Name: _____ Class: _____ Date: _____ ID: A

Chapter 1 Test -- Science Practices

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

____ 1. Your little brother has chocolate smeared all over his face. Which of the following is an **inference** you might make?
a. Your brother ate a chocolate bar.
b. The chocolate is brown.
c. Your brother is smiling.
d. Chocolate is sweet.

____ 2. Sophia plays the piano. Which of the following would be an **opinion** by Sophia about her piano?
a. I enjoy playing the piano.
b. My piano has 88 keys.
c. My piano has 3 pedals.
d. The last key on my piano is a C.

____ 3. Which of the following is an **inference** you could make after observing a picture of a tree with red leaves?
a. The picture was taken in the fall.
b. The bark feels rough.
c. The picture is pretty.
d. The tree is twenty feet tall.

You bite into your favorite kind of chocolate chip cookie at the school cafeteria, and find that it tastes very salty and not sweet at all.

____ 4. Which of the following is an **inference** you could make about this cookie?
a. Lauren does not like cookies.
b. The baker didn't follow the recipe properly.
c. The cookie doesn't look any different than usual.
d. There are 12 chocolate chips in the cookie.

____ 5. A **scientific theory** is a:
a. statement that explains a complex idea and is supported by much evidence.
b. statement of observed facts.
c. general statement that is accepted as true.
d. scientific approach to problem solving.

____ 6. A scientific ____ is a statement that describes an observed phenomenon such as how gravity works.
a. method
b. law
c. theory
d. fact

____ 7. The scientifically accepted explanation for how Earth's continents have shifted over time is an example of a(n):
   a. scientific fact.
   b. scientific law.
   c. scientific theory.
   d. scientific method.

____ 8. A good hypothesis is:
   a. a prediction based on observations.
   b. a wild guess.
   c. a question.
   d. an observation.

____ 9. The **scientific method** is a process used to solve problems. One of the first steps is:
   a. collecting evidence.
   b. making observations.
   c. analyzing data.
   d. forming a conclusion.

Elena notices that when her math teacher gives exams on colored paper, the students all seem to get better grades. Use this information to answer the following questions.

____ 10. Elena's math teacher helped test her hypothesis by giving their next math test to half the class on colored paper and half the class on white paper. The half of the class that took the test on colored paper scored a total of 1500 points on the test. The half of the class that took the test on white paper scored a total of 1750 points.

What type of **data** did Elena collect?
   a. Qualitative
   b. Chemical
   c. Hypothetical
   d. Quantitative

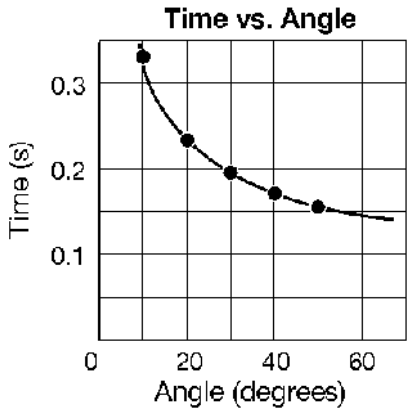
____ 11. For a descriptive investigation, which of the following would you NOT need to do?
   a. Make a hypothesis
   b. Draw a conclusion
   c. Collect qualitative data
   d. Write a report

____ 12. What professionals use scientific knowledge to create or improve inventions that solve problems?
   a. Astronomers
   b. Biologists
   c. Earth scientists
   d. Engineers

Henrietta conducts an experiment. She is growing the same plant species with similar light and temperature regimes. She wants to test three different fertilizers to see if there is a difference in height between the plants as a result of the fertilizer.

____ 13. What is NOT a control variable?
a. Plant species
b. Temperature
c. Light
d. Fertilizer

____ 14. What type of model would a scientist use to forecast ocean temperature change?
a. Physical
b. Conceptual
c. Mathematical
d. Computer



____ 15. Which is the responding variable?
a. Time
b. Mass
c. Angle
d. None of the above

Completion
Complete each statement.

Select the correct term to complete each sentence. There are extra terms in the list.

hypothesis	science	variable
scientific law	scientific theory	inference

16. In science, an educated guess to a science question based on observations is called a(n) _____.

17. The scientifically accepted explanation for how the universe began is known as the Big Bang. This is an example of a(n) _____.

18. A factor that affects how a system works is called a(n) _____ .

Matching

Juan's class project looked at fishing data for a local lake. They wanted to perform a scientific study of the lake. Match each statement with its part in the scientific process. Use each answer only once.

a. observation
b. question
c. hypothesis
d. data
e. conclusion

____ 19. Increased fishing in the lake causes the average bass size to decrease.

____ 20. The class noticed that the average size of bass caught from the lake seems smaller than it was 20 years ago.

____ 21. The number of fishermen fishing at the lake in 2006 is two times the number in 1986.

____ 22. Why are bass caught in the lake smaller now than they were 20 years ago?

____ 23. The number of fishermen fishing at the lake doubled in 20 years so increased fishing may be causing the average bass size to decrease.

Short Answer

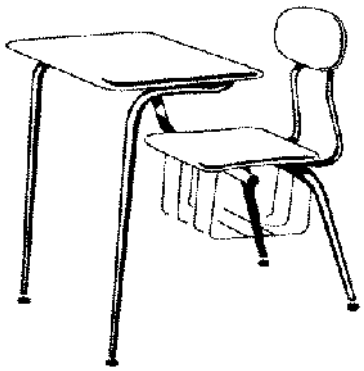
24. Tomorrow is Friday and the cafeteria will be serving pizza.

    Is this statement an **inference** or an **observation**? Explain why.

25. Makayla loves science class.

    Is this statement an **observation** or an **opinion**? Explain why.

26.



    List three **observations** about this desk.

27. The **scientific method** is used to find answers to science questions. List the five basic steps in this scientific process.

28. Paddy is looking at the effect of temperature on the volume of gas inside a balloon. He submerges balloons with the same initial volume in hot and cold water. What are the manipulated, responding, and control variables for this experiment?

Essay

29. A student records the temperature of a mixture of ice and water in a glass until the ice melts. Explain how the student uses his or her senses to make observations. Include which senses are needed to make these observations.

30. Are people who study and try to predict weather considered scientists? Why or why not?

Chapter 1 Test -- Science Practices
Answer Section

MULTIPLE CHOICE

1.	ANS: A	PTS: 1	DIF:	basic	REF:	section 1.1
2.	ANS: A	PTS: 1	DIF:	intermediate	REF:	section 1.1
3.	ANS: A	PTS: 1	DIF:	intermediate	REF:	section 1.1
4.	ANS: B	PTS: 1	DIF:	advanced	REF:	section 1.1
5.	ANS: A	PTS: 1	DIF:	basic	REF:	section 1.2
6.	ANS: B	PTS: 1	DIF:	basic	REF:	section 1.2
7.	ANS: C	PTS: 1	DIF:	basic	REF:	section 1.2
8.	ANS: A	PTS: 1	DIF:	basic	REF:	section 1.2
9.	ANS: B	PTS: 1	DIF:	basic	REF:	section 1.2
10.	ANS: D	PTS: 1	DIF:	intermediate	REF:	section 1.2
11.	ANS: A	PTS: 1	DIF:	basic	REF:	section 1.3
12.	ANS: D	PTS: 1	DIF:	basic	REF:	section 1.3
13.	ANS: D	PTS: 1	DIF:	intermediate	REF:	section 1.3
14.	ANS: D	PTS: 1	DIF:	intermediate	REF:	section 1.3
15.	ANS: A	PTS: 1	DIF:	advanced	REF:	section 1.3

COMPLETION

16. ANS: hypothesis

    PTS: 1 DIF: basic REF: section 1.2
17. ANS: scientific theory

    PTS: 1 DIF: basic REF: section 1.2
18. ANS: variable

    PTS: 1 DIF: basic REF: section 1.3

MATCHING

19.	ANS: C	PTS: 1	DIF:	advanced	REF:	section 1.2
20.	ANS: A	PTS: 1	DIF:	advanced	REF:	section 1.2
21.	ANS: D	PTS: 1	DIF:	advanced	REF:	section 1.2
22.	ANS: B	PTS: 1	DIF:	advanced	REF:	section 1.2
23.	ANS: E	PTS: 1	DIF:	advanced	REF:	section 1.2

SHORT ANSWER

24. ANS:
The statement is an inference because you are making a prediction based on your experience of the cafeteria serving pizza on Fridays. It can't be an observation because it hasn't happened yet.

PTS: 1 DIF: intermediate REF: section 1.1

25. ANS:
This statement is an opinion. It is Makayla's personal judgement that she loves something. An observation would be an accurate description of science class, not a personal opinion.

PTS: 1 DIF: basic REF: section 1.1

26. ANS:
Answers will vary. Correct answers include:
The desk has 4 legs
The desk has a flat top.
The desk has a seat attached to it.

PTS: 1 DIF: intermediate REF: section 1.1

27. ANS:
1. Make observations.
2. Ask a question.
3. State a hypothesis.
4. Test the hypothesis with an experiment and collect data.
5. Draw conclusions based on the experiment.

PTS: 1 DIF: intermediate REF: section 1.2

28. ANS:
Manipulated variable: temperature
Responding variable: volume
Control: amount of gas in the balloon

PTS: 1 DIF: advanced REF: section 1.3

ESSAY

29. ANS:
A student uses his eyes to watch the temperature of the thermometer rise in the glass and to observe the ice melting. She uses her sense of touch to observe that the temperature of the glass is cold, but getting warmer over time. If the student is working with a lab partner, he will use his sense of hearing to listen to the observations that need to be recorded. A person uses the sense of touch to handle a pencil and lab notebook, and record the observations. This is how observations involve the different senses.

PTS: 1 DIF: advanced REF: section 1.1

30. ANS:
Yes, a person who studies the weather is a scientist. They use the scientific method to make predictions and answer questions. They observe, ask questions, hypothesize, collect data, and draw conclusions. All of these things are what scientists do.

PTS: 1 DIF: intermediate REF: section 1.2

Chapter 1 Test -- Science Practices [Answer Strip] **ID: A**

A 1.

A 2.

A 3.

B 4.

A 5.

B 6.

C 7.

A 8.

B 9.

D 10.

A 11.

D 12.

D 13.

D 14.

A 15.

C 19.

A 20.

D 21.

B 22.

E 23.