: B PTS: 1 DIF: L1
OBJ: CaLS.1.1.1 Identify skills scientists use to learn about the world.
STA: S 7.7.c BLM: knowledge
5. ANS: C PTS: 1 DIF: L1
OBJ: CaLS.1.1.1 Identify skills scientists use to learn about the world.
STA: S 7.7.c BLM: knowledge
6. ANS: C PTS: 1 DIF: L1
OBJ: CaLS.1.1.1 Identify skills scientists use to learn about the world.
STA: S 7.7 BLM: knowledge
7. ANS: D PTS: 1 DIF: L2
OBJ: CaLS.1.1.1 Identify skills scientists use to learn about the world.
STA: S 7.7.d BLM: comprehension
8. ANS: C PTS: 1 DIF: L2
OBJ: CaLS.1.1.1 Identify skills scientists use to learn about the world.
STA: S 7.7 BLM: application
9. ANS: C PTS: 1 DIF: L2
OBJ: CaLS.1.3.1 Explain what scientific inquiry involves. STA: S 7.7.a
BLM: application
10. ANS: C PTS: 1 DIF: L1
OBJ: CaLS.1.3.2 Describe how to develop a hypothesis and design an experiment.
STA: S 7.7.c BLM: knowledge
11. ANS: D PTS: 1 DIF: L2
OBJ: CaLS.1.3.2 Describe how to develop a hypothesis and design an experiment.
STA: S 7.7.c BLM: comprehension
12. ANS: B PTS: 1 DIF: L2
OBJ: CaLS.1.3.2 Describe how to develop a hypothesis and design an experiment.
STA: S 7.7.a BLM: application
13. ANS: C PTS: 1 DIF: L2
OBJ: CaLS.1.4.1 Explain why preparation is important when carrying out scientific investigations in the lab and in the field. STA: S 7.7 BLM: application

14. ANS: A PTS: 1 DIF: L2
OBJ: CaLS.1.4.1 Explain why preparation is important when carrying out scientific investigations in the lab and in the field. STA: S 7.7 BLM: application
15. ANS: B PTS: 1 DIF: L1
OBJ: CaLS.1.4.2 Describe what you should do if an accident occurs.
STA: S 7.7 BLM: knowledge
16. ANS: D PTS: 1 DIF: L2
OBJ: CaLS.1.4.2 Describe what you should do if an accident occurs.
STA: S 7.7 BLM: application
17. ANS: D PTS: 1 DIF: L2
OBJ: CaLS.1.1.1 Identify skills scientists use to learn about the world.
STA: S 7.7.d BLM: application
18. ANS: B PTS: 1 DIF: L1
OBJ: CaLS.1.2.2 Identify some of the big ideas in life science. STA: S 7.5 | S 7.6
BLM: knowledge
19. ANS: A PTS: 1 DIF: L2
OBJ: CaLS.1.2.1 Explain how the branches of life science are related.
STA: S 7.6 BLM: comprehension
20. ANS: C PTS: 1 DIF: L2
OBJ: CaLS.1.1.1 Identify skills scientists use to learn about the world.
STA: S 7.7 BLM: application
21. ANS: D PTS: 1 DIF: L2
OBJ: CaLS.1.1.1 Identify skills scientists use to learn about the world.
STA: S 7.7 BLM: application
22. ANS: A PTS: 1 DIF: L2
OBJ: CaLS.1.3.2 Describe how to develop a hypothesis and design an experiment.
STA: S 7.7 BLM: comprehension
23. ANS: D PTS: 1 DIF: L2
OBJ: CaLS.1.2.1 Explain how the branches of life science are related.
BLM: comprehension
24. ANS: C PTS: 1 DIF: L2
OBJ: CaLS.1.2.1 Explain how the branches of life science are related.
BLM: comprehension
25. ANS: D PTS: 1 DIF: L2
OBJ: CaLS.1.2.2 Identify some of the big ideas in life science. STA: S 7.5.g
BLM: application
26. ANS: D PTS: 1 DIF: L2
OBJ: CaLS.1.2.2 Identify some of the big ideas in life science. STA: S 7.5.g
BLM: application
27. ANS: B PTS: 1 DIF: L2
OBJ: CaLS.1.3.1 Explain what scientific inquiry involves. STA: S 7.7
BLM: comprehension
28. ANS: B PTS: 1 DIF: L2
OBJ: CaLS.1.4.1 Explain why preparation is important when carrying out scientific investigations in the lab and in the field. STA: S 7.7 BLM: comprehension

29. ANS: C PTS: 1 DIF: L2
OBJ: CaLS.1.4.1 Explain why preparation is important when carrying out scientific investigations in the lab and in the field. STA: S 7.7 BLM: comprehension
30. ANS: C PTS: 1 DIF: L2
OBJ: CaLS.1.2.1 Explain how the branches of life science are related.
BLM: application

MODIFIED TRUE/FALSE

31. ANS: F, quantitative
- PTS: 1 DIF: L2
OBJ: CaLS.1.1.1 Identify skills scientists use to learn about the world.
STA: S 7.7 BLM: application
32. ANS: T PTS: 1 DIF: L1
OBJ: CaLS.1.3.1 Explain what scientific inquiry involves. STA: S 7.7.c
BLM: knowledge
33. ANS: F, operational definition
- PTS: 1 DIF: L1
OBJ: CaLS.1.3.2 Describe how to develop a hypothesis and design an experiment.
STA: S 7.7.c BLM: knowledge
34. ANS: F, graph
- PTS: 1 DIF: L2
OBJ: CaLS.1.3.2 Describe how to develop a hypothesis and design an experiment.
STA: S 7.7.a BLM: comprehension
35. ANS: T PTS: 1 DIF: L2
OBJ: CaLS.1.4.1 Explain why preparation is important when carrying out scientific investigations in the lab and in the field. STA: S 7.7 BLM: comprehension
36. ANS: F, always
- PTS: 1 DIF: L1
OBJ: CaLS.1.4.1 Explain why preparation is important when carrying out scientific investigations in the lab and in the field. STA: S 7.7 BLM: knowledge
37. ANS: T PTS: 1 DIF: L1
OBJ: CaLS.1.3.2 Describe how to develop a hypothesis and design an experiment.
STA: S 7.7 BLM: knowledge
38. ANS: F, Development
- PTS: 1 DIF: L1
OBJ: CaLS.1.2.2 Identify some of the big ideas in life science. STA: S 7.6
BLM: knowledge
39. ANS: F

control

PTS: 1 DIF: L2

OBJ: CaLS.1.3.2 Describe how to develop a hypothesis and design an experiment.

STA: S 7.7.c BLM: comprehension

40. ANS: F, similar

PTS: 1 DIF: L2

OBJ: CaLS.1.2.2 Identify some of the big ideas in life science. STA: S 7.5

BLM: application

COMPLETION

41. ANS: Classifying

PTS: 1 DIF: L2

OBJ: CaLS.1.1.1 Identify skills scientists use to learn about the world.

STA: S 7.7 BLM: comprehension

42. ANS: inquiry

PTS: 1 DIF: L1

OBJ: CaLS.1.3.1 Explain what scientific inquiry involves. STA: S 7.7.c

BLM: knowledge

43. ANS: conclusions

PTS: 1 DIF: L2

OBJ: CaLS.1.3.2 Describe how to develop a hypothesis and design an experiment.

STA: S 7.7.c BLM: application

44. ANS: testable

PTS: 1 DIF: L1

OBJ: CaLS.1.3.2 Describe how to develop a hypothesis and design an experiment.

STA: S 7.7 BLM: knowledge

45. ANS: controlled

PTS: 1 DIF: L1

OBJ: CaLS.1.3.2 Describe how to develop a hypothesis and design an experiment.

STA: S 7.7 BLM: knowledge

46. ANS: field

PTS: 1 DIF: L2

OBJ: CaLS.1.4.1 Explain why preparation is important when carrying out scientific investigations in the lab and in the field. STA: S 7.7 BLM: comprehension

47. ANS: variables

- PTS: 1 DIF: L1
OBJ: CaLS.1.3.2 Describe how to develop a hypothesis and design an experiment.
STA: S 7.7 BLM: knowledge
48. ANS: life
- PTS: 1 DIF: L2
OBJ: CaLS.1.2.1 Explain how the branches of life science are related.
BLM: application
49. ANS: Ecology
- PTS: 1 DIF: L1
OBJ: CaLS.1.2.1 Explain how the branches of life science are related.
BLM: knowledge
50. ANS: growth
- PTS: 1 DIF: L2
OBJ: CaLS.1.2.2 Identify some of the big ideas in life science. STA: S 7.5.a
BLM: comprehension
51. ANS: scientific inquiry
- PTS: 1 DIF: L3
OBJ: CaLS.1.3.1 Explain what scientific inquiry involves. STA: S 7.7
BLM: application
52. ANS: cells
- PTS: 1 DIF: L2
OBJ: CaLS.1.2.2 Identify some of the big ideas in life science. STA: S 7.1.a
BLM: comprehension
53. ANS: Functions
- PTS: 1 DIF: L2
OBJ: CaLS.1.2.2 Identify some of the big ideas in life science. STA: S 7.5
BLM: comprehension
54. ANS: inquiry
- PTS: 1 DIF: L2
OBJ: CaLS.1.3.1 Explain what scientific inquiry involves. STA: S 7.7
BLM: comprehension
55. ANS: development
- PTS: 1 DIF: L2
OBJ: CaLS.1.2.2 Identify some of the big ideas in life science. STA: S 7.3 | S 7.5
BLM: analysis
56. ANS: characteristics.

PTS: 1 DIF: L2

OBJ: CaLS.1.2.2 Identify some of the big ideas in life science. STA: S 7.1 | S 7.5

BLM: application

57. ANS: ecology.

PTS: 1 DIF: L3

OBJ: CaLS.1.2.1 Explain how the branches of life science are related.

BLM: synthesis

58. ANS: hazard.

PTS: 1 DIF: L2

OBJ: CaLS.1.4.1 Explain why preparation is important when carrying out scientific investigations in the lab and in the field. BLM: application

59. ANS:

laboratory.

lab.

PTS: 1 DIF: L2

OBJ: CaLS.1.3.1 Explain what scientific inquiry involves. STA: S 7.7

BLM: application

60. ANS: molecular biology.

PTS: 1 DIF: L3

OBJ: CaLS.1.2.2 Identify some of the big ideas in life science. BLM: synthesis

SHORT ANSWER

61. ANS:

using the senses to make observations, counting

PTS: 1 DIF: L2

OBJ: CaLS.1.1.1 Identify skills scientists use to learn about the world.

STA: S 7.7.c BLM: analysis

62. ANS:

The chimpanzee's diet has been classified into four different categories. The "miscellaneous" category probably includes two or more smaller categories.

PTS: 1 DIF: L2

OBJ: CaLS.1.1.1 Identify skills scientists use to learn about the world.

STA: S 7.7.c BLM: analysis

63. ANS:

The data in this table represent quantitative observations because they deal with percents, which are a type of number or amount.

PTS: 1 DIF: L3

OBJ: CaLS.1.1.1 Identify skills scientists use to learn about the world.

STA: S 7.7.c BLM: synthesis

64. ANS:

Scientific inquiry is the ongoing process of discovery in science including the ways in which scientists study the natural world and propose explanations based on evidence gathered. The data is an example of information gathered while observing chimpanzees in their natural habitat. For example, leaves and insects made up 32% of the chimpanzee diet in November.

PTS: 1 DIF: L3

OBJ: CaLS.1.3.1 Explain what scientific inquiry involves. STA: S 7.7.c

BLM: synthesis

65. ANS:

An ecologist would use this information to infer relationships between the chimpanzees and their environment. A physiologist might use the information to infer the ways in which a chimpanzee's body structure contributes to its food gathering abilities for different kinds of food.

PTS: 1 DIF: L3

OBJ: CaLS.1.2.1 Explain how the branches of life science are related.

STA: S 7.7.c BLM: synthesis

66. ANS:

The data in the table above could be made into a graph to help interpret the information more easily.

PTS: 1 DIF: L2

OBJ: CaLS.1.3.2 Describe how to develop a hypothesis and design an experiment.

STA: S 7.7.a BLM: application

67. ANS:

Putting data into a table helps you organize and record the information you collect in an experiment.

PTS: 1 DIF: L2

OBJ: CaLS.1.3.2 Describe how to develop a hypothesis and design an experiment.

STA: S 7.7.a BLM: analysis

68. ANS:

Yes, there appears to be a relationship. As the temperature increases from 15°C to 25°C, the average number of chirps per minute also increases.

PTS: 1 DIF: L3

OBJ: CaLS.1.3.2 Describe how to develop a hypothesis and design an experiment.

STA: S 7.7.c BLM: synthesis

69. ANS:

Answers may vary. One possible answer is "Perhaps crickets chirp more when the temperature is higher."

PTS: 1 DIF: L2

OBJ: CaLS.1.3.2 Describe how to develop a hypothesis and design an experiment.

STA: S 7.7.c BLM: application

70. ANS:

The manipulated variable is the air temperature because it is purposely changed by the experimenter to test the hypothesis. The responding variable is the number of cricket chirps because it may change in response to the air temperature.

PTS: 1 DIF: L2

OBJ: CaLS.1.3.2 Describe how to develop a hypothesis and design an experiment.

STA: S 7.7.c BLM: analysis

71. ANS:

Answers may vary. One possible answer is “Cricket chirping increases with temperature.”

PTS: 1 DIF: L3

OBJ: CaLS.1.3.2 Describe how to develop a hypothesis and design an experiment.

STA: S 7.7.c BLM: synthesis

72. ANS:

Sample answer: Using the average of chirps per minute for each temperature, you could infer that for each 5-degree C increase in temperature, cricket chirps increase by an average of about 42 chirps per minute. Using this model, you could predict the chirps per minute at different temperatures, even though you have not taken data on cricket chirps at those temperatures.

PTS: 1 DIF: L3

OBJ: CaLS.1.1.1 Identify skills scientists use to learn about the world.

STA: S 7.7.d BLM: evaluation

ESSAY

73. ANS:

Inferring is what you do when you explain or interpret the things you observe. Predicting is what you do when you make a forecast of what will happen in the future. Predictions and inferences are closely related. One important similarity is that neither are wild guesses. Instead, both inferences and predictions are based on some sort of evidence, such as prior knowledge, past experience, or reasoning. Another characteristic shared by both inferences and predictions is that they are not always correct. There is one key difference between inferences and predictions, however. Inferences are attempts to explain observations of something that is happening in the present or has happened in the past. On the other hand, predictions are attempts to describe what will happen in the future.

PTS: 1 DIF: L2

OBJ: CaLS.1.1.1 Identify skills scientists use to learn about the world.

STA: S 7.7.c BLM: analysis

74. ANS:

The six major stages of the process of scientific inquiry are pose questions, form a hypothesis, design an experiment, collect and interpret data, draw conclusions, and communicate. Rather than being a rigid sequence of steps, the process of scientific inquiry has many paths. Scientific inquiry usually doesn't end once a set of experiments is done. Often, one scientific inquiry leads to another one, which leads to new hypotheses and new experiments. Also, scientists communicate their results so that other scientists can repeat their experiment and further build on the scientific inquiry.

PTS: 1 DIF: L2

OBJ: CaLS.1.3.1 Explain what scientific inquiry involves. STA: S 7.7

BLM: comprehension

75. ANS:

If you were testing the effects of light on the growth of tomatoes you would have to observe tomatoes grown with different amounts of light. Light would be the manipulated variable. The growth of the plant would be the responding variable. The size of the plants to start with, the amount of water and plant food given to each plant, and the temperature would all have to be the same in order to have a controlled experiment.

PTS: 1 DIF: L3

OBJ: CaLS.1.3.2 Describe how to develop a hypothesis and design an experiment.

STA: S 7.7.a BLM: synthesis

76. ANS:

Scientists often make data tables to record their data. For qualitative data they may record their data as a log or as a journal. The journal or log can then be used to interpret data and can be shared with other scientists. For quantitative data, they use the International System of Units to take measurements and they can create graphs to reveal trends or patterns in the data. Graphs can be shared with others to show results and conclusions.

PTS: 1 DIF: L2

OBJ: CaLS.1.3.2 Describe how to develop a hypothesis and design an experiment.

STA: S 7.7.c BLM: comprehension

77. ANS:

The big idea in life science known as "change over time" refers to a gradual process of change that occurs in groups of organisms over many generations. Development refers to the changes in an individual organism during its life span. The changes that occur in the way a child's brain functions as it matures into an adult is an example of development, but it is not a change over time that occurs over many generations.

PTS: 1 DIF: L3

OBJ: CaLS.1.2.2 Identify some of the big ideas in life science. STA: S 7.3 | S 7.5

BLM: analysis

78. ANS:

No. The student and his partners should have backed away from the spill and notified the teacher. A student should never try to clean up a chemical spill without informing a teacher, as he or she may not be aware of a chemical's dangerous properties.

PTS: 1 DIF: L3
OBJ: CaLS.1.4.2 Describe what you should do if an accident occurs.
BLM: evaluation

79. ANS:

Photosynthesis is the process by which plants make sugars from the sun's energy. It relies on chemical processes and the physics of light. The life science fields of biology, plant biology, molecular biology, and ecology are involved in understanding photosynthesis

PTS: 1 DIF: L3
OBJ: CaLS.1.2.2 Identify some of the big ideas in life science. STA: S 7.6
BLM: synthesis

80. ANS:

The big ideas of life science incorporate multiple fields of scientific inquiry. The idea that organisms are diverse yet share similar characteristics is studied by biologists, ecologists, geneticists, and physiologists. Physiologists also study the idea that structure and function of organisms are complementary, while a biologist might study this idea as well. Evolution, or change over time, is an idea that could be studied by almost any field of the life sciences. Ecologists, geneticists, biologists, cell biologists, molecular biologists, and physiologists all work in this area. Finally, molecular biologists and physiologists contribute to our understanding of why organisms abide by the same principles as the rest of the natural world. These examples show how the major themes in life science relate to the fields that scientists study.

PTS: 1 DIF: L3
OBJ: CaLS.1.2.1 Explain how the branches of life science are related.
STA: S 7.5 | S 7.6 BLM: synthesis