

End-of-Chemistry Assessment Review

To help you prepare for the End-of-Chemistry Assessment, review the following at the end of each chapter:

- Chapter Highlights
- Vocabulary
- Answer Chapter Review questions (answers will be posted on my website next week)

Physical Science Text Book - Chapters 1, 2, 3, 4, 11, 12 and part of 10)

Answer all questions thoroughly and use as a study guide:

Chapter 1: (pages 30-31) – Answer questions - 5, 6, 24.

Chapter 2: (pages 54-55) – Answer questions – 1, 4, 5, 6, 7-12, 15, 17, 18, 23, 24, 25, 26-29

Chapter 3 (pages 76-77) – Answer questions – 1,3,4,5-10, 15, 16, 18, 19, 23

Chapter 4 (pages 100-101) - Answer questions – 1-16

Chapter 10 (pages 272-273) – Answer questions - 1-5, 7, 9, 19, 21, 24-26

Chapter 11 (pages 296-297) – Answer questions - 1-5, 8-12, 21, 22

Chapter 12 (pages 320 – 321) – Answer questions – 1-9, 14

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End-of-Chemistry Review - Answer Key

Ch. 1 - #5, 6, 24

5. volume is the amount of space taken up by an object, and mass is the amount of matter an object contains
6. Area is the amount of surface an object has, and density is the amount of matter in a given volume
24. a. $\text{volume} = 27 \text{ cm} \times 19 \text{ cm} \times 6 \text{ cm} = 3078 \text{ cm}^3$
b. $\text{density} = 340 \text{ g} / 3078 \text{ cm}^3 = 0,110 \text{ g/cm}^3$
c. $\text{area} = 27 \text{ cm} \times 19 \text{ cm} = 513 \text{ cm}^2$

Ch. 2 - #1, 4, 5, 6, 7-12, 15, 17, 18, 23, 24, 25, 26-29

1. mass is the amount of matter in an object and volume is the amount of space the object occupies.
4. volume is the amount of space occupied by an object and density is the amount of mass in a given amount of space.
5. physical property: can be observed without changing the identity of the matter
6. When matter undergoes a physical change, its shape or form changes, but its identity remains the same. When matter undergoes a chemical change, its identity and properties change.
7. c
8. d
9. b
10. d
11. a
12. a
15. Measure the volume of a liquid using a graduated cylinder reading the scale at the bottom of the meniscus. The volume of the rectangular solid is determined by multiplying the object's $L \times W \times H$.
17. $\text{density} = \text{mass} / \text{volume}$
18. Characteristic properties include density, solubility, reactivity with acids, melting point and boiling point.
23. The scientific definition of volume is the amount of space that matter occupies. The capacity of a container describes the maximum amount of space that matter inside the container can occupy.
24. $\text{volume} = \text{length} \times \text{width} \times \text{height} = 20 \text{ cm} \times 10 \text{ cm} \times 5 \text{ cm} = 1000 \text{ cm}^3$
25. $\text{Density of glycerin} = 37.8 \text{ g} / 30 \text{ ml} = 1.26 \text{ g/mL}$
 $\text{Density of corn syrup} = 82.8 \text{ g} / 60 \text{ mL} = 1.38 \text{ g/mL}$
The glycerin will be on top because it is less dense than the corn syrup.
26. crushed shape, somewhat shiny, metallic
27. physical change

28. The density of the metal before and after the change is the same because density is a characteristic property of matter.
29. No, chemical properties cannot be determined simply by looking at a substance. Chemical properties can only be observed when a chemical change might occur.

Ch. 3 - #1,3,4,5-10, 12, 14, 15, 16, 18, 19, 23

1. solid is the state of matter in which the substance has a definite shape and volume; liquid is the state in which the substance takes the shape of its container but has a definite volume.
3. Evaporation is the change of a liquid to a gas at the surface of a liquid below the boiling point. Boiling is the change of liquid to a gas throughout the liquid at the boiling point.
4. melting changes a solid to a liquid and freezing changes a liquid to a solid.
5. b. particles are close together but moving past each other
6. b. physical properties
7. b. condensation
8. b. the volume of the gas increases and the speed of the particles increases
9. a. condensation
10. c. freezing
12. d. all of the above
14. the particles of water can move past one another and take the shape of a container. Particles in an ice cube are locked in place and cannot move past one another. An ice cube holds its shape no matter what container you put it in.
15. gases, liquids, solids
16. iron in the solid state is more dense than iron in the liquid or gaseous state. The density of gaseous iron is lower than the density of solid or liquid iron.
18. As you take a shower, some of the liquid water evaporates and becomes a gas. When the gaseous water touches the mirror, the water releases energy to the mirror and condenses into drops of liquid water.
19. The splitting of water into hydrogen and oxygen is not a change of state because the substance (water) does not keep its identity during the change. The water is changed into two new substances: hydrogen and oxygen.
23.
 - a. 80 degrees C
 - b. liquid
 - c. the temperature of the liquid will rise.

Ch. 4 - #1-16, 23

1. compound
2. solubility
3. suspension
4. element, compound
5. nonmetals
6. solute
7. c. decrease temp
8. b. mixture

9. b. can be broken down into simpler substances
10. b. concentrated
11. c. water
12. a. decr temp
13. a. metal
14. c. compound
15. Elements cannot be separated into simpler substances, but compounds can be separated by chemical means.
16. solute: nail polish, solvent: acetone
23. $60 \text{ g}/200 \text{ mL} = 0.25 \text{ g/mL}$

Ch. 10 #1-5, 7, 9, 19, 21, 24-26

1. Temperature is a measure of the average kinetic energy of the particles of a substance. Thermal energy is the total kinetic energy of the particles of the substance.
2. Heat is the transfer of energy from a hotter object to a cooler object. Thermal energy is the energy transferred by heat.
3. A conductor is a material that allows energy to transfer easily. An insulator is a material that does not allow energy to transfer easily.
4. Conduction is the transfer of energy from one substance to another through direct contact. Convection is the transfer of energy by the movement of a gas or liquid.
5. The states of matter are the physical forms in which a substance can exist. A change of state occurs when a substance changes from one state to another.
7. b. less thermal energy and a higher temperature
9. c. metal
19. Inside a down-filled jacket are lots of air pockets between the feathers. You stay warm because these air pockets slow the transfer of energy from your body to the cooler air outside the jacket.
21. Heating air increases the KE of the air particles, causing them to move faster and spread apart. As a result the less dense warm air rises and the balloon floats.
24. freezing
25. 0 deg. C
26. A change of state. Energy is being transferred away from the substance and the attraction between the particles is increasing.

Ch. 11 - #1-5, 8-12, 21, 22

1. electron clouds
2. protons
3. neutrons
4. mass number
5. atomic mass
8. a. 23
9. a. electrons and protons
10. c. protons are part of the nucleus of an atom

- 11. a. neutrons have a mass of 1 amu
- 12. a. atomic number
- 13. b. neutrons
- 21. 40 protons, 50 neutrons, 40 electrons
- 22. a. a and c
 - b. 3
 - c. 7

Ch. 12 - #1-9, 14

- 1. group
- 2. period
- 3. alkali metals
- 4. noble gases
- 5. c halogens
- 6. b alkali metals are group 1 elements
- 7. c the elements at the far left of the PT are nonmetals
- 8. b poor conductors of electricity
- 9. c each element has a unique atomic number
- 14. Metals are located to the left of the zigzag line. Nonmetals are located to the right of the zigzag. Metalloids border the zigzag.