# Unit 1 Review
# pg 141 #1-12 and
# 141-144 multiple choice

1) An element is a basic building block of compounds. An element has only one type of atom, while a compound has at least two types of atoms held together by chemical bonds.
2) The volume of lead is 1.75mL, aluminum's volume is 7.41mL.

# Question #3

| | Symbol | Atomic Number | Group Number | Number of protons | Number of electrons |
|---|---|---|---|---|---|
| Lithium | Li | 3 | 1A | 3 | 3 |
| Bromine | Br | 35 | 7A | 35 | 35 |
| Zinc | Zn | 30 | 2B | 30 | 30 |
| Sulfur | S | 16 | 6A | 16 | 16 |
| Barium | Ba | 56 | 2A | 56 | 56 |
| Carbon | C | 6 | 4A | 6 | 6 |

4) Nuclear fission occurs when a nucleus breaks apart to form two nuclei with smaller atomic numbers than the original nucleus. Nuclear fusion occurs when two nuclei join together to form a nucleus with a greater atomic number.

5. An isotope is an atom of an element with a specific number of neutrons in its nucleus. You can predict the most common isotope by rounding the average atomic mass to the element nearest the whole number.

6) If both atoms are metal atoms, then the atoms form a metallic bond. If one atom is a metal and the other is a nonmetal, then they will form an ionic bond. If both atoms are nonmetal atoms, then the atoms might form a covalent bond. If both atoms are noble gases, they will not form a bond.

7) Cations are ions that have lost electrons, causing them to have a positive charge. Anions are ions that have gained electrons, causing them to have a negative charge.

8) Metals: Na, Sr, Mg, Cu

Nonmetals: S, Cl, Se, I

Possible answers: sodium chloride, NaCl; magnesium iodide, $MgI_2$; strontium sulfide, SrS; copper (II) chloride, $CuCl_2$

9)a. Aluminum is a metal and chlorine is a nonmetal, so aluminum chloride has ionic bonding and conducts electricity in solution only.

b. Oxygen is made up only of nonmetal atoms and is a gas, so it has molecular covalent bonding and does not conduct electricity.

c. Silver (I) hydroxide has ionic bonding and conducts electricity in solution only.

d. Platinum is a metal element, so it has metallic bonding and conducts electricity.

- 10. You can determine the charge on a transition metal ion by the formula of its salt. The total charge of the ionic compound must be zero, so the positive charge on the metal ion is the sum of the negative charges on the anions divided by the number of metal ions in the formula. Example: $CuCl_2$, chloride's total charge is 2-, so the charge on the one copper atom is +2.

11. A material that does not dissolve in water and does not conduct electricity is held together by network covalent bonds or molecular covalent bonds. Although some materials with molecular covalent bonds dissolve in water, others do not.

12. One element can be changed into another only by changing the number of protons in the nuclei of its atoms. The process requires enormous amounts of energy.

# 141-144 multiple choice

1. C
2. B
3. C
4. C
5. B
6. D
7. A
8. A
9. D
10. A
11. C
12. B
13. D
14. B
15. A
16. B,D
17. B
18. C
19. B,C
20. C
21. B
22. B