

Bipin Pandey  
bpandey@pensacolastate.edu

One of the most challenging thing as an educator for me has been asking students remember or memorize things. I am a science teacher (chemistry) and when writing formulas and names of compounds, it is very important that students know the names of polyatomic ions some of which are listed in the table below.

#### Some Common Polyatomic ions

Nitrate = $\text{NO}_3^-$
Carbonate = $\text{CO}_3^{2-}$
Chlorate = $\text{ClO}_3^{1-}$
Sulfate = $\text{SO}_4^{2-}$
Phosphate = $\text{PO}_4^{3-}$

Up until I knew the mnemonic trick, it used to be very difficult for me to get the message across. Through one of my colleagues, I came to know that there is a helpful mnemonic trick as shown below:

#### Nomenclature Mnemonic for Remembering "ates"

Nick the Camel Ate a Clam Supper and Crepes (for dessert) in Phoenix

	Consonants = Oxygen	Vowels = Charge	Polyatomic Ion
Nick = Nitrate	3	-1	$\text{NO}_3^-$
Camel = Carbonate	3	-2	$\text{CO}_3^{2-}$
Clam = Chlorate	3	-1	$\text{ClO}_3^-$
<i>(Note: Bromate and Iodate are the same as Chlorate.)</i>			
Supper = Sulfate	4	-2	$\text{SO}_4^{2-}$
Crepes = chromate	4	-2	$\text{CrO}_4^{2-}$
Phoenix = Phosphate	4	-3	$\text{PO}_4^{3-}$

The trick here is to look at the word and count the consonants for oxygen and vowels for the charge. For example, using "Nick", the formula starts with N (for Nitrogen) followed by O (oxygen) whose number depends on the consonant in the word "Nick". There are 3 consonants which means we put 3 as subscript after the O. There is 1 vowel in the word "Nick" meaning that charge would be "-1". Everything put together, the formula we get from the word "Nick" is  $\text{NO}_3^-$ . Also the word "ate" tells us that the name for the formula we derive from this mnemonic ends in "ate" like nitrate, carbonate etc.

When I explain this concept using the mnemonic, I find most of my students are able to comprehend the material.

In conclusion, my two cents to my fellow educators like yourself is if and when possible, try and find analogy, mnemonics etc. to teach the materials and you may be able to explain otherwise difficult topics to your students much more easily.