

HW 13 – January 24- chemical reactions

1. A student decided to do a dry distillation¹ of a school chalk. He put together some distillation equipment, put in there 20 g of chalk (CaCO_3) and heated it to high temperatures. To his disappointment the chalk did not undergo distillation but got cracked. No liquid came out of the equipment. When the chalk cooled down the student weighed it and found out with surprise that the mass decreased to 11.2 g! The student realized that he discovered the law of mass non conservation. He was about to write up his discovery when a friend of his walked into the lab and explained that in the end of the experiment the substance was not chalk anymore but something else. To prove it he spit on the substance and the “chalk” hissed.
 - a. What reaction took place in the experiment
 - b. Write down the chemical equation²
 - c. Explain where disappeared 8.8 g of the substance.

2. Write down chemical formulas of substances formed by the pairs of elements below (replace the indexes of x and y with the correct numbers remembering that the molecules are neutral (the molecular charge is 0) and that we do not write index “1”. E.g. we write LiCl and NOT Li_1Cl_1)
 - a. Na and I (Na_xI_y)
 - b. Ca and I (Ca_xI_y)
 - c. K and $(\text{OH})^-$ (hydroxide ion) ($\text{K}_x(\text{OH})_y$)
 - d. Mg and $(\text{OH})^-$ ($\text{Mg}_x(\text{OH})_y$)

¹ Dry distillation is the heating of solid materials to produce gaseous products

² Hint – we saw this reaction in class (class work #13, January 17.