1. Salt lowers the freezing point of water by _____.

(A) increasing the kinetic energy of water molecules
(B) interfering with the formation of six-sided ice crystals
(C) releasing ionization energy as sodium chloride is ionized
(D) preventing six-sided ice crystals from hydrogen bonding to other six-sided ice crystals

2. How many molecules are in 1 mole of molecules?

(A) 6.02×10^{23}
(B) 12.02×10^{23}
(C) 1.00×10^{23}
(D) 1.15×10^{23}

3. Calculating the weighted average molecular weight for an element requires all of the following except _____.

(A) the atomic number for each isotope
(B) the molecular weight of each isotope for that element
(C) the percentage of each isotope in nature
(D) the number of electrons in each isotope

4. If the atomic number of a sodium atom is 11, and its atomic weight is 23, how much does 1 mole of sodium atoms weigh?

(A) 11g
(B) 23g
(C) 6.02×10^{23}g
(D) 33g

5. If you have 1 mole of oxygen molecules, and the molecular weight of oxygen is 16.0, which of the following can you calculate in the oxygen sample?

(A) the total weight
(B) the total pressure
(C) the total volume
(D) the kinetic energy

6. What is the mass number of an atom which contains 28 protons, 28 electrons, and 34 neutrons?

(A) 28
(B) 56
(C) 62
(D) 90

7. The atomic number of cobalt is 27 and its atomic weight is 59. How many neutrons does an atom of cobalt have?

(A) 86
(B) 27
(C) 32
(D) 59

8. Table sugar has the formula $C_{12}H_{22}O_{11}$. The atomic weight of carbon is 12.0, hydrogen 1.0, and oxygen 16.0. How many grams of carbon are in 454 grams (1.00 lb) of sugar?

(A) 121 g
(B) 42 g
(C) 144 g
(D) 192 g

9. If the molecular weight of an ammonia molecule is 17.03 and the molecular weight of nitrogen is 14.01, what is the percent weight of nitrogen in the ammonia molecule?

(A) 72.27%
(B) 82.27%
(C) 86.27%
(D) 92.27%

10. If 13.2% of a compound is boron and 86.8% is chlorine, what is the empirical formula for the compound? Boron's atomic weight is 10.8 and chlorine's 35.5.

(A) BCl_2
(B) B_2Cl
(C) BCl
(D) B_2Cl_2

11. If the molar mass of the compound is 164 g, what is the molecular formula for the compound?

(A) BCl_2
(B) B_2Cl_4
(C) B_3Cl_6
(D) B_4Cl_8