

Pre-AP Chemistry Summer Practice

1. Memorize the formula (letter symbol of element w/numbers) and name for each polyatomic ion as described on the Common Polyatomic Ions chart below. Memorize the charge as part of the formula. Ex: For the phosphate ion shown below, the student should be able to state "phosphate, P, O, 4, 3 negative". This tells you the elements, the number of atoms, and the ion's charge.

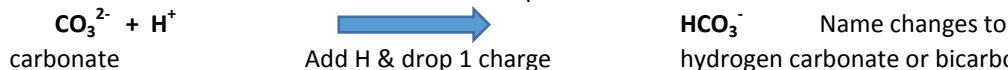
- = -1 charge		Common Polyatomic Ions				-3 charge ions	
-1 charge ions		+ = +1 charge		-2 charge ions		-3 charge ions	
NAME	Formula	NAME	Formula	NAME	Formula	NAME	Formula
nitrate	NO_3^-	sulfate	SO_4^{2-}	phosphate	PO_4^{3-}		
nitrite	NO_2^-	sulfite	SO_3^{2-}	arsenate	AsO_4^{3-}		
hydroxide	OH^-	carbonate	CO_3^{2-}				
bromate	BrO_3^-	chromate	CrO_4^{2-}				
perchlorate	ClO_4^-	dichromate	$\text{Cr}_2\text{O}_7^{2-}$				
chlorate	ClO_3^-	oxalate	$\text{C}_2\text{O}_4^{2-}$				
chlorite	ClO_2^-	peroxide	O_2^{2-}				
hypochlorite	ClO^-	hydrogen phosphate	HPO_4^{2-}				
cyanide	CN^-						
permanganate	MnO_4^-						
hydrogen sulfate	HSO_4^-						
hydrogen carbonate	HCO_3^-						
acetate (2 forms)	$\text{C}_2\text{H}_3\text{O}_2^-$ CH_3COO^-						

+1 charge		+2 charge	
ammonium	NH_4^+	dimercury or mercury (I)	Hg_2^{2+}

Phosphate Ion

element → PO → charge on PO_4 (3-)
 → 4 → # of oxygens

Note: Other names will be encountered. Here is an example of how the same formula can be written differently.



carbonate Add H & drop 1 charge hydrogen carbonate or bicarbonate

2. Know the symbols for elements #1-50 as well as symbols for lead, barium, cesium, uranium, plutonium, and gold. For example, if the teacher says "Magnesium," the student should be able to state "Mg." A list of these elements can be found at the end of the link entitled "Pre-AP Chemistry Summer Practice" on the MISD science homepage.

<http://www.mansfieldisd.org/page.cfm?p=4754>

3. In addition, know that Pb can have a charge of +2 or +4, Fe (+2, +3), and Cu (+1, +2).

4. Know the following prefixes from the metric system.

Prefix	Defintion	Abbreviation
nano-	10^{-9}	n
micro-	10^{-6}	μ
milli-	10^{-3}	m
centi-	10^{-2}	C
kilo-	10^3	k
mega-	10^6	M

5. Logon to Khan Academy or Google "Khan Academy" and watch the following videos entitled:

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| a. "Introduction to Significant Figures" | d. "Multiplying and Dividing with Significant Figures" |
| b. "Rules of Significant Figures" | e. "Unit Conversion Within the Metric System" |
| c. "Addition and Subtraction with Significant Figures" | |

Names and Symbols for Common Elements

H	Hydrogen	Sc	Scandium	Zr	Zirconium
He	Helium	Ti	Titanium	Nb	Niobium
Li	Lithium	V	Vanadium	Mo	Molybdenum
Be	Beryllium	Cr	Chromium	Tc	Technetium
B	Boron	Mn	Manganese	Ru	Ruthenium
C	Carbon	Fe	Iron	Rh	Rhodium
N	Nitrogen	Co	Cobalt	Pd	Palladium
O	Oxygen	Ni	Nickel	Ag	Silver
F	Fluorine	Cu	Copper	Cd	Cadmium
Ne	Neon	Zn	Zinc	In	Indium
Na	Sodium	Ga	Gallium	Sn	Tin
Mg	Magnesium	Ge	Germanium	Sb	Antimony
Al	Aluminum	As	Arsenic	Te	Tellurium
Si	Silicon	Se	Selenium	I	Iodine
P	Phosphorus	Se	Selenium	Xe	Xenon
S	Sulfur	Br	Bromine	Pb	Lead
Cl	Chlorine	Kr	Krypton	Ba	Barium
Ar	Argon	Rb	Rubidium	U	Uranium
K	Potassium	Sr	Strontium	Pu	Plutonium
Ca	Calcium	Y	Yttrium	Au	Gold
				Cs	Cesium