

Introduction to Chemistry

CHAPTER

1

Section 1.1 *Evolution of Chemistry*

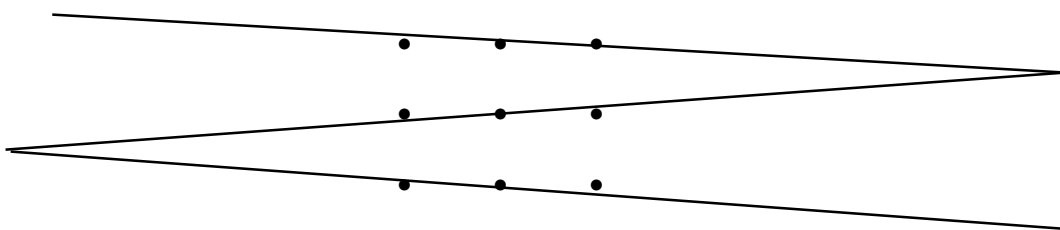
2. Thales stated *water* was the single element that composed earth, air, and space.
4. Aristotle stated *air, earth, fire, water, and ether* were five basic elements responsible for everything in nature.
6. Step 2 of the scientific method is to *analyze the data* and *propose a tentative hypothesis* to explain the experimental observations.
8. *Robert Boyle* is generally considered the founder of the scientific method.
10. A *hypothesis* is an initial proposal that is tentative, whereas a *theory* is a proposal that has been extensively tested and verified.
12. (a) is a *natural law* because the relationship is stated as an equation.
(b) is a *scientific theory* because the number of molecules cannot be counted.
(c) is a *natural law* because gas temperature and pressure can be measured.
(d) is a *scientific theory* because it is a model that explains the atom.

Section 1.2 *Modern Chemistry*

14. *Antoine Lavoisier* is considered the founder of modern chemistry.
16. *Agriculture* and *medicine* are industries in which chemistry plays a crucial role. Other industries in which chemistry plays an important role include the *pharmaceutical*, *electronics*, *paper*, *construction*, and *petrochemical* industries.

Section 1.3 *Learning Chemistry*

18. A solution to the nine-dot problem using three straight lines is shown below; the unconscious assumption regards the angle of the lines and the size of the dots.



Challenge Exercises

20. By staring at the point where the blocks intersect, we can “flip” the image and view the blocks as stacking upward, or stacking downward.