Polyatomic Ions (Radicals) Enriched Notes

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**Bonding and naming metals with polyatomic ions and naming them.**

* Bonding: x-over charges of metal and PI

Naming: name 1st element, name PI

|  |  |  |
| --- | --- | --- |
| example | x-over rule | name |
| Ca and CO32- |  |  |
| Ca and NO3- |  |  |
| Ca and PO43- |  |  |
| Al and OH- |  |  |
| Al and CO32- |  |  |

**Chart**

|  |  |  |  |
| --- | --- | --- | --- |
| **Chemical formula** | **Name** | **Chemical formula** | **Name** |
| NH4+ | ammonium | OH- | hydroxide |
| HCO3- | bicarbonate | NO3- | nitrate |
| CO32- | carbonate | NO2- | nitrite |
| ClO3- | chlorate | PO43- | phosphate |
| CrO42- | chromate | SO42- | sulphate |
| CH3COO- | acetate | SO32- | sulphite |

**Determining if bond is possible**

Ex 1: Be3(NO3)2 charge is NO3- Ex 2: Al(PO4)3 charge is PO43-

Sample question:

The charge for nitrite is NO2-, choose the answer which shows correct bonds.

1- Ca(NO2)2

2- Al3(NO2)3

3- KNO2

A) 1 and 2 B) 1 and 3 C) 2 and 3 D) 1, 2 and 3

**Determining charge of radical**

Use atom number the metal has after x-over rule is done.

ex: Mg3(AsO4)2 H2SO4

LiOH AlPO4

**Vocabulary:**

cation= metal

anion= radical Al2(CO3)3

Write all the possible bonds that the following atoms and radicals can form.

Na Al CO32- NO3-

**How to recognize a covalent bond vs a radical?**

|  |  |
| --- | --- |
| P2S3 | Diphosphorus trisulfide |
| CCl4 | Carbon tetrachloride |
| PF3 | Phosphorus triflouride |
| O2 | Oxygen |

|  |  |
| --- | --- |
| CaCO3 | Calcium carbonate |
| LiOH | Lithium hydroxide |
| K3PO4 | Potassium phosphate |