

Name _____ Period _____

CP Chemistry of the Earth

Assignment 4P – Unit 4 Review – Ionic Bonding

30 Points

Complete the following questions based on the assignments and presentation from Unit 4

Group Number	1A 1	2A 2	1B – 10B	3A 13	4A 14	5A 15	6A 16	7A 17	8A 18
Valance Electrons (e ⁻)	1	2	2	3	4	5	6	7	8
Lewis Dot Structure	$\cdot X \cdot$	$\cdot X \cdot$	$\cdot X \cdot$	$\cdot X \cdot$	$\cdot X \cdot$	$\cdot X \cdot$	$\cdot X \cdot$	$\cdot X \cdot$	$\cdot X \cdot$

Complete the following chart based on the chart above

Element Symbol	Al	Cu ³⁺	O	Br		N
Element Name	Aluminum			Bromine	Calcium	Nitrogen
Group Number	13/3A			17/7A		15/5A
Valance Electrons	3			7		5
Lewis Dot Structure	$\begin{array}{c} \circ \\ \text{Al} \circ \\ \circ \end{array}$		$\begin{array}{c} \circ \\ \text{Br} \circ \\ \circ \end{array}$	$\begin{array}{c} \circ \circ \\ \text{Br} \circ \circ \\ \circ \circ \end{array}$		$\begin{array}{c} \circ \circ \\ \text{N} \circ \\ \circ \end{array}$
Ion Charge	+3			-1		-3
Lose/Gain e ⁻	lose 3e ⁻			gain 1e ⁻		gain 3e ⁻
Ion Val Electrons	0			8		8

Complete the following ionic compound nomenclature

Ion	Ion Name*	Ion Charge**	Cation/Anion	Binary/Poly Ion	Lose/Gain e ⁻ ***
Li ¹⁺			(+) (-)	X ⁺ or Y ⁻ YO ₂ ⁻	+ : lose # - : gain #
N ³⁻	Nitride Ion	3A/-3	Anion	Binary	gain 3e ⁻
CrO ₄ ²⁻	Chromate Ion	-2	Anion	Polyatomic	gain 2e ⁻
NO ₃ ¹⁻					
BrO ₂ ¹⁻	Bromite Ion	-1	Anion	Polyatomic	gain 1e ⁻
PO ₃ ³⁻	Phosphite Ion	-3	Anion	Polyatomic	gain 3e ⁻

* Chart ** Ion charge chart (4C)

Complete the following ionic compounds

look at P T group

Elements	Li ⁺	O ²⁻
Ion Charge	(IA) +1	(6A) -2
Cross Method	$\begin{array}{c} +1 \quad -2 \\ \text{Li} \quad \text{O} \end{array}$	
Ionic Formula	Li ₂ O	

Elements	Al ³⁺	CO ₃ ²⁻
Ion Charge	(3A) +3	-2
Cross Method	$\begin{array}{c} +3 \quad -2 \\ \text{Al} \quad \text{CO}_3 \end{array}$	
Ionic Formula	Al ₂ (CO ₃) ₃	

Find charge!

W ⁶⁺	CrO ₄ ²⁻
+6	-2
$\begin{array}{c} +6 \quad -2 \\ \text{W} \quad \text{CrO}_4 \end{array}$	
W(CrO ₄) ₃	

Pb ⁴⁺	SO ₄ ²⁻
$\begin{array}{c} +4 \quad -2 \\ \text{Pb} \quad \text{SO}_4 \end{array}$	
Pb(SO ₄) ₂	

Reduce

$2:2 \rightarrow 1:1$
 $2:4 \rightarrow 1:2$
 $3:6 \rightarrow 1:2$
 $2:6 \rightarrow 1:3$

Name the following ionic compounds

VCl ₃	
Ion	Ion Name
V ³⁺	Vanadium(III) ion
Cl	Chloride ion
Ionic Compound Name	
Vanadium(III) Chloride	

Cu ₃ P ₂	
Ion	Ion Name
Cu ²⁺	
P	
Ionic Compound Name	

Mg(BrO ₃) ₂	
Ion	Ion Name
Mg	
BrO ₃ ¹⁻	
Ionic Compound Name	

K ₂ C ₂ O ₄	
Ion	Ion Name
K	
C ₂ O ₄ ²⁻	
Ionic Compound Name	

NH ₄ OH	
Ion	Ion Name
NH ₄ ¹⁺	Ammonium ion
OH ¹⁻	Hydroxide ion
Ionic Compound Name	
Ammonium Hydroxide	

Pb(SO ₃) ₂	
Ion	Ion Name
Pb ⁴⁺	Lead(IV) ion
SO ₃ ²⁻	Sulfite ion
Ionic Compound Name	
Lead(IV) Sulfite	

Trans. Metal

Poly. ion = no roman num.