

Chapter 2

2.1

1. What are the two characteristics of matter?
2. What are the name and abbreviation of the instrument that produces images of atoms?
3. Though objects in the macroscopic world look continuous and uniform, they are really _____ in nature.

2.2

4. What is the most important idea in chemistry?
5. About how many different types of atoms are there?
6. What do we call these types of atoms?
7. What are compounds?
8. A compound contains at least _____ different types of atoms.
9. A molecule is a particle made of what?
10. Specifically, what do elements contain? (That is, how are elements different from compounds?)
11. Give two examples of elements that consist of molecules.
12. A compound always has the same what?
13. Usually, how do properties of a compound compare to the properties of the elements that make them up?

2.3

14. What are the properties of a solid?

15. What are the properties of a liquid?

16. What are the properties of a gas?

2.4

17. Give six examples of physical properties of a substance (not a person).

18. What do chemical properties refer to?

19. What happens to a given substance during a chemical change?

20. In ice, the water molecules are locked into _____ . As liquid water, the molecules are still _____ together, but their positions are no longer _____. In the gaseous state, the water molecules are _____ apart.

21. Why are changes of state considered to be physical changes?

22. Why is the electrolysis of water (see Figure 2.8) a chemical change?

2.5

23. Most matter around us consists of what?

24. Define a mixture.

25. Why is soda a mixture?

26. Air is a mixture of various substances. The amount of _____ in the air varies greatly, such as when an air sample collected over the desert is compared to one from Florida.

27. The composition of mixtures varies, but the composition of _____ is always the same.

28. What are alloys?

29. Compounds always have the same _____.

30. A pure substance could be either an _____ or a _____.

31. Mixtures can be _____ into pure substances.

32. What is another name for a homogeneous mixture?

33. What is the different between a heterogeneous and a homogeneous mixture?

2.6

34. Seawater is water containing _____ minerals. We can separate the water and the minerals by a process called _____.

35. We can use filtration when we have a mixture of a liquid and an _____ solid. We pour the mixture through a mesh such as _____.

Chapter 3

36. The element lithium can be used to treat what?

37. Name two applications of chemistry that were in use before 1000 B.C.

38. Around 400 B.C., the Greeks proposed that all things were composed of what four elements?

39. What was Robert Boyle's greatest contribution to science?

3.1

40. How many naturally occurring elements are there?

41. Oxygen makes up about what percentage (by mass) of Earth's crust, oceans, and atmosphere?

42. What four elements are the basis for all biologically important molecules?

3.2

43. Besides English, the names of the elements sometimes come from _____, _____, or _____ words. Some elements are named for the _____ where they were discovered. Many heavy elements were named after famous _____.

44. The first letter of an element symbol is always _____. If the symbol has a second letter, it is _____.

3.4

45. What is a compound?

46. A chemical formula tells what two things about a compound?

47. What is unique about the subscript "1"?

3.9

48. What DON'T we often find in nature?

49. Specifically, why are gold, platinum, and silver often found in relatively pure form?

50. List the six noble gases.

51. What are diatomic molecules?

52. List the seven elements that form diatomic molecules.

53. What are allotropes?

54. List three allotropes of carbon.

Chapter 5

5.8

55. Write the formula for density.

56. How do we often determine the volume of a solid object?

57. Density can be used as a tool for _____ substances.

58. What is specific gravity?

Chapter 6

59. What is Kevlar used in?

6.1

60. Not all jelly beans weigh the same, but we can still count them by weighing if we know the _____ of the jelly beans.

61. When would two samples, A and B, contain the same number of components?

6.2

62. Why don't we use common mass units like the g or kg to find the masses of individual atoms?

63. We find the mass of individual atoms using the _____.

6.3

64. How is the mole defined?

65. What is the value of Avogadro's number?

66. One mole of something consists of:

67. Always include the _____ as you perform calculations.

Chapter 10

10.1

68. Define energy.

69. What two things could potential energy be due to?

70. The kinetic energy of an object depends on what two things?

71. What does the law of conservation of energy state?

72. In the example of the ball rolling down the hill, some kinetic energy is turned into _____, which causes the surface of the hill to warm slightly.

73. _____ is independent of pathway, but _____ and _____ are both dependent on the pathway.

74. What is a state function?

75. In traveling from Chicago to Denver, is "distance traveled" or "change in elevation" a state function?

10.2

76. What is the difference between temperature and heat?

10.3

77. Whenever we study something in science, we divide the universe into two parts. What are they?

78. How does energy flow in an: ...exothermic reaction? ...endothermic reaction?

79. Give an example of an endothermic process.

80. In an exothermic reaction, the energy gained by the surroundings is equal to what?

81. In an exothermic reaction, where did the heat come from?