N17 - Writing Neutral Formulas for Ionic Compounds

Target:

I can write neutral formulas, making sure that the charges balance.

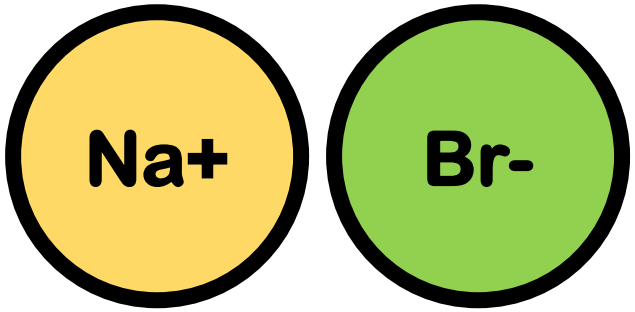
Link to YouTube Presentation: https://youtu.be/SqXspzKwIaE

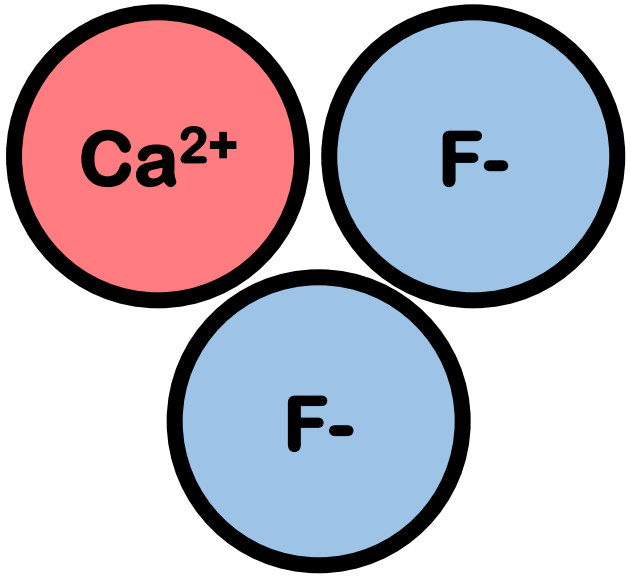
N17 - Writing Neutral Formulas for Ionic Compounds

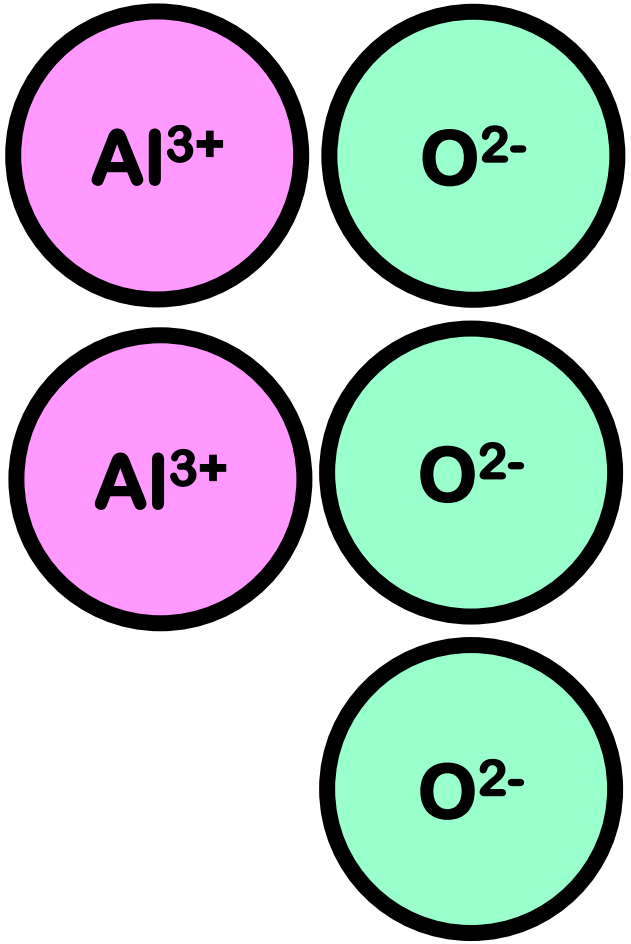
You need to know your ions for this!!!!!!!!!!!!!!!!!!!!!!!!!!

Neutral Compounds

- **We need our compounds to be "electrically neutral"**
  - Charges need to cancel out
  - Not always a 1:1 ratio!



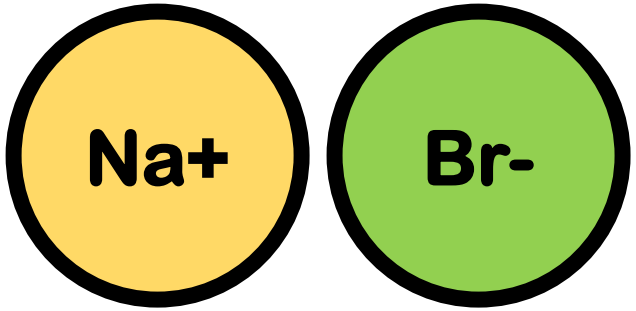




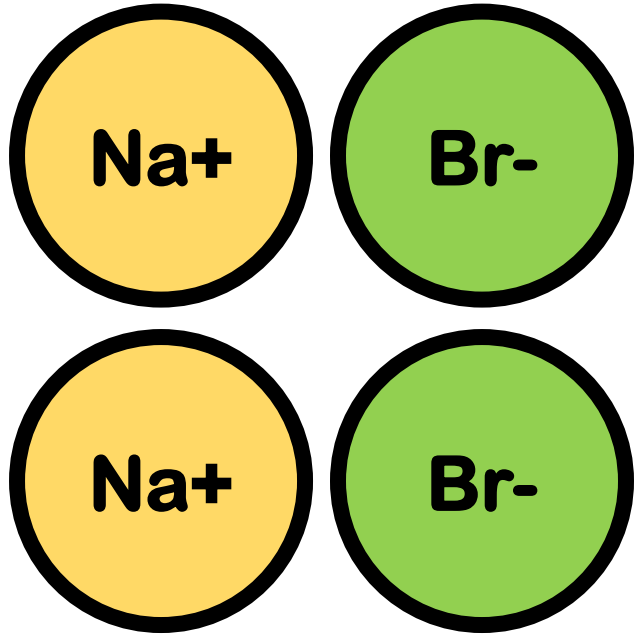
Neutral Compounds

- **Write the lowest possible combo to get neutral**

YES!



NO!



Steps

Eventually we should do this in our head! When asked to show work you will use this "crossing over" method.

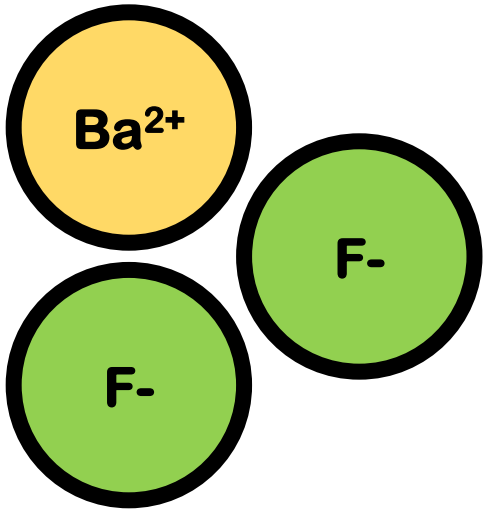
1) Write cation first then anion
2) Write the charges with each symbol
3) The superscript of one atom, becomes the subscript of the other. Use the absolute value! This is "crossing over"
4) Reduce your subscripts to the lowest numbers possible while maintaining the correct ratio
5) You do not need to put the 1s for subscripts!
6) **CAREFUL WITH POLYATOMIC IONS!**

Barium Fluoride

Ba^{2+} F^{-}

1 2

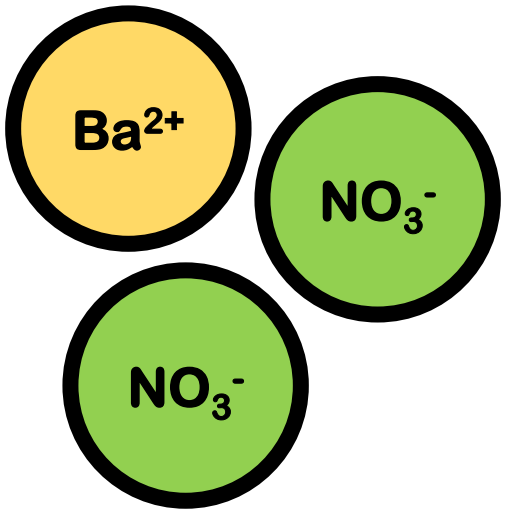
BaF_2



Barium Nitrate

Ba^{2+} $(NO_3)^-$

1 2

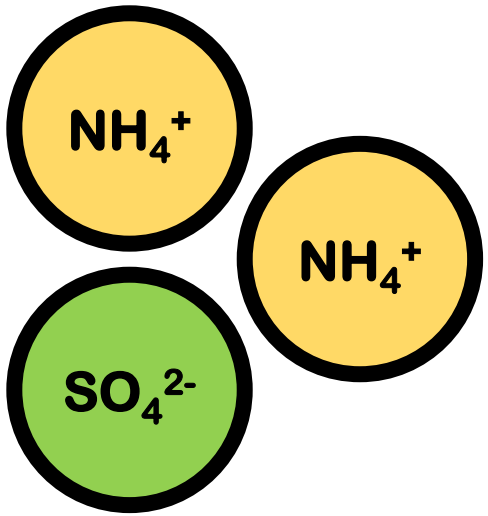


$Ba(NO_3)_2$

Ammonium Sulfate

$(NH_4)^{+}$ $(SO_4)^{2-}$

2 1



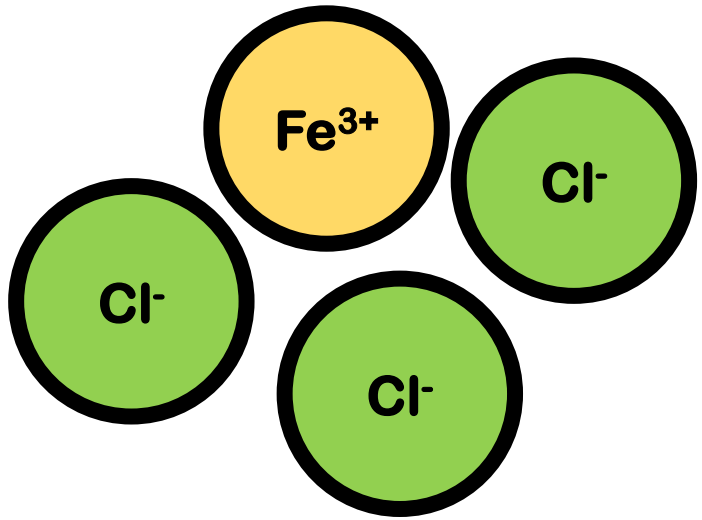
$(NH_4)_2(SO_4)$

Iron(III) Chloride

Fe^{3+} Cl^{-}

1 3

$FeCl_3$

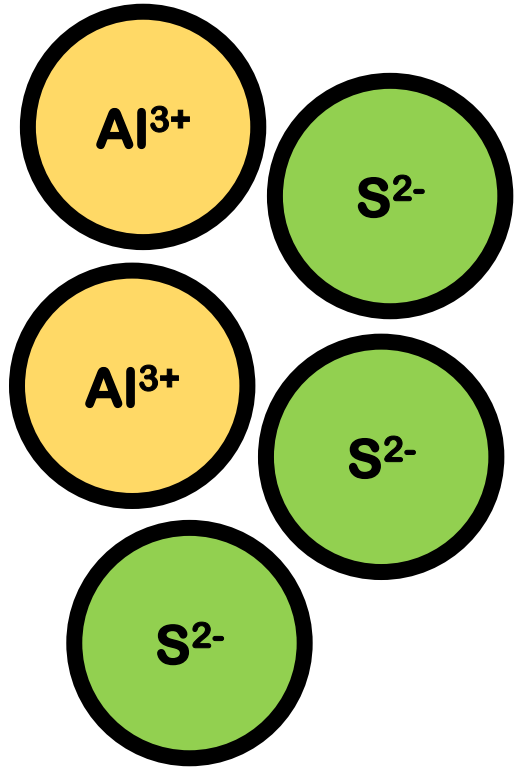


Aluminum Sulfide

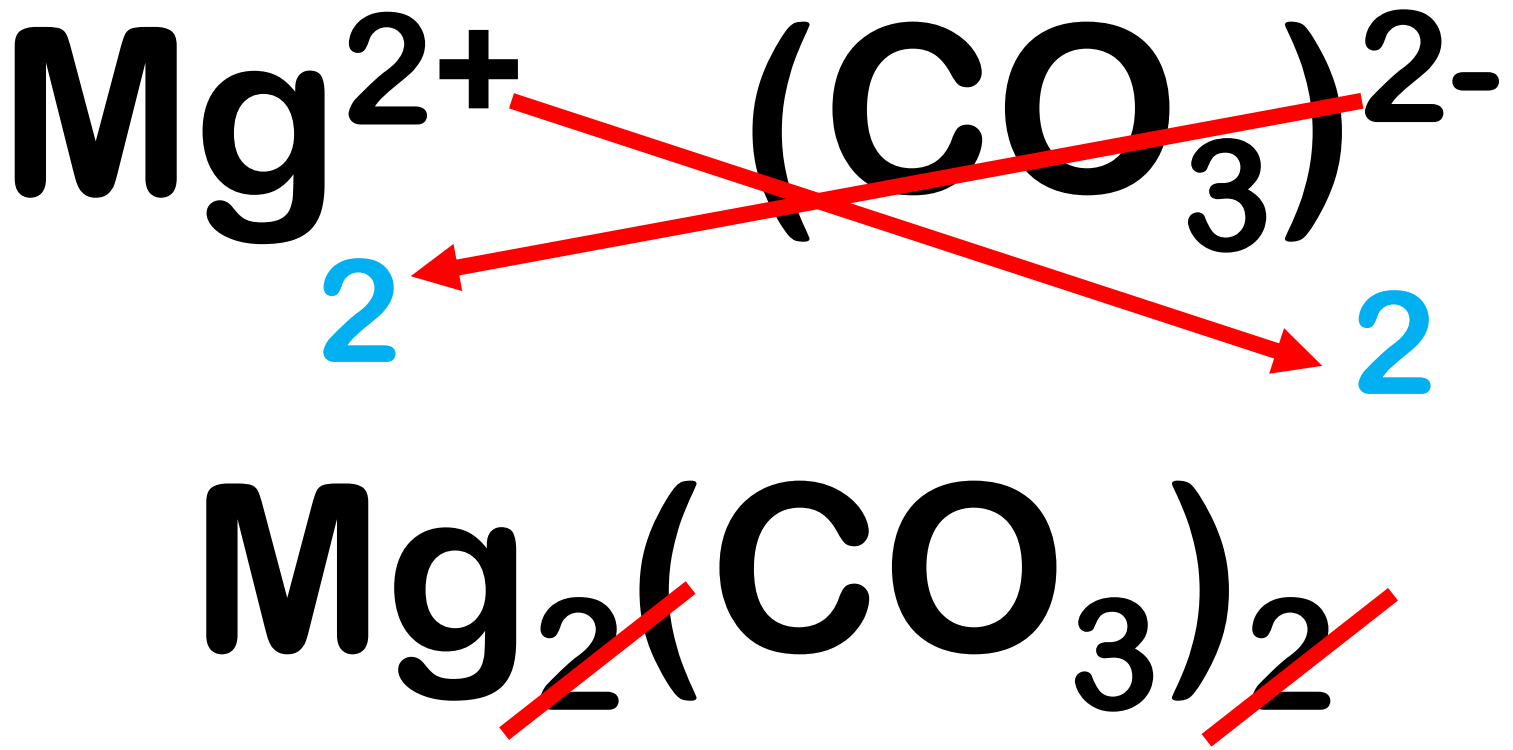
Al^{3+} S^{2-}

2 3

Al_2S_3



Magnesium Carbonate

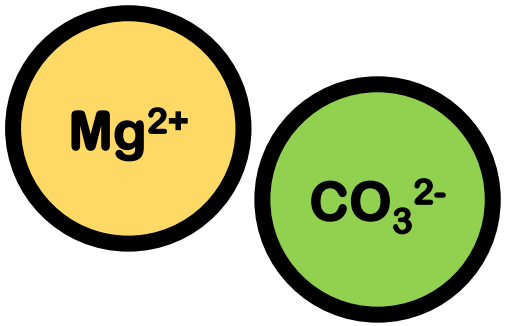


Magnesium Carbonate

Mg^{2+} $(CO_3)^{2-}$

2 2

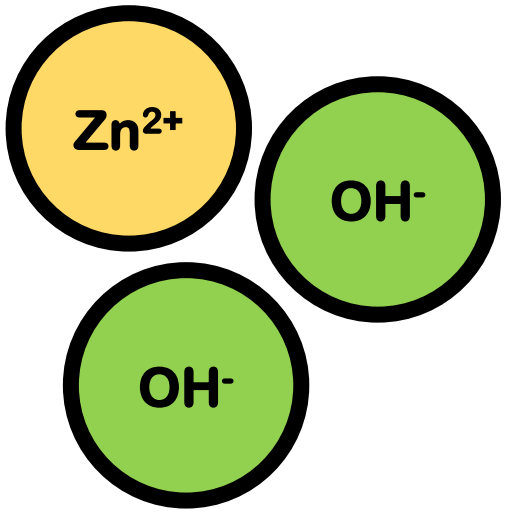
$Mg(CO_3)$



Zinc Hydroxide

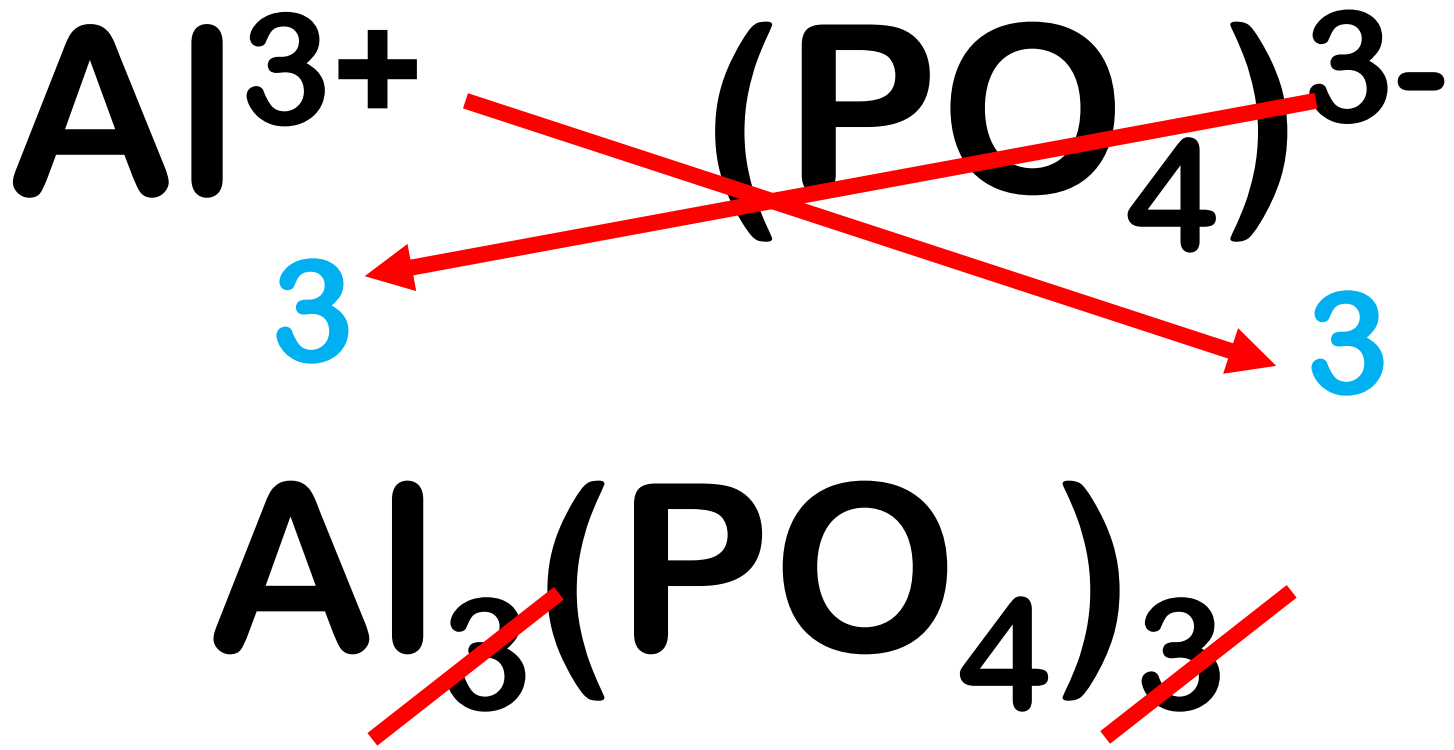
Zn^{2+} $(OH)^-$

1 2



$Zn(OH)_2$

Aluminum Phosphate

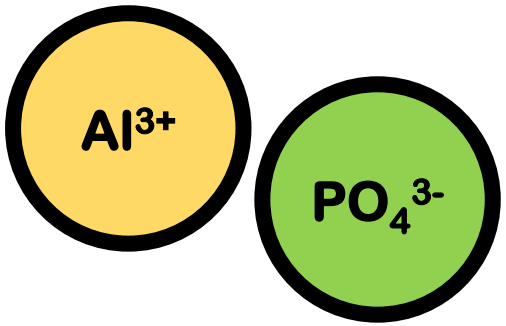


Aluminum Phosphate

Al^{3+} $(PO_4)^{3-}$

3 3

$Al(PO_4)$

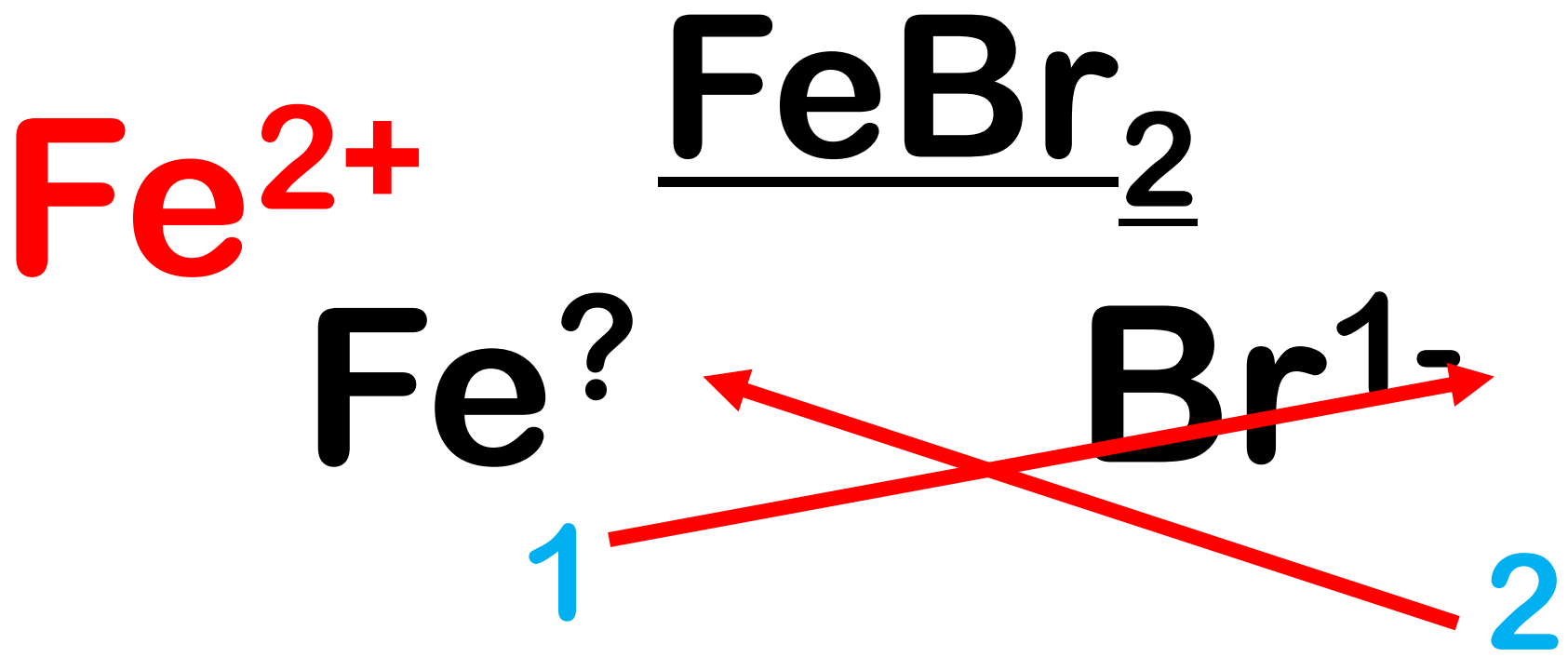


Working Backwards

Sometimes you are given the formula for a compound with a transition metal and you have to work backwards to figure out what charge the transition metal has. It's a number puzzle!

Fe^{2+}

$FeBr_2$

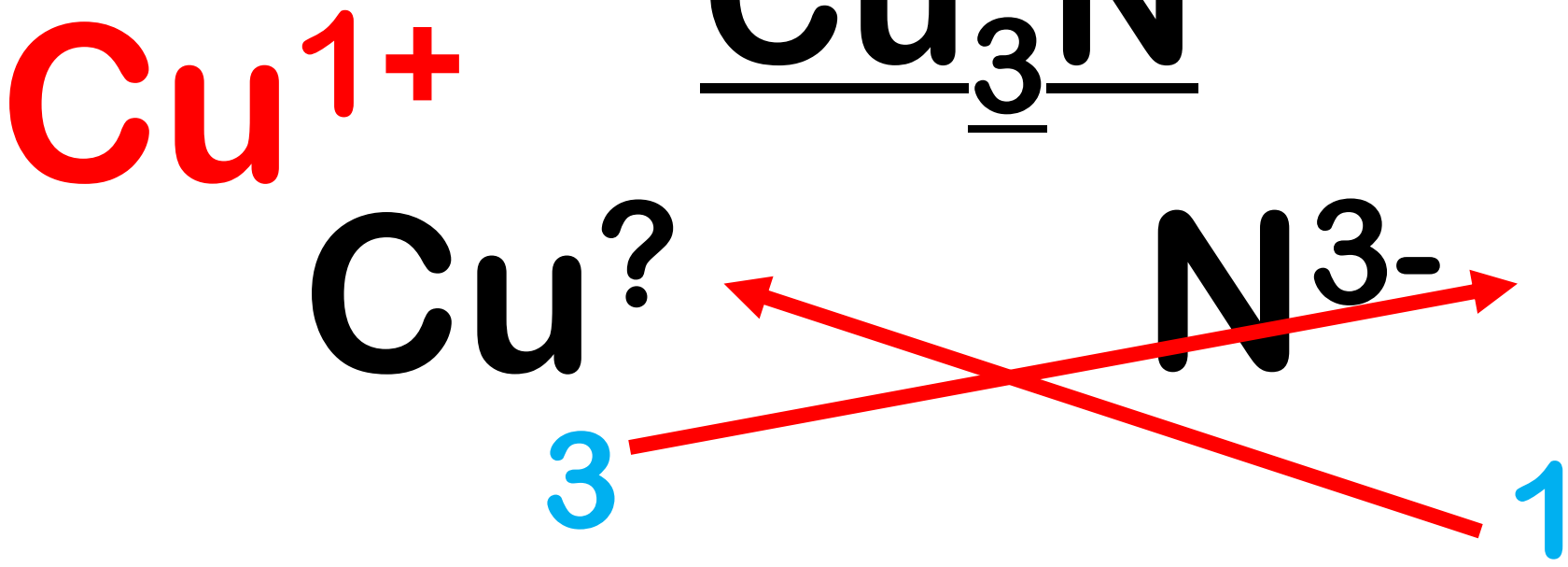


So…Fe^{2+} and Br^{1-} makes….

Iron (II) Bromide

Cu^{1+}

Cu_3N

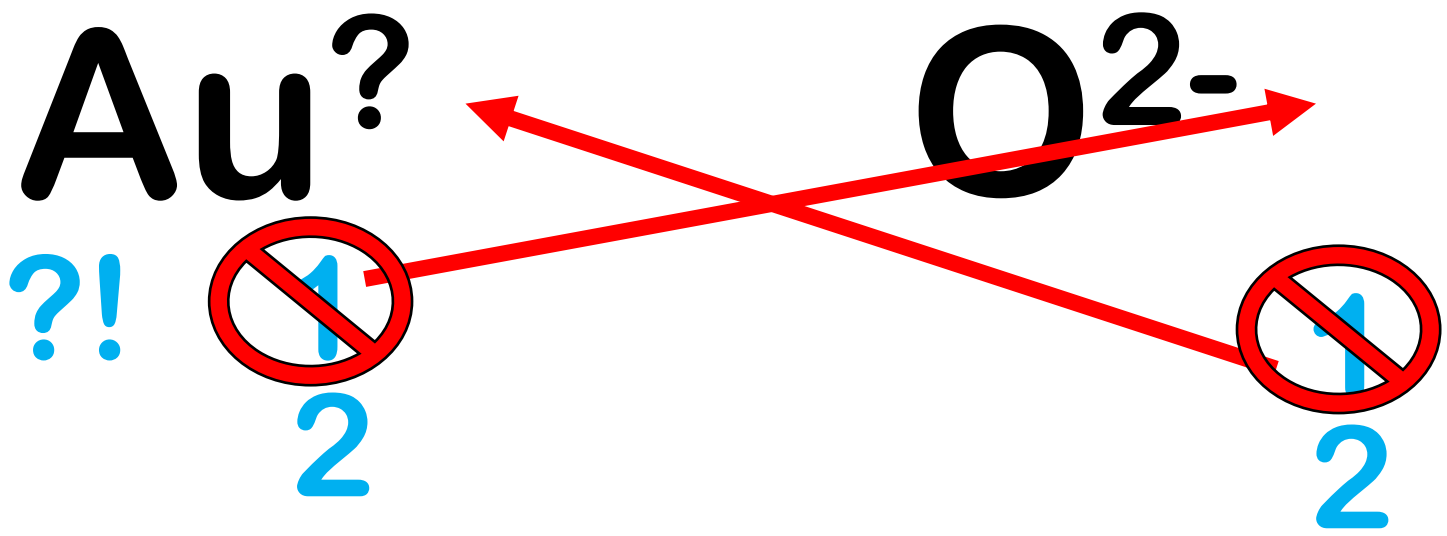


So…Cu^{1+} and N^{3-} makes…

Copper (I) Nitride

AuO

Au^{2+}



It was reduced!!!

Gold (II) Oxide

YouTube Link to This Presentation

https://youtu.be/SqXspzKwIaE