

**Chapter 1 About Science**

**Exercises**

**1.1 The Basic Science—Physics (page 1)**

- The study of science today branches into the study of the \_\_\_\_\_ sciences and the \_\_\_\_\_ sciences.
- Write *L* or *P* beside each of the following to classify it as a branch of life science or physical science.
 

_____ zoology	_____ astronomy
_____ physics	_____ botany
_____ chemistry	_____ geology
_____ biology	
- Complete the following table by identifying each type of science described.

Type of Science	Description
	The study of the nature of things such as motion, forces, energy, matter, heat, sound, light, and the composition of atoms
	The study of how matter is put together, how atoms combine to form molecules, and how the molecules combine to make up matter
	The study of matter that is alive

**1.2 Mathematics—The Language of Science (page 1)**

- When the ideas of science are expressed in mathematical terms, they are \_\_\_\_\_.
- Explain why equations are often used in science.  
 \_\_\_\_\_  
 \_\_\_\_\_
- Is the following sentence true or false? Scientific findings are harder to verify or to disprove when they are expressed mathematically.  
 \_\_\_\_\_

**1.3 Scientific Methods (page 2)**

- Which two scientists are usually credited as the principal founders of the scientific method? \_\_\_\_\_ and \_\_\_\_\_
- Name five steps that are generally included in scientific methods.
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
  - e. \_\_\_\_\_

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9. Is the following statement true or false? Following the steps of the scientific method exactly is an important part of the success of science.
- \_\_\_\_\_

**1.4 The Scientific Attitude (pages 2–3)**

Match each term to its definition.

Term	Definition
_____ 10. law or principle	a. a close agreement by competent observers who make a series of observations of the same phenomenon
_____ 11. fact	b. a hypothesis that has been tested over and over again and not contradicted
_____ 12. hypothesis	c. an educated guess that is not fully accepted until demonstrated by experiment

13. What should happen if a scientist finds evidence that contradicts a hypothesis, law, or principle?
- \_\_\_\_\_
- \_\_\_\_\_

14. Which is more reliable, an idea of a scientist who has an excellent reputation or a single verifiable experiment that shows the idea is wrong?
- \_\_\_\_\_

15. In everyday speech, the word *theory* means \_\_\_\_\_
- \_\_\_\_\_

16. In science, the word *theory* means \_\_\_\_\_
- \_\_\_\_\_

17. Is the following statement true or false? Once an idea becomes a theory, it cannot be changed. \_\_\_\_\_

**1.5 Scientific Hypotheses (page 4)**

18. What must be true in order for a hypothesis to be scientific?
- \_\_\_\_\_

19. To determine whether a hypothesis is scientific or not, you should \_\_\_\_\_
- \_\_\_\_\_

20. Scientists perform a(n) \_\_\_\_\_ to test a(n) \_\_\_\_\_.

21. Is the following hypothesis scientific? Why? "Intelligent life exists on other planets somewhere in the universe." \_\_\_\_\_

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**1.6 Science, Technology, and Society (page 5)**

22. Science is a method of answering \_\_\_\_\_; technology is a method of solving \_\_\_\_\_.

23. Write *S* or *T* to indicate whether the following statements describe science or technology.

\_\_\_\_\_ Involves the design and creation of something for the use and enjoyment of humans

\_\_\_\_\_ Has to do with discovering facts and relationships between observable phenomena in nature

**1.7 Science, Art, and Religion (page 6)**

*Match each term to its definition.*

Term	Definition
_____ 24. science	a. concerned with the source, purpose, and meaning of everything
_____ 25. art	b. concerned with the value of human interactions as they pertain to the senses
_____ 26. religion	c. concerned with discovering and recording natural phenomena

27. The domain of science is \_\_\_\_\_; the domain of religion is \_\_\_\_\_.

**1.8 In Perspective (page 7)**

28. Is the following statement true or false? Progress was much slower thousands of years ago than it is today. \_\_\_\_\_

29. Thousands of years ago, the building of great structures such as the Pyramids was inspired by \_\_\_\_\_.

30. Is the inspiration for progress today similar to or different from the inspiration thousands of years ago? \_\_\_\_\_