

Name _____

#5 Nomenclature

Quantitative Chemistry

Student Learning Map

Unit EQ: How do I name and write formulas for chemical compounds?

Key Learning: Naming and writing formulas for compounds is a systematic process.

UNIT CONCEPT:

1. Type I Compounds	2. Type II Compounds	3. Type III Compounds	4. Acids
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LESSON ESSENTIAL QUESTIONS:

a. How do I distinguish between Type I, II, III Compounds, and Acids? b. How do I name and write formulas for Type I compounds?	How do I name and write formulas for Type II compounds?	How do I name and write formulas for Type III compounds?	How do I name and write formulas for acids?
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LESSON ESSENTIAL VOCABULARY:

Monatomic Ion Polyatomic Ion			Acid
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1a. Distinguishing Between Compounds

EQ: How do I distinguish between Type I, II, III Compounds and Acids?

First Element:

Key																					
11	Na	11	Sodium	22.99	Average atomic mass*																
11	Na	11	Sodium	22.99	Average atomic mass*																
1	1A	2	3A	4A	5A	6A	7A	8A	13	14	15	16	17	18	13	14	15	16	17	18	
1	H	He																			
2	Li	Be	B	C	N	O	F	Ne													
3	Na	Mg	Al	Si	P	S	Cl	Ar													
4	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr			
5	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe			
6	Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn			
7	Fr	Ra	Ac	Rf	Db	Sg	Bh	Hs	Mt												
* If this number is in parentheses, then it refers to the atomic mass of the most stable isotope.																					

Polyatomic Ion: NH₄⁺

TYPE I:	TYPE II:	TYPE III:	ACIDS:

1b. Type I Compounds (without Polyatomic Ions)

EQ: How do I name and write formulas for Type I Compounds with Polyatomic Ions?

Naming:

Compound	Ions Present	Compound Name
MgBr ₂	X	Magnesium bromide
AgF	X	Silver fluoride
Na ₂ S	X	Sodium sulfide
Al ₂ O ₃	X	Aluminum oxide
Ba ₃ N ₂	X	Barium nitride
CaI₂	Ca²⁺₁ I¹⁻₂ (2+) + (2-) = 0	Calcium Iodide
Rb₂ O	Rb¹⁺₂ O²⁻₁ (2+) + (2-) = 0	Rubidium Oxide
K Cl	K¹⁺₁ Cl¹⁻₁ (1+) + (1-) = 0	Potassium Chloride
Al₂ S₃	Al³⁺₂ S²⁻₃ (6+) + (6-) = 0	Aluminum Sulfide
Li F	Li¹⁺₁ F¹⁻₁ (1+) + (1-) = 0	Lithium Fluoride
Na₃ P	Na¹⁺₃ P³⁻₁ (3+) + (3-) = 0	Sodium Phosphide

1b. Type I Compounds (w/out Polyatomic Ions) (cont.)

Give the name/formula for each of the following:

- | | | | |
|--------------------------|--------------------------|-------------------------------------|--------------------------|
| 1. CaF_2 | Calcium fluoride | 7. Beryllium Oxide | Be O |
| | | $\text{Be}^{2+}_1 \text{O}^{2-}_1$ | |
| | | $(2+) + (2-) = 0$ | |
| 2. MgI_2 | Magnesium iodide | 8. Strontium Bromide | Sr Br₂ |
| | | $\text{Sr}^{2+}_1 \text{Br}^{1-}_2$ | |
| | | $(2+) + (2-) = 0$ | |
| 3. K_2S | Potassium sulfide | 9. Aluminum Chloride | Al Cl₃ |
| | | $\text{Al}^{3+}_1 \text{Cl}^{1-}_3$ | |
| | | $(3+) + (3-) = 0$ | |
| 4. Li_3P | Lithium phosphide | 10. Sodium Nitride | Na₃ N |
| | | $\text{Na}^{1+}_3 \text{N}^{3-}_1$ | |
| | | $(3+) + (3-) = 0$ | |
| 5. BaCl_2 | Barium chloride | 11. Silver Fluoride | Ag F |
| | | $\text{Ag}^{1+}_1 \text{F}^{1-}_1$ | |
| | | $(1+) + (1-) = 0$ | |
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- | | | | |
|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| 1. Na_2S | Sodium sulfide | 7. Barium Iodide | Ba I₂ |
| | | $\text{Ba}^{2+}_1 \text{I}^{2-}_2$ | |
| | | $(2+) + (2-) = 0$ | |
| 2. KBr | Potassium Bromide | 8. Silver Chloride | Ag Cl |
| | | $\text{Ag}^{1+}_1 \text{Cl}^{1-}_1$ | |
| | | $(1+) + (1-) = 0$ | |
| 3. Li_3N | Lithium nitride | 9. Aluminum Oxide | Al₂ O₃ |
| | | $\text{Al}^{3+}_2 \text{O}^{2-}_3$ | |
| | | $(6+) + (6-) = 0$ | |
| 4. CaCl_2 | Calcium chloride | 10. Beryllium Sulfide | Be S |
| | | $\text{Be}^{2+}_1 \text{S}^{2-}_1$ | |
| | | $(2+) + (2-) = 0$ | |
| 5. MgO | Magnesium oxide | 11. Lithium Bromide | Li Br |
| | | $\text{Li}^{1+}_1 \text{Br}^{1-}_1$ | |
| | | $(1+) + (1-) = 0$ | |
| 6. AlF_3 | Aluminum fluoride | 12. Potassium Phosphide | K₃ P |
| | | $\text{K}^{1+}_3 \text{P}^{3-}_1$ | |
| | | $(3+) + (3-) = 0$ | |

1b. Type I Compounds (with Polyatomic Ions)

EQ: How do I name and write formulas for Type I Compounds?

Naming:

Compound	Ions Present	Compound Name
KClO ₃	X	Potassium chlorate
Ba(NO ₂) ₂	X	Barium nitrite
Na ₂ SO ₄	X	Sodium sulfate
AgC ₂ H ₃ O ₂	X	Silver acetate
BeSO ₃	X	Beryllium sulfite
Mg (OH)₂	Mg²⁺₁ (OH)¹⁻₂ (2+) + (2-) = 0	Magnesium Hydroxide
Li NO₂	Li¹⁺₁ (NO₂)¹⁻₁ (1+) + (1-) = 0	Lithium Nitrite
K₂ O₂	K¹⁺₂ (O₂)²⁻₁ (2+) + (2-) = 0	Potassium Peroxide
Ca CO₃	Ca²⁺₁ (CO₃)²⁻₁ (2+) + (2-) = 0	Calcium Carbonate
Sr₃ (PO₄)₂	Sr²⁺₃ (PO₄)³⁻₂ (6+) + (6-) = 0	Strontium Phosphate
NH₄ NO₃	(NH₄)¹⁺₁ (NO₃)¹⁻₁ (1+) + (1-) = 0	Ammonium Nitrate PNII

1b. Type I Compounds (cont.)

Give the name/formula for each of the following:

Mixed Review – With and without Polyatomic Ions

1. CaCl_2	calcium chloride	7. Lithium Dichromate	$\text{Li}_2 \text{Cr}_2\text{O}_7$
			$\text{Li}^{1+}_2 (\text{Cr}_2\text{O}_7)^{2-}_1$
2. $\text{Mg}(\text{CN})_2$	magnesium cyanide	8. Beryllium Sulfide	Be S
			$\text{Be}^{2+}_1 \text{S}^{2-}_1$
3. KMnO_4	potassium permanganate	9. Aluminum Chloride	Al Cl_3
			$\text{Al}^{3+}_1 \text{Cl}^{1-}_3$
4. NaHCO_3	sodium hydrogen carbonate	10. Calcium Hydroxide	$\text{Ca} (\text{OH})_2$
			$\text{Ca}^{2+}_1 (\text{OH})^{1-}_2$
5. Na_2O_2	sodium peroxide	11. Rubidium Acetate	$\text{Rb C}_2\text{H}_3\text{O}_2$
			$\text{Rb}^{1+}_1 (\text{C}_2\text{H}_3\text{O}_2)^{1-}_1$
6. Ag_3P	silver phosphide	12. Ammonium Bromide	$\text{NH}_4 \text{Br}$
			$(\text{NH}_4)^{1+}_1 \text{Br}^{1-}_1$

1. Na_2CO_3	sodium carbonate	11. Cesium Oxide	$\text{Cs}_2 \text{O}$
			$\text{Cs}^{1+}_2 \text{O}^{2-}_1$
2. K_2SO_4	potassium sulfate	12. Lithium Chlorate	Li ClO_3
			$\text{Li}^{1+}_1 (\text{ClO}_3)^{1-}_1$
3. Li_3N	lithium nitride	13. Calcium Phosphate	$\text{Ca}_3 (\text{PO}_4)_2$
			$\text{Ca}^{2+}_3 (\text{PO}_4)^{3-}_2$
4. $\text{Ca}(\text{C}_2\text{H}_3\text{O}_2)_2$	calcium acetate	14. Sodium Nitride	$\text{Na}_3 \text{N}$
			$\text{Na}^{1+}_3 \text{N}^{3-}_1$
5. MgBr_2	magnesium bromide	15. Sodium Nitrite	Na NO_2
			$\text{Na}^{1+}_1 (\text{NO}_2)^{1-}_1$
6. Al_2O_3	aluminum oxide	16. Sodium Nitrate	Na NO_3
			$\text{Na}^{1+}_1 (\text{NO}_3)^{1-}_1$
7. $\text{Zn}(\text{CN})_2$	zinc cyanide	17. Silver Sulfide	$\text{Ag}_2 \text{S}$
			$\text{Ag}^{1+}_2 \text{S}^{2-}_1$
8. NH_4Cl	ammonium chloride	18. Potassium Iodide	KI
			$\text{K}^{1+}_1 \text{I}^{1-}_1$
9. RbF	rubidium fluoride	19. Barium Hydroxide	$\text{Ba} (\text{OH})_2$
			$\text{Ba}^{2+}_1 (\text{OH})^{1-}_2$
10. CsMnO_4	cesium permanganate	20. Magnesium Sulfite	Mg SO_3
			$\text{Mg}^{2+}_1 (\text{SO}_3)^{2-}_1$

2. Type II Compounds

EQ: How do I name and write formulas for Type II Compounds?

Naming:

Compound	Ions Present	Compound Name
PtBr ₂	$\text{Pt}^{2+}_1 \text{Br}^{1-}_2$ (2+) + (2-) = 0	platinum (II) bromide
Ni(OH) ₂	$\text{Ni}^{2+}_1 (\text{OH})^{1-}_2$ (2+) + (2-) = 0	nickel (II) hydroxide nickelous hydroxide
CuCO ₃	$\text{Cu}^{2+}_1 (\text{CO}_3)^{2-}_1$ (2+) + (2-) = 0	copper (II) carbonate cupric carbonate
Cr ₂ S ₃	$\text{Cr}^{3+}_2 \text{S}^{2-}_3$ (6+) + (6-) = 0	chromium (III) sulfide
Pb(CN) ₄	$\text{Pb}^{4+}_1 (\text{CN})^{1-}_4$ (4+) + (4-) = 0	lead (IV) cyanide plumbic cyanide
Hg (NO ₂) ₂	$\text{Hg}^{2+}_1 (\text{NO}_2)^{1-}_2$ (2+) + (2-) = 0	Mercury(II) Nitrite
V ₂ O ₅	$\text{V}^{5+}_2 \text{O}^{2-}_5$ (10+) + (10-) = 0	Vanadium(V) Oxide
Au NO ₃	$\text{Au}^{1+}_1 (\text{NO}_3)^{1-}_1$ (1+) + (1-) = 0	Gold(I) Nitrate
Co Cl ₂	$\text{Co}^{2+}_1 \text{Cl}^{1-}_2$ (2+) + (2-) = 0	Cobalt(II) Chloride
Sn S ₂	$\text{Sn}^{4+}_1 \text{S}^{2-}_2$ (4+) + (4-) = 0	Tin(IV) Sulfide

2. Type II Compounds (cont.)

Give the name/formula for each of the following:

- | | | | |
|--|--|---|---|
| 1. SnO_2 | BMII tin(IV)oxide; stannic oxide | 7. Iron(III) Bromide | |
| | tin(II) peroxide; stannous peroxide | $\text{Fe}^{3+}_1 \text{Br}^{1-}_3$: | FeBr_3 |
| 2. SnO | tin(II)oxide; | 8. Cadmium(II) Phosphate | |
| | stannous oxide | $\text{Cd}^{2+}_3 (\text{PO}_4)^{3-}_2$: | $\text{Cd}_3 (\text{PO}_4)_2$ |
| 3. CrCO_3 | chromium (III) carbonate | 9. Mercury(II) Nitrate | |
| | | $\text{Hg}^{2+}_1 (\text{NO}_3)^{1-}_2$: | $\text{Hg}(\text{NO}_3)_2$ |
| 4. $\text{Fe}_2(\text{SO}_4)_3$ | iron (III) sulfate | 10. Manganese(IV) Oxide | |
| | ferrous sulfate | $\text{Mn}^{4+}_1 \text{O}^{2-}_2$: | MnO_2 |
| 5. $\text{Pb}(\text{C}_2\text{H}_3\text{O}_2)_2$ | lead (II) acetate | 11. Gold(III) Chloride | |
| | plumbous acetate | $\text{Au}^{3+}_1 \text{Cl}^{1-}_3$: | AuCl_3 |
| 6. NiCl_2 | nickel (II) chloride | 12. Copper(I) Iodide | |
| | nickelous chloride | $\text{Cu}^{1+}_1 \text{I}^{1-}_1$: | CuI |
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- | | | | |
|---------------------------------|---------------------------------|--|---|
| 1. $\text{Co}(\text{CN})_3$ | cobalt (III) cyanide | 11. Titanium(III) Iodide | |
| | cobaltic cyanide | $\text{Ti}^{3+}_1 \text{I}^{1-}_3$: | TiI_3 |
| 2. $\text{Mn}(\text{OH})_2$ | manganese (II) hydroxide | 12. Titanium(IV) Iodide | |
| | | $\text{Ti}^{4+}_1 \text{I}^{1-}_4$: | TiI_4 |
| 3. CdBr_2 | cadmium (II) bromide | 13. Zirconium(IV) Sulfide | |
| | | $\text{Zr}^{4+}_1 \text{S}^{2-}_2$: | ZrS_2 |
| 4. ScCl_3 | scandium (III) chloride | 14. Lead(II) Chromate | |
| | | $\text{Pb}^{2+}_1 (\text{CrO}_4)^{2-}_1$: | PbCrO_4 |
| 5. WO_3 | tungsten (VI) oxide | 15. Iron(III) Nitrate | |
| | | $\text{Fe}^{3+}_1 (\text{NO}_3)^{1-}_3$: | $\text{Fe}(\text{NO}_3)_3$ |
| 6. $\text{Bi}(\text{NO}_3)_3$ | bismuth (III) nitrate | 16. Iron(III) Nitride | |
| | | $\text{Fe}^{3+}_1 \text{N}^{3-}_1$: | FeN |
| 7. VSO_4 | vanadium (II) sulfate | 17. Tin(II) Oxalate | |
| | | $\text{Sn}^{2+}_1 (\text{C}_2\text{O}_4)^{2-}_1$: | SnC_2O_4 |
| 8. CrN | chromium (III) nitride | 18. Copper(II) Chlorate | |
| | iron (III) chlorate | $\text{Cu}^{2+}_1 (\text{ClO}_3)^{1-}_2$: | $\text{Cu}(\text{ClO}_3)_2$ |
| 9. $\text{Fe}(\text{ClO}_3)_3$ | ferric chlorate | 19. Gold(I) Cyanide | |
| | cupric permanganate | $\text{Au}^{1+}_1 (\text{CN})^{1-}_1$: | AuCN |
| 10. $\text{Cu}(\text{MnO}_4)_2$ | copper (II) permanganate | 20. Nickel(II) Phosphide | |
| | | $\text{Ni}^{2+}_3 \text{P}^{3-}_2$: | Ni_3P_2 |

2. Type II Compounds (cont.)

Older System of Naming

Refer to the Type II Cation IUPAC and Old Name Handout

Examples:

Sn(NO₃)₂: tin(II) nitrate stannous nitrate	Au(NO₃)₃: gold(III) nitrate auric nitrate
Pb(NO₃)₄: lead(IV) nitrate plumbic nitrate	Sb(NO₃)₅: antimony(V) nitrate stibic nitrate

Name the following compounds using the OLDER system of naming.

- | | | | |
|-----------------------------------|--------------------------|--------------------------------------|--------------------------|
| 1. CuCl | cuprous chloride | 5. PbSO ₄ | plumbous sulfate |
| 2. CuCl ₂ | cupric chloride | 6. Pb(SO ₄) ₂ | plumbic sulfate |
| 3. Fe ₂ O ₃ | ferric oxide | 7. SnCl ₂ | stannous chloride |
| 4. FeO | ferrous oxide | 8. SnCl ₄ | stannic chloride |
| 5. CoSO ₃ | cobaltous sulfite | 10. NiH ₂ | nickelous hydride |

Type I vs. Type II

- | | | | |
|--|--|--|--|
| 1. (NH ₄) ₃ PO ₃ | Type I
ammonium phosphite | 4. K ₃ P | Type I
potassium phosphide |
| 2. ZnO ₂ | Type I
zinc peroxide | 5. Sc(ClO) ₃ | Type II
scandium (III) hypochlorite |
| 3. CoSO ₄ | Type II
cobalt (II) sulfate
cobaltous sulfate | 6. Cs ₂ C ₂ O ₄ | Type I
cesium oxalate |

Compare / Contrast Type I and Type II Compounds?

Type 1

Type II



How Alike?





How Different?



With Regard To

Metal's PT Location

Oxidation States

IUPAC Naming

Old Names

Determining Cation Charges

2. Type II Compounds (cont.)

Type I & Type II Table

	Na^+	Cu^{2+}	Al^{3+}	Pb^{4+}
Cl^-	Na Cl	Cu Cl₂	Al Cl₃	Pb Cl₄
SO_4^{2-}	Na₂ SO₄	Cu SO₄	Al₂(SO₄)₃	Pb (SO₄)₂
N^{3-}	Na₃ N	Cu₃ N₂	Al N	Pb₃ N₄

Give the name/formula for each of the following:

- CaCO₃ **Calcium Carbonate**
- HgO **Mercury (II) Oxide**
Mercuric Oxide
- Cr(CN)₃ **Chromium(III)Cyanide**
- LiClO₃ **Lithium Chlorate**
- Beryllium Fluoride **Be F₂**
- Lead(II) Chloride **Pb Cl₂**
- Magnesium Sulfide **Mg S**
- Tin(IV) Oxalate **Sn(C₂O₄)₂**

Name the following using the OLDER system of naming.

Cu(NO₃)₂
Cupric Nitrate

SnCl₂
Stannous Chloride

Pb(C₂H₃O₂)₂
Plumbous Acetate

Complete the following table with formula and name:

	Au^+	Mg^{2+}	Pb^{2+}	Al^{3+}
O^{2-}	Au₂ O Gold (I) Oxide Aurous Oxide	Mg O Magnesium Oxide	Pb O Lead (II) Oxide Plumbous Oxide	Al₂ O₃ Aluminum Oxide

3. Type III Compounds (cont.)

Give the name/formula for each of the following. (Identify the type first.)

- | | | | |
|--------------------------------------|-------------------------------|-------------------------|---|
| 1. NaCl | sodium chloride | 6. Carbon Tetraiodide | Cl₄ |
| Type I | | Type III | |
| 2. SF ₆ | sulfur hexafluoride | 7. Copper(II) Hydroxide | Cu(OH)₂ |
| Type III | | Type II | |
| 3. Cr(NO ₃) ₃ | chromium (III) nitrate | 8. Aluminum Sulfate | Al₂(SO₄)₃ |
| Type II | | Type I | |
| 4. N ₂ O ₃ | dinitrogen trioxide | 9. Gold(III) Chloride | AuCl₃ |
| Type III | | Type II | |
| 5. K ₂ SO ₃ | potassium sulfite | 10. Dinitrogen Monoxide | N₂O |
| Type I | | Type III | |

Compound	Compound Name	Type I, II, or III?
LiBr	lithium bromide	Type I
FeCl ₃	iron (III) chloride ferric chloride	Type II
PH ₃	phosphorus trihydride	Type III
Co₂O₃	Cobalt(III) Oxide	Type II
Ag₂SO₄	Silver Sulfate	Type I
As₂O₅	Diarsenic Pentoxide	Type III
Sn(NO ₃) ₄	tin (IV) nitrate stannic nitrate	Type II
N ₂ O	dinitrogen monoxide	Type III
Na ₂ O ₂	sodium peroxide	Type I
CuCO ₃	copper (II) carbonate cupric carbonate	Type II
ClBr	chlorine monobromide	Type III
SiCl₄	Silicon Tetrachloride	Type III
CuOH	Copper(I) Hydroxide	Type II
Ba(C₂H₃O₂)₂	Barium Acetate	Type I

4. Acids

EQ: How do I name and write formulas for Acids?

Naming Acids:

<u>Acids WITHOUT Oxygen</u>	<u>Acids WITH Oxygen</u>

Formula	Ions Present	Anion Name	Acid Name
HCl hydracid	$\text{H}^{1+} \text{Cl}^{1-}$ $(1+) + (1-) = 0$	chloride	hydrochloric acid
H_2SO_3 oxyacid	$\text{H}^{1+}_2 (\text{SO}_3)^{2-}_1$ $(2+) + (2-) = 0$	sulfite	sulfurous acid
HBr hydracid	$\text{H}^{1+} \text{Br}^{1-}$ $(1+) + (1-) = 0$	bromide	hydrobromic acid
H_3PO_4 oxyacid	$\text{H}^{1+}_3 (\text{PO}_4)^{3-}_1$ $(3+) + (3-) = 0$	phosphate	phosphoric acid
HF hydracid	$\text{H}^{1+} \text{F}^{1-}$ $(1+) + (1-) = 0$	fluoride	Hydrofluoric Acid
HCN hydracid	$\text{H}^{1+} (\text{CN})^{1-}_1$ $(1+) + (1-) = 0$	cyanide	Hydrocyanic Acid
H_2SO_4 oxyacid	$\text{H}^{1+}_2 (\text{SO}_4)^{2-}_1$ $(2+) + (2-) = 0$	sulfate	Sulfuric Acid
HNO_2 oxyacid	$\text{H}^{1+} (\text{NO}_2)^{1-}_1$ $(1+) + (1-) = 0$	nitrite	Nitrous Acid

4. Acids

A. Give the name/formula for each of the following acids:

- | | | | |
|--------------------|--------------------------|----------------------|---|
| 1. HNO_3 | nitric acid | 5. Hydrobromic Acid | HBr |
| 2. HI | hydroiodic acid | 6. Acetic Acid | $\text{HC}_2\text{H}_3\text{O}_2$ |
| 3. HClO_3 | chloric acid | 7. Phosphoric Acid | H_3PO_4 |
| 4. HCl | hydrochloric acid | 8. Hydrofluoric Acid | HF |

B. Give the name for each of the following compounds:

- | | | | |
|---------------------------|---|---|--|
| 1. BrF_5 | bromine pentafluoride | 6. $\text{Zn}_3(\text{PO}_4)_2$ | zinc phosphate |
| 2. FeBr_3 | iron (III) bromide
ferric bromide | 7. SnCl_2 | tin (II) chloride
stannous chloride |
| 3. MgI_2 | magnesium iodide | 8. Na_3N | sodium nitride |
| 4. PbSO_4 | lead (II) sulfate
plumbous sulfate | 9. <i>Acid:</i> H_2CO_3 | carbonic acid |
| 5. B_2O_3 | diboron trioxide | 10. <i>Acid:</i> HCN | hydrocyanic acid |

C. Give the formula for each of the following compounds:

- | | | | |
|-------------------------|--|-----------------------------|---|
| 1. Cobalt(III) Chloride | CoCl_3 | 6. Dinitrogen Trioxide | N_2O_3 |
| 2. Lead(IV) Oxide | PbO_2 | 7. Ammonium Chromate | $(\text{NH}_4)_2\text{CrO}_4$ |
| 3. Sodium Carbonate | Na_2CO_3 | 8. Hydrofluoric Acid | HF |
| 4. Carbon Tetrachloride | CCl_4 | 9. Sulfurous Acid | H_2SO_3 |
| 5. Copper(II) Cyanide | $\text{Cu}(\text{CN})_2$ | 10. Sulfuric Acid | H_2SO_4 |

D. Name the following using the OLDER system of naming:

