Memorizing Polyatomic Ions and more...

Name_____Per___

By learning the four shaded ions below, **and** knowing that one less oxygen (same charge) turns the name to −*ite*, **and** two less oxygens (if possible) turns the name to *hypo*−xxx−ite **and** one more oxygen (if possible) turns the name to *hypo*−xxx−ite will make learning all eighteen ions in the chart below as easy as learning just four.

hypo- (2 less O)	**-ite** (1 less O)	**-ate**	**per-** (1 more O)
	nitrite NO_2^-	nitrate NO_3^-	
	sulfite SO_3^{2-}	sulfate SO_4^{2-}	
	phosphite PO_3^{3-}	phosphate PO_4^{3-}	
hypochlorite ClO^-	chlorite ClO_2^-	chlorate ClO_3^-	perchlorate ClO_4^-
hypobromite BrO^-	bromite BrO_2^-	bromate BrO_3^-	perbromate BrO_4^-
hypoiodite IO^-	iodite IO_2^-	iodate IO_3^-	periodate IO_4^-

Odd Companions or No Companion	
hydroxide OH^-	
cyanide CN^-	
acetate $C_2H_3O_2^-$	
carbonate CO_3^{2-}	bicarbonate HCO_3^-
permanganate MnO_4^- *purple*	

and don't forget
ammonium NH_4^+

Solubility Rules worth memorizing

ALWAYS SOUBLE IF IN A COMPOUND	EXCEPT WITH
Alkali ions, NH_4^+,	No Exceptions
NO_3^-, $C_2H_3O_2^-$, ClO_4^-, ClO_3^-	No Exceptions
Cl^- , Br^- , I^-	Pb^{2+}, Ag^+
SO_4^{2-}	Pb^{2+}, Ag^+, Hg_2^{2+} Ca^{2+}, Sr^{2+}, Ba^{2+}

Demystifying the Naming of Acids

(refer to page 61 − 62 in text)

Does the anion contain oxygen?

No → hydro-(anion root)-ic

HF	hydrofluoric
HCl	hydrochloric
HBr	hydrobromic
HI	hydroiodic
H_2S	hydrosulfuric
HCN	hydrocyanic

if Yes → check the ending of the root

-ite → (anion root)-ous

nitrous	HNO_2
sulfurous	H_2SO_3
phosphorus	H_3PO_3
chlorous	$HClO_2$
bromous	$HBrO_2$

-ate → (anion root)-ic

nitric	HNO_3
sulfuric	H_2SO_4
phosphoric	H_3PO_4
carbonic	H_2CO_3
acetic	$HC_2H_3O_2$

Memorize the Seven Strong Acids

(all other acids are weak)

HCl	hydrochloric acid
HBr	hydrobromic acid
HI	hydroiodic acid
HNO_3	nitric acid
H_2SO_4	sulfuric acid
$HClO_3$	chloric acid
$HClO_4$	perchloric acid