



SHS LEARNING ACTIVITY

CHEM1-05-03

Name: _____ Score/Mark: _____

Grade and Section: _____ Date: _____

Strand: STEM ABM HUMSS ICT (*TVL Track*)Type of Activity : Concept Notes Skills: Exercise/Drill Illustration Laboratory Report Essay/Task Report Other: _____Activity Title: 05-03.Naming compounds v02

Learning Target: To practice naming chemical compounds

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Salts are named simply by stating the cation followed by the anion. For example, KI is "potassium iodide", and $\text{Fe}_2(\text{SO}_4)_3$ is "iron(III) sulfate" (or, in the old nomenclature that's still in use, "ferric sulfate"). To find out how many of each ion we need, we must make sure that the total charge is zero using the smallest possible combination. For Na^+ and Cl^- it's easy: just one of each. But for Fe^{3+} and SO_4^{2-} it's trickier. We could have either one Fe^{3+} (3 positive charges), or two Fe^{3+} (**6+**), or three (9+) or four (**12+**) and so on. Similarly, we could have one SO_4^{2-} (2-), two (4-), three (**6-**), four (8-), five (10-), six (**12-**), seven (14-) and so on. The first time that we have the same number of positive and negative charges is at ± 6 , so we get $\text{Fe}_2(\text{SO}_4)_3$. Technically, 6 is the least common multiple (LCM) of 2 and 3. Conversely, for lead(IV) sulfate, we have Pb^{4+} and SO_4^{2-} , so we only need to get to ± 4 , the LCM of 2 and 4: $\text{Pb}(\text{SO}_4)_2$.

Hydroxides (bases) and **metal oxides** are named exactly like salts.

Non-metal oxides are much easier to name: we just count the number of each atom and write prefixes that indicate the numbers (mono, di, tri, tetra, penta, hexa, hepta, octa, nona, deca). For example: N_2O_4 is dinitrogen tetraoxide. Note that if the first element has only one atom, we don't write "mono" for it, but we do for the oxygen: CO is carbon monoxide.

Binary acids are named "hydro{elem-}ic acid"; HCl is hydrochloric acid.

Oxoacids are easier to learn with an example. Sulfur**ic** acid is made from sulfate: H_2SO_4 , whereas sulfur**ous** acid is made from sulfite. So just remember that: ____ite ion \rightarrow ____ous acid, ____ate ion \rightarrow ____ic acid.

Exercise. Write the name or formula of the following compounds. **Salts:** KI, CdS, ammonium sulfate, calcium phosphate. **Non-metal oxides:** N_2O_4 , P_4O_{10} , sulfur trioxide. **Acids:** hydroiodic acid, nitric acid, HNO_2 . **Bases:** $\text{Mg}(\text{OH})_2$.

