

# Chapter 4

## Nomenclature

writing chemical formulas  
naming chemical compounds

potassium chromate



potassium dichromate

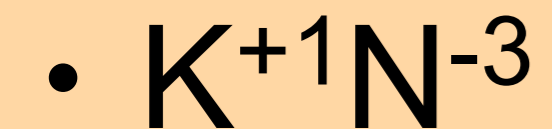


Write the chemical formula for strontium sulfide

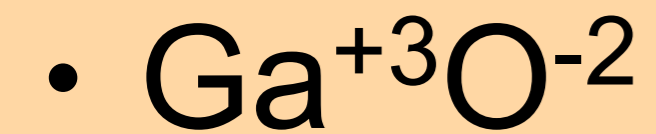
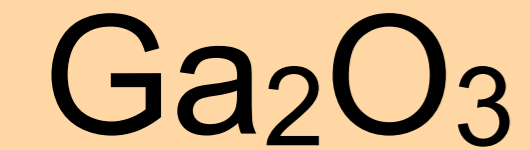
SrS

- remember always write ionic formula in lowest whole number ratio

# Write the chemical formula for potassium nitride



Write the chemical formula for  
gallium oxide



# Write the chemical formula for zinc chloride

ZnCl<sub>2</sub>

- Remember that zinc is one of the transition metals that does not require a Roman #, since its oxidation state is always +2.

# Write the chemical formula for chromium (VI) sulfide



- The Roman # tells you the +6 charge on the chromium metal
- $\text{Cr}^{+6}\text{S}^{-2}$
- You might have criss-crossed to  $\text{Cr}_2\text{S}_6$  but then you must reduce it to the lowest whole number ratio.

Write the name for SrSe

strontium selenide

# Write the name for $\text{Fe}_2\text{O}_3$

iron(III) oxide

- you can un-criss-cross
- or you can work off the charge on the anion



# Write the name for $\text{Cu}_2\text{O}$

copper (I) oxide

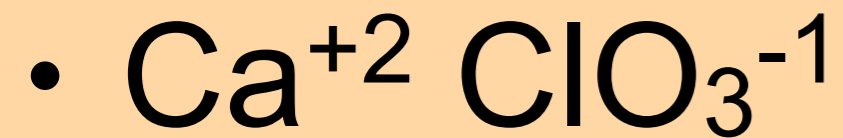
- You must can “un-criss-cross”
- or you can work into the cation by knowing that the anion is -2
  - ✓ The total + and - charge must add to 0
  - ✓ this means that electrons lost = electrons gained
  - ✓ the Roman # = the individual oxidation state of one of the metal ions (not the total metal charge)

# Write the name for $\text{CrP}_2$

chromium (VI) phosphide

- you can't just un-criss-cross because this is a formula which has been reduced.
  - ✓ work off the non-metal's charge
  - ✓ remember the total + must equal - that means the e- lost = e- gained

# Write the chemical formula for calcium chlorate

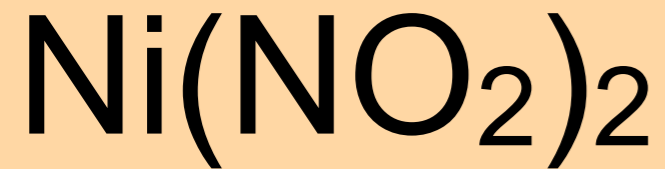


# Write the chemical formula for iron (III) dichromate



- note that dichromate does not mean two chromates, it is a particular ion
  - ✓ it got its name for the two chromium's in the ion, not because there will be two of the polyatomic ions in the compound

# Write the chemical formula for nickel(II) nitrite



- $\text{Ni}^{+2} \text{NO}_2^{-1}$
- Note the charge on the nitrite is  $-1$  not  $2x^{-1}$ , the subscript 2 is part of the ion.

# Write the chemical formula for gallium cyanide



- *not*  $\text{GaCN}_3$

- ✓ you need 3 cyanides to go with the one gallium

Write the name for  $\text{Mn}(\text{SO}_4)_2$

Manganese(IV) sulfate

Write the name for  $(\text{NH}_4)_3\text{PO}_4$

Ammonium phosphate

- ammonium,  $\text{NH}_4^{+1}$  is one of the few positive polyatomic ions

# Write the name for $\text{Ca}_2\text{Fe}(\text{CN})_6$

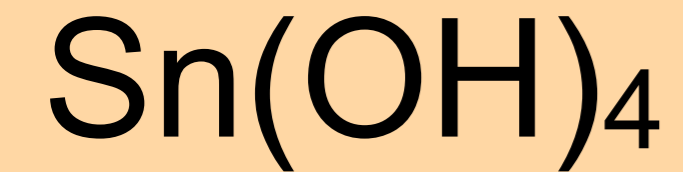
calcium ferrocyanide

- how do you know that it is ferrocyanide, not ferricyanide?
  - ✓ look at the fact that there are 2  $\text{Ca}^{+2}$  ions present
  - ✓ that means that the total cation is +4 and thus the anion must be -4 to match.

Write the name for AuSCN

gold(I) thiocyanate

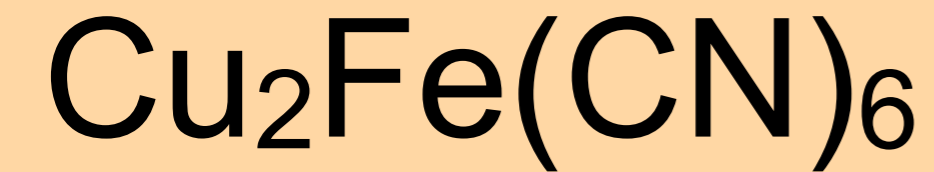
Write the chemical formula for  
tin(IV) hydroxide



Write the name for  $\text{CuCO}_3$

copper(II) carbonate

Write the chemical formula for  
copper(I) ferrocyanide



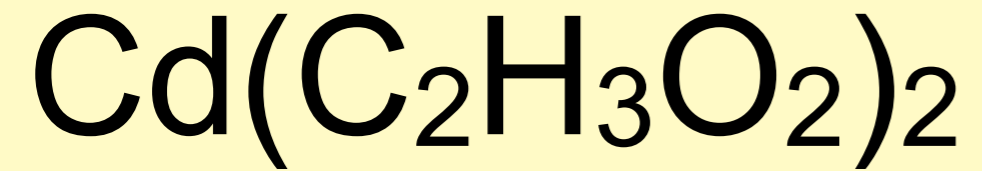
Write the name for CoAs

cobalt(III) arsenide

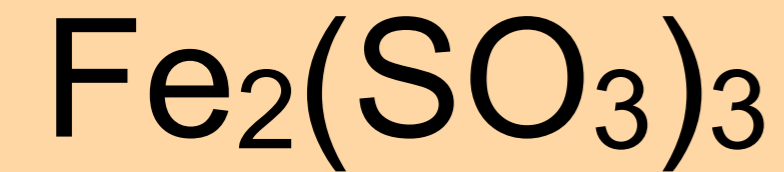
Write the chemical formula for uranium(VI) fluoride

$\text{UF}_6$

Write the name for  
cadmium acetate



Write the chemical formula for  
iron(III) sulfite



Write the name for  $\text{Cr}(\text{ClO})_3$

chromium(III) hypochlorite

Write the chemical formula for  
ammonium nitrate



Write the name for  $\text{Mg}(\text{OH})_2$

magnesium hydroxide

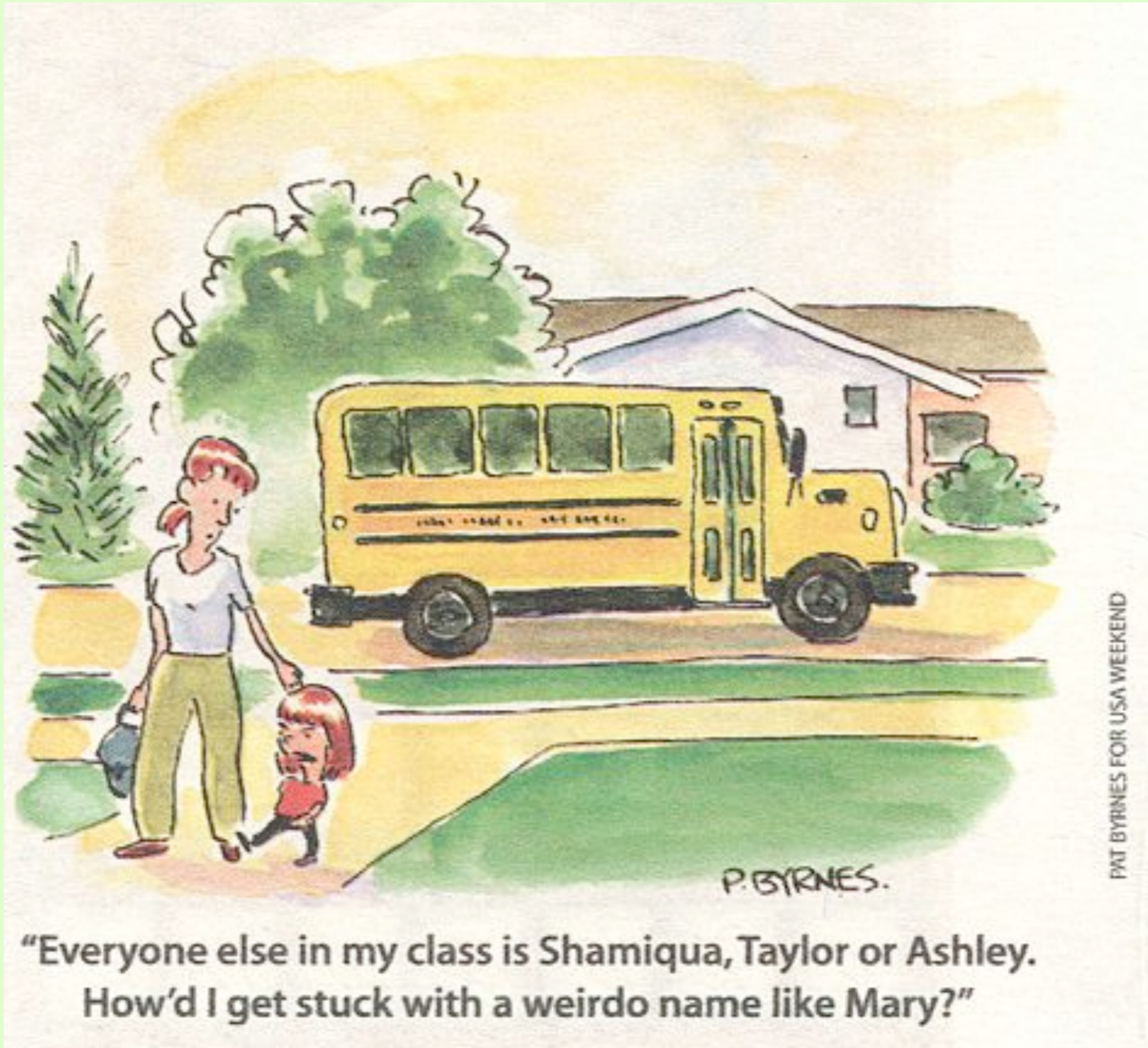
Write the chemical formula for  
 $K_3Fe(CN)_6$

potassium ferricyanide

Write the name for  $\text{Pb}(\text{Cr}_2\text{O}_7)_2$

lead(IV) dichromate

# It's all in the name....



# March Madness !

Which formula contains the most number of “atoms?”



11 “atoms”



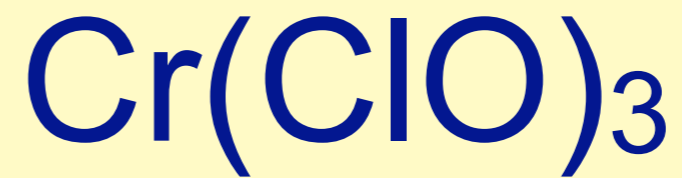
7 atoms

# March Madness !

Which formula contains the greatest number of ions?



3 ions



4 ions

# March Madness !

Which formula has the highest total charge on the anions?



- 4



- 3

# March Madness !

Which formula has the largest molar mass?



$$55 + 2(32) + 8(16) \\ = 247$$

$$52 + 3(35.5) + 3(16) \\ = 206.5$$