HONORS CHEMISTRY UNIT 4 NOTES

NOMENCLATURE

Binary Compounds

1.

2.

NAMING A COMPOUND THAT CONTAINS A METAL AND A NONMETAL

Binary Ionic Compounds

Type I Binary Ionic Compounds

Rules for Naming

1.

2.

3.

|  |  |
| --- | --- |
| Compound | Name |
| NaCl |  |
| CaBr2 |  |
| MgO |  |
| Al2O3 |  |

Check Point: Name the following compounds

1. CsF
2. AlCl3
3. MgI2

Type II Binary Ionic Compounds

Rules for Naming

1.

2.

3.

|  |  |  |
| --- | --- | --- |
| Compound | Ions Present | Name |
| CuCl |  |  |
| HgO |  |  |
| PbCl4 |  |  |
| Fe2O3 |  |  |

Check Point: Name the following compounds

1. CoCl3
2. CuI
3. HgCl2
4. Co2S3

Final section check: Name the following compounds

1. SnI4
2. K3N
3. NaH
4. CrF2
5. MnI2

NAMING BINARY COMPOUNDS THAT CONTAIN ONLY NONMETALS (TYPE III)

Type III Binary Compounds

Rules for Naming Type III Binary Compounds

1.

2.

3.

4.

Examples: Name the following binary compounds

1. BF3
2. NO
3. N2O5

Check Point: Name the following binary compounds

1. CCl4
2. NO2
3. IF5

A SUMMARY OF NAMING BINARY COMPOUNDS

Yes

No

Binary Compound?

Yes

Metal Present?

No

Yes

Type III:

Use Prefixes

Does the metal form more than one cation?

Type I: No Roman Numeral for the Cation

Type II: Use Roman Numeral After name of the cation

Examples: Use the graphic organizer above to help name the following compounds.

1. CuO
2. SrO
3. B2O3
4. TiCl4
5. K2S
6. OF2
7. NH3

Check Point: Name the following compounds

1. ClF3
2. CuCl
3. MgO
4. VF5
5. MnO2

NAMING COMPOUNDS THAT CONTAIN POLYATOMIC IONS

Polyatomic ions

Oxyanions

The endings

Rules for Naming Compounds that contain polyatomic ions

1.

2.

3.

Examples

|  |  |  |
| --- | --- | --- |
| COMPOUND | IONS PRESENT | COMPOUND NAME |
| Na2SO4 |  |  |
| KH2PO4 |  |  |
| Fe(NO3)3 |  |  |
| Mn(OH)2 |  |  |
| Na2SO3 |  |  |

Check Point

1. Ca(OH)2
2. Na3PO4
3. KMnO4
4. (NH4)2Cr2O7
5. Co(ClO4)2
6. KClO3
7. Cu(NO2)2

SUMMARY OF COMPOUNDS SO FAR

No Rules Yet

Binary Compound?

Yes

See Other Chart

No

Polyatomic ion(s) present?

Yes

Use Rules for Compounds containing polyatomics

No

Examples: Use previous graphic organizers to name the following compounds.

1. Na2CO3
2. FeBr3
3. CsClO4
4. CuSO4
5. PCl3

Check Point: Use Previous graphic organizers to name the following compounds.

1. NaHCO3
2. BaSO4
3. BrF6
4. NaBr
5. KOCl
6. Zn3(PO4)2

NAMING ACIDS

Acids

Rules for Naming Acids

1.

2.

Summary for Naming Acids

Does the anion contain oxygen?

No

Hydro + anion root + -ic acid = hydro(anionic ) acid

Yes

Check ending of anion name

-ite

Anion or element root + ous = root(ous) acid

-ate

Anion or element root + ic = root(ic) acid

Examples: Use graphic organizer above to name the following acids

1. HF
2. H3PO3
3. HNO3
4. HBrO4
5. H2S

Check Point: Use graphic organizer above to name the following acids

1. HNO2
2. HCN
3. HCl
4. H2SO4
5. HC2H3O2

WRITING FORMULAS FROM NAMES

Compounds that are acids or contain metals and/or polyatomic ions

Rules for writing

1.

2.

3.

Examples

1. Potassium bromide
2. Magnesium nitride
3. Cobalt (II) oxide
4. Nitric acid
5. Mercury (II) sulfate
6. Sodium chlorate
7. Ammonium carbonate
8. Aluminum oxide
9. Iron (III) sulfide

Compounds that contain only nonmetals or metalloids

1.

2.

Examples

1. carbon dioxide
2. dinitrogen pentoxide
3. phosphorus trichloride
4. nitrogen monoxide

SUMMARY OF WRITING FORMULAS

From the name is it an acid or is there a metal and/or polyatomic ion present?

Yes

No

Write symbols with charges and balance charges using LCM

Write symbols and use prefixes present to determine subscripts. If no prefix is present, then assume one atom

Check Point: Write formulas for the following compounds using the graphic organizer above.

1. Potassium hydroxide
2. Sodium carbonate
3. Sulfuric acid
4. Dichlorine monoxide
5. Hydrochloric acid
6. Lithium sulfide
7. Chlorous acid
8. Copper (II) nitrate
9. Zinc oxide
10. Carbon tetrachloride