Common Polyatomic Ions

Memorize these!

-1	
acetate	$C_2H_3O_2^-$
bromate	BrO_3^-
chlorate	ClO_3^-
cyanide	CN^-
hydroxide	OH^-
iodate	IO_3^-
chlorate	ClO_3^-
permanganate	MnO_4^-
thiocyanate	SCN^-

-2	
carbonate	CO_3^{2-}
chromate	CrO_4^{2-}
dichromate	$Cr_2O_7^{2-}$
oxalate	$C_2O_4^{2-}$
peroxide	O_2^{2-}
sulfate	SO_4^{2-}
sulfite	SO_3^{2-}
thiosulfate	$S_2O_3^{2-}$
hydrogen phosphate	HPO_4^{2-}

-3	
phosphate	PO_4^{3-}

+1	
ammonium	NH_4^+

In the sets below, notice the relationship between the prefixes & endings & # of oxygens. These rules apply to other polyatomic ions in addition to the examples below. You don't need to memorize all of these as long as you know the prefixes and endings. I suggest that you just memorize the "ate".

per…ate …ate …ite hypo…ite

periodate	IO_4^-
iodate	IO_3^-
iodite	IO_2^-
hypoiodite	IO^-

pernitrate	NO_4^-
nitrate	NO_3^-
nitrite	NO_2^-
hyponitrite	NO^-

perchlorate	ClO_4^-
chlorate	ClO_3^-
chlorite	ClO_2^-
hypochlorite	ClO^-

The polyatomic ions below all contain the hydrogen ion. When you add an H+ to an existing ion the net charge on the new ion is less negative by one. These ions can be named just by adding the word hydrogen to the beginning of the ion name OR the prefix "bi". 'bi' indicates hydrogen, it does ***not*** *mean two.*

For example, phosphate is PO_4^{3-}. When you add a hydrogen to make hydrogen phosphate, the formula is HPO_4^{2-}. Notice that the charge changed from -3 to -2. Add another hydrogen to get dihydrogen phosphate, $H_2PO_4^-$. You should be able to apply this concept to any of the basic polyatomic ions. Some common ones are listed below.

bicarbonate (hydrogen carbonate)	HCO_3^-
bisulfate (hydrogen sulfate)	HSO_4^-
bisulfide (hydrogen sulfide)	HS^-