

Chapter 1 Study Guide

Multiple Choice

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

- _____ 1. The ways in which people change the world around them to meet their needs or solve practical problems are called
 - a. science.
 - b. technology.
 - c. feedback.
 - d. systems.
- _____ 2. What is the goal of technology?
 - a. to produce and deliver cereal
 - b. to understand how the natural world functions
 - c. to study the natural world
 - d. to improve the way people live
- _____ 3. Science and technology are
 - a. the same thing.
 - b. not important.
 - c. dependent on each other.
 - d. completely unrelated.
- _____ 4. An endoscope is an example of
 - a. science.
 - b. technology.
 - c. brainstorming.
 - d. prototyping.
- _____ 5. One positive effect of pesticides is
 - a. greater food production.
 - b. creating more work for farmers.
 - c. pesticides washing into streams.
 - d. pesticides harming people and animals.
- _____ 6. 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.
- _____ 7. 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.
- _____ 8. Using one or more of your senses to gather information is called
 - a. observing.
 - b. inferring.
 - c. predicting.
 - d. classifying.

- _____ 9. Observations that deal with a number or amount are called
- manipulated observations.
 - quantitative observations.
 - qualitative observations.
 - operational observations.
- _____ 10. Observations that deal with descriptions that cannot be expressed in numbers are called
- manipulated observations.
 - quantitative observations.
 - qualitative observations.
 - operational observations.
- _____ 11. Explaining or interpreting the things you observe based on reasoning from what you already know is called
- observing.
 - inferring.
 - predicting.
 - classifying.
- _____ 12. Trying to explain why a cactus needs little water to survive is an example of
- a prediction.
 - drawing a conclusion.
 - scientific inquiry.
 - classification.
- _____ 13. Making a forecast of what will happen in the future based on past experience or evidence is called
- observing.
 - inferring.
 - predicting.
 - classifying.
- _____ 14. When scientists put things into categories or group together items that are alike in some way, they are
- inferring.
 - predicting.
 - classifying.
 - making models.
- _____ 15. When scientists create a representation of a complex process, they are
- inferring.
 - predicting.
 - classifying.
 - making models.
- _____ 16. Knowing how to use lab equipment is an example of
- good lab preparations.
 - performing a lab.
 - being in the filed.
 - completing a lab.
- _____ 17. In a scientific experiment, a statement that describes how to measure a particular variable or define a particular term is a(n)
- hypothesis.
 - manipulated variable.
 - operational definition.
 - responding variable.

- _____ 18. If a beaker breaks, the first thing you should do is
- clean up the broken glass.
 - ask a classmate for help.
 - read safety symbols for the lab.
 - notify your teacher.
- _____ 19. Scientists' skepticism should be balanced with an ability to
- accept new and different ideas.
 - be honest.
 - find solutions to problems.
 - learn more about the topics they study.
- _____ 20. What scientific attitude is especially important when a scientist's results go against previous ideas?
- curiosity
 - honesty
 - skepticism
 - creativity
- _____ 21. Grocery stores organize food according to food type—diary, frozen, bakery, and so on. This is an example of
- observation.
 - posing questions.
 - classifying.
 - inferences.
- _____ 22. Scientists can communicate their results
- at scientific meetings.
 - in scientific journals.
 - by exchanging information on the Internet.
 - all of the above
- _____ 23. The use of endoscopes to study the functions of the heart shows that
- advances in science and technology often depend on one another.
 - science is important to technology.
 - science changes the natural world.
 - technology is independent from science.
- _____ 24. A person who is trained to use both technology and scientific knowledge to solve practical problems is known as a(n)
- biologist.
 - engineer.
 - forest technician.
 - scientist.
- _____ 25. To reveal trends in data, the data should be presented in a(n)
- hypothesis.
 - graph.
 - operational definition.
 - scientific investigation.

Completion

Complete each sentence or statement.

26. Products that help people meet their needs or solve practical problems are examples of _____.

27. Technology _____ solve every problem.
28. _____, which is the process of grouping together items that are alike in some way, helps a scientist organize information.
29. In science, a hypothesis must be _____.
30. An experiment in which only one variable is manipulated at a time is called a(n) _____ experiment.

Short Answer

Use the diagram to answer each question.

Chimpanzee Diet in November	
Food	% Diet
Fruit	62.0%
Insects	16.0%
Leaves	16.0%
Miscellaneous	6.0%

31. Explain how researchers might have obtained the data shown in the table.
32. Describe how the chimpanzee's diet has been classified.
33. How does the data provide an example of scientific inquiry?
34. Do the data in this table represent quantitative observations or qualitative observations? Explain.
35. 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			
Cricket	15°C	20°C	25°C
1	91	135	180
2	80	124	169
3	89	130	176
4	78	125	158
5	77	121	157
Average	83	127	168

36. What is the purpose of recording data in a table like the one above?
37. Is there a relationship between the number of chirps per minute and the temperature? If so, describe the relationship.
38. What hypothesis might this experiment be designed to test?
39. Identify the manipulated variable and the responding variable in this experiment. Explain.
40. State a conclusion based on the data from this experiment.

Name: _____

ID: A

Essay

41. What is the difference between science and technology? How are they related?
42. Compare and contrast the skills of inferring and predicting.
43. Identify and describe five attitudes, or habits of mind, that are important for a successful scientist to possess.
44. Identify the six major stages of the process of scientific inquiry and explain why the process is not a rigid sequence of steps.
45. 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?

