Scientific Methods

Name:

Period:

Use Chapter 1, Section 2 of your textbook to answer the questions below.

Section 2: Scientific Methods (p.12)
What Are Scientific Methods?

1. Scientists answer _____ and solve _____ using scientific methods.

2. The order that scientists use steps for investigations isn't always the same; it may _____.

3. Look at Figure 1. Is the order of the steps of the scientific method always the same? _____

Ask a Question (p.13)

_____ 4. What usually happens when someone observes something that is hard to explain?
a. they ask questions. b. they do experiments c. they forget about it. d. they do nothing.

Make Observations (p.13)

5. The students made observations when they _____ numbers of deformed frogs and normal frogs.

6. The students photographed the frogs and took _____ of them, as well as writing descriptions.

7. Observations are useful only if they are made _____.

Types of Observations (p.13)

8. Information that you gather through your senses is called an _____ .

_____ 9. Look in Figure 2. Which of these tools is this scientist using to make their observations?
a. a hammer b. a calculator c. a microscope d. a spoon

Form a Hypothesis (p.14)

10. A possible explanation or answer to a question is called a _____.

11. A good hypothesis should be based on _____ , and can be _____ .

_____ 12. Which of the following was a possible explanation for the deformed frogs?
a. UV light b. chemical pollutants c. parasites d. all of these

Predictions (p.15)

13. A statement of cause and effect that can help test a hypothesis is a _____.

_____ 14. How are predictions usually stated?
a. as a question b. in an if-then format c. in code d. as a hypothesis

15. Scientists do experiments to see if _____ match their predictions.

turn this page over for more questions

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Test the Hypothesis (p.16)

16. Anything in an experiment that can influence an experiment's outcome is considered a _____.

17. An experiment that tests only one factor at a time is a _____ experiment.

18. The one factor that differs between groups in an experiment is the _____.

Designing an Experiment (p.16)

_____ 19. What must be considered when you design an experiment?
a. every factor b. temperature c. many variables d. light

_____ 20. Look at Table 1. Which of the following is true about the control group for the experiment?
a. it has a different number of eggs than the other groups
b. its frogs are not the same as the frogs in the experimental groups
c. its temperature is the highest of all the groups
d. it is not exposed to UV light, unlike the experimental groups

Collecting Data (p.17)

_____ 21. Why do scientists try to test many individuals?
a. to be more certain of their data c. to study many variables
b. to make a new hypothesis d. to have a big experiment

_____ 22. What is one way that scientists can support their conclusions?
a. by stopping their investigation c. by repeating experiments
b. by telling other scientists d. by asking different questions

23. Look at Figure 6. What is the letter of the tank that had the greatest number of deformed frogs? _____

A**nalyze the Results (p.17)**

24. Scientists must organize their _____ before they can analyze the results of an experiment.

Draw Conclusions (p.18)

_____ 25. What are scientists deciding when they draw conclusions?
a. whether to draw their data in a graph c. whether the results support their hypothesis
b. which factor is the variable d. which group should be the control group

_____ 26. What must a scientist do when a hypothesis is proved wrong?
a. organize the data again b. find another explanation c. tell people it was right d. retire from science

What Is the Answer? (p.18)

_____ 27. What is true about finding an answer to a science question?
a. It may lead to another investigation. c. The original question was not good.
b. No more questions can come up. d. The experiment was done wrong.

Communicate Results (p.18)

_____ 28. Why do scientists share their results?
a. so they can make money from them c. to practice their writing skills
b. so other scientists can repeat the experiments d. to hide their mistakes

Practice: 15 points