



SHS LEARNING ACTIVITY

CHEM1-05-02

Name: _____ Score/Mark: _____

Grade and Section: _____ Date: _____

Strand: STEM ABM HUMSS ICT (TVL Track)Type of Activity : Concept Notes Skills: Exercise/Drill Illustration Laboratory Report Essay/Task Report Other: _____Activity Title: 05-02.Common cations and anions v03

Learning Target: To familiarize with the most typical inorganic ions

Authors/References: Victor Sojo, Jerome Sadudaquil / Chang, Chemistry 10th ed., pp. 60–61; Petrucci, Chemistry 10th ed., pp. 88-91

CATIONS WITH A UNIQUE CHARGE simply receive the name of their element, such as the silver ion, Ag^+ . Here are the most significant ones:**Only 1+:** All in Group 1 of the periodic table (Li^+ , Na^+ , K^+ , Rb^+ , Cs^+), Ag^+ .**Only 2+:** All in Group 2 (Be^{2+} , Mg^{2+} , Ca^{2+} , Sr^{2+} , Ba^{2+}), Cd^{2+} , Zn^{2+} .**Only 3+:** Al^{3+} .**CATIONS WITH TWO TYPICAL CHARGES**

Here are some useful pairs to remember:

Cu^+	copper(I)	cuprous	Au^+	gold(I)	aurous
Cu^{2+}	copper(II)	cupric	Au^{3+}	gold(III)	auric
Hg_2^{2+}	mercury(I)	mercurous	Fe^{2+}	iron(II)	ferrous
Hg^{2+}	mercury(II)	mercuric	Fe^{3+}	iron(III)	ferric
Sn^{2+}	tin(II)	stannous	Co^{2+}	cobalt(II)	cobaltous
Sn^{4+}	tin(IV)	stannic	Co^{3+}	cobalt(III)	cobaltic
Pb^{2+}	lead(II)	plumbous	Cr^{2+}	chromium(II)	chromous
Pb^{4+}	lead(IV)	plumbic	Cr^{3+}	chromium(III)	chromic

ANIONS are not as easy to classify, so let's just group them loosely:

F^-	fluoride	OH^-	hydroxide	N^{3-}	nitride
Cl^-	chloride	O^{2-}	oxide	NO_2^-	nitrite
Br^-	bromide	O_2^{2-}	peroxide	NO_3^-	nitrate
I^-	iodide	S^{2-}	sulfide	MnO_4^-	permanganate
ClO^-	hypochlorite	SO_3^{2-}	sulfite	CrO_4^{2-}	chromate
ClO_2^-	chlorite	SO_4^{2-}	sulfate	$\text{Cr}_2\text{O}_7^{2-}$	dichromate
ClO_3^-	chlorate	HSO_3^-	bisulfite	CO_3^{2-}	carbonate
ClO_4^-	perchlorate	HSO_4^-	bisulfate	HCO_3^-	bicarbonate
PO_4^{3-}	phosphate	HPO_4^{2-}	hydrogen phosphate	H_2PO_4^-	dihydrogen phosphate

SOME STRANGE IONSHydrogen can be either a cation (H^+ , proton) or an anion (H^- , hydride). NH_4^+ , ammonium, is the only cation discussed here that is not a metal.We saw the peroxide O_2^{2-} and mercurous Hg_2^{2+} ions above. **Do not**"simplify" them to O^- and Hg^+ ! This is incorrect! They must stay as pairs.**Exercise:** can you predict the formula of the ion iodate? Hint: Group 17.