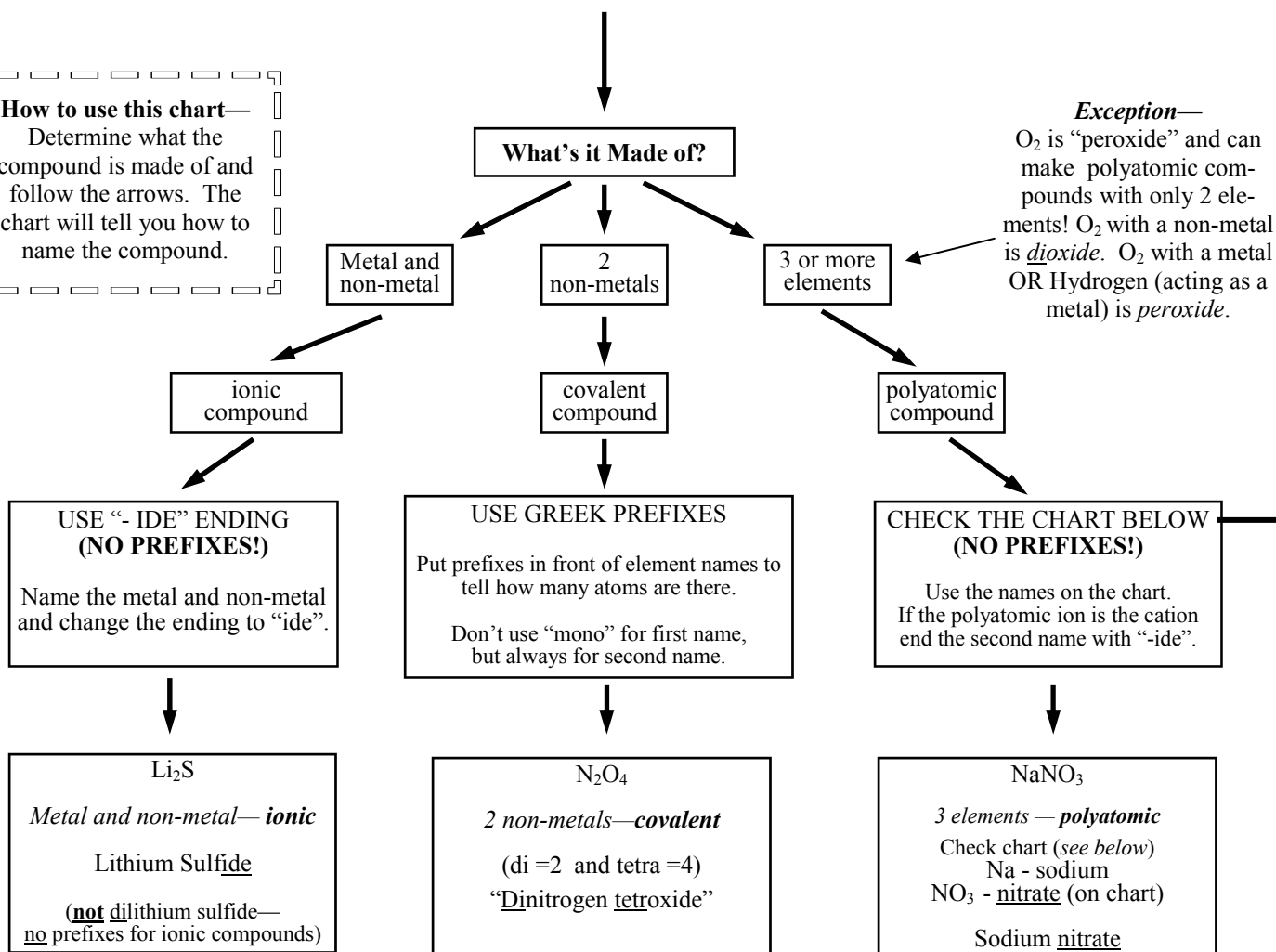


# Naming Compounds

**How to use this chart—**  
Determine what the compound is made of and follow the arrows. The chart will tell you how to name the compound.

**Exception—**  
O<sub>2</sub> is “peroxide” and can make polyatomic compounds with only 2 elements! O<sub>2</sub> with a non-metal is dioxide. O<sub>2</sub> with a metal OR Hydrogen (acting as a metal) is peroxide.



Why are ionic compounds so easy to name? Because most ionic compounds can only form one way, using the oxidation numbers. In covalent compounds, though, non-metals can sometimes combine in multiple ways (carbon monoxide; carbon dioxide). So, covalent compounds use prefixes.

### Greek Prefixes

Mono - 1	Hexa - 6
Di - 2	Hepta - 7
Tri - 3	Octa - 8
Tetra - 4	Nona - 9
Penta - 5	Deca - 10

### How to remember prefixes:

Monorail – one rail train  
Monocle – glasses for one eye; single lens (Colonel Klink).

Dilemma – struggle between 2 choices.

Tricycle – 3 wheels

Pentagon – 5 five sided military building in Washington, D.C.

Octopus – 8 legs

Decade – 10 years

### Transition Metals Can Have More Than One Oxidation Number

Iron (II) has an oxidation number of 2+  
Iron (III) has an oxidation number of 3+.  
When naming them you must specify WHICH ONE.

FeO—Iron (II) oxide  
Fe<sub>2</sub>O<sub>3</sub>— Iron (III) oxide

### Polyatomic Ions

Oxidation #	Name	Formula
1+	ammonium	NH <sub>4</sub> <sup>+</sup>
1-	acetate	C <sub>2</sub> H <sub>3</sub> O <sub>2</sub> <sup>-</sup>
2-	carbonate	CO <sub>3</sub> <sup>2-</sup>
2-	chromate	CrO <sub>4</sub> <sup>2-</sup>
1-	hydrogen carbonate	HCO <sub>3</sub> <sup>1-</sup>
1+	hydronium	H <sub>3</sub> O <sup>+</sup>
1-	hydroxide	OH <sup>1-</sup>
1-	nitrate	NO <sub>3</sub> <sup>1-</sup>
2-	peroxide	O <sub>2</sub> <sup>2-</sup>
3-	phosphate	PO <sub>4</sub> <sup>3-</sup>
2-	sulfate	SO <sub>4</sub> <sup>2-</sup>
2-	sulfite	SO <sub>3</sub> <sup>2-</sup>

Name: \_\_\_\_\_

Ch. 19:4

Period: \_\_\_\_\_

<u>Metal or Non-metal?</u>	<u>Ionic or Covalent?</u>	<u>Name These Ionic Compounds</u>	<u>Use the Polyatomic Ion Chart on the front of the worksheet to name these Polyatomic Ions:</u>
<i>M N</i> Iron Oxide	<u>Ionic</u>	MgF <sub>2</sub> Magnesium Fluor- <u>ide</u>	HCO <sub>3</sub> <sup>1-</sup> <u>Hydrogen carbonate</u>
Barium Chloride	_____	Li <sub>2</sub> O Lithium Ox- _____	SO <sub>4</sub> <sup>2-</sup> _____
Carbon Dioxide	_____	NaCl Sodium Chlor- _____	O <sub>2</sub> <sup>2-</sup> _____
Magnesium Oxide	_____	K <sub>2</sub> O Potassium Ox- _____	SO <sub>3</sub> <sup>2-</sup> _____
Aluminum Fluoride	_____	CaS _____ Sulf- _____	NO <sub>3</sub> <sup>1-</sup> _____
Nitrogen Tribromide	_____	BeI <sub>2</sub> _____ Iod- _____	NH <sub>4</sub> <sup>+</sup> _____
Chromium Fluoride	_____	AlBr <sub>3</sub> _____ Brom- _____	CrO <sub>4</sub> <sup>2-</sup> _____
Potassium Oxide	_____	CaF <sub>2</sub> _____	OH <sup>1-</sup> _____
		MgO _____	PO <sub>4</sub> <sup>3-</sup> _____
		LiCl _____	CO <sub>3</sub> <sup>2-</sup> _____

<u>Define these Greek Prefixes</u>			<u>Name These Covalent Compounds</u>
Penta = _____	Tetra = _____	1. CO <sub>2</sub>	A. Carbon monoxide
Nona = _____	Hexa = _____	2. C <sub>2</sub> O <sub>4</sub>	B. Carbon dioxide
Mono = _____	Hepta = _____	3. C <sub>3</sub> O <sub>5</sub>	C. Dicarbon monoxide
Octa = _____	Deca = _____	4. CO	D. Tricarbon pentoxide
Tri = _____	Di = _____	5. C <sub>2</sub> O	E. Dicarbon tetroxide
		6. CO <sub>8</sub>	F. Carbon octoxide
			Si <sub>2</sub> O <sub>3</sub> Disilicon _____ oxide
			N <sub>3</sub> Cl <sub>4</sub> _____ nitrogen tetrachloride
			SO <sub>2</sub> Sulfur _____ oxide
			PO <sub>5</sub> Phosphorous _____ ox _____
			S <sub>2</sub> F <sub>4</sub> _____ sulfur _____ fluor _____

<u>Name these Polyatomic Compounds (Remember — no prefixes!)</u>	<u>Classify and Name These Compounds</u>	
	<u>Ionic, Covalent, or Polyatomic</u>	<u>Name</u>
CaSO <sub>4</sub> Calcium _____	1. BaCl <sub>2</sub> <u>Ionic</u>	<u>Barium chloride</u>
K <sub>2</sub> CO <sub>3</sub> _____ carbonate	2. CO _____	_____
CuNO <sub>3</sub> Copper (I) _____	3. Ag <sub>2</sub> O _____	_____
NH <sub>4</sub> Cl _____ chloride	4. K <sub>2</sub> SO <sub>4</sub> _____	_____
Mg(NO <sub>3</sub> ) <sub>2</sub> Magnesium _____	5. MgBr <sub>2</sub> _____	_____
K <sub>3</sub> PO <sub>4</sub> Potassium _____	6. SO <sub>3</sub> _____	_____
Li <sub>2</sub> (CrO <sub>4</sub> ) Lithium _____	7. P <sub>2</sub> O <sub>4</sub> _____	_____
Mg(OH) <sub>2</sub> M _____ H _____	8. Be(CrO <sub>4</sub> ) _____	_____
Al(PO <sub>4</sub> ) A _____ P _____	9. LiF _____	_____
K(NO <sub>3</sub> ) _____	11. CO <sub>2</sub> _____	_____
Ca <sub>2</sub> SO <sub>3</sub> _____	12. OF <sub>2</sub> _____	_____