Chapter 1 Review Answer Key

(Note: Solutions to Problems 22 – 23 & 26 – 28 can be found in the Book Answer Key)

Assignments:

- Chapter Review questions 1-28 on pages 31-32
- Written Assessment questions 29 & 30 on page 32
- Focus on Graphing questions 34-37 on pages 33

Chapter Review Assignment

1. Chemistry is the study of matter.
2. The common physical states of matter are solid (fixed volume and shape), liquid (fixed volume, but no fixed shape) and gas (no fixed volume and no fixed shape).
3. In a physical change, the identity of the substance does not change. In a chemical change, the identity of the substance is changed and new substances are formed.
4. The units used to express are *grams* and the units used to express weight are *newtons*.
5. *Quantity* is the amount being measured and *unit* is the way the amount is reported.
6. A conversion factor is a simple ratio that relates two units that express a measurement of the same quantity.
7. Derived units are those that cannot be directly measured – they are derived using the seven basic units. Area is an example - calculated by multiplying length (meters) and width (meters). Another example is speed – distance (meters) divided by time (seconds).
8. Density is mass divided by volume. Density is a physical property as it is not dependent on the size or amount used. A substance remains wholly unchanged when density is measured.
9. Student answers will vary but must show an understanding of *atom, molecule, compound and element*.
10. In homogeneous mixtures, pure substances are distributed uniformly throughout the mixture, whereas in heterogenous mixtures substances are not evenly distributed or mixed.
11. All matter (every substance) is made of chemicals.
12. a. gas b. liquid c. solid d. gas e. liquid
13. Yes, toasting bread is an example of a chemical change. Burning or charring is a chemical change.
14. a. physical b. chemical c. chemical d. physical
15. The five most common SI Base Units used in chemistry are length (meter), mass (kilogram), time (second), thermodynamic temperature (kelvin) and amount of substance (mole).
16. a. volume/time b. distance/time c. height x length x depth
17. Student answers will vary but should show an understanding of physical and chemical properties.
18. Both a substance's mass and volume are required to determine the density.
19. No. The two substances are not the same as they have different densities.
20. A compound is a pure substance and not a mixture. When substances react to create a compound, a new, pure substance is formed.
21. a. solid b. gas c. liquid d. gas
22. See book answer key
23. See book answer keys
24. Students pictures should resemble the pictures found on page 8 of the textbook.
25. Student answers will vary but should show an understanding of physical properties.
26. See book answer key
27. See book answer key
28. See book answer key

Written Assessment

29. Student answers may vary but should resemble the following.
    a. A chemical change occurred evidenced by the emission of gas and change in reactivity.
    b. The substance is a compound as there is a chemical reaction without the addition of another substance.
30. Student answers will vary but should be similar to the following.
    a. A physical change has occurred as the chemical make-up of the substance has not changed.
    b. The ink is a mixture of multiple inks or colors.

Focus on Graphing

34. The straight line indicates that there is a direct proportionality between mass and volume, as mass increases, so does the volume.

35. The slopes indicate that Metal A has a greater density than Metal B.

36. The density of Metal A = massA/volumeA = 105 g/10 cm^3 = 10.5 g/cm^3

    The density of Metal B = massB/volumeB =80 g/10 cm^3 = 8.0 g/cm^3

37. Metal A = Silver and Metal B = Iron