Name Selected Answers + Notes Period _____

College Prep Chemistry of the Earth

Assignment 4M – Writing Double Replacement Reactions w/ Polyatomic Ions 20 Points

For the following reactions, write the products of each reaction following the template provided. Show work for ionic compound

Reaction	$HBr + Ca(OH)_2 \rightarrow$ ___ + ___					
AB	+	CD	→	AD	+	CB
	+		→		+	

	A	D	C	B
Element or Ion				
Ion Charge				
Cross Method Final Formula				

Reaction	$H_3N + Al(OH)_3 \rightarrow$ ___ + ___					
AB	+	CD	→	AD	+	CB
	+		→		+	

	A	D	C	B
Element or Ion				
Ion Charge				
Cross Method Final Formula				

Acid

HX

H_2SO_4

$H|SO_4$

Reaction	$H_2SO_4 + Cu(OH)_3 \rightarrow$ ___ + ___ Cu = +3					
AB	+	CD	→	AD	+	CB
H_2SO_4 (A|B)	+	$Cu(OH)_3$ (C|D)	→	HOH	+	$Cu_2(SO_4)_3$

	A	D	C	B
Element or Ion	H	OH	Cu	SO_4
Ion Charge	+1	−1	+3	−2
Cross Method Final Formula	H OH HOH		Cu (SO_4) $Cu_2(SO_4)_3$ ~~Cu_2SO_3~~	

Base

YOH

$Cu(OH)_3$

$Cu|OH$

Water

HOH

H: Acid OH: Base

min. work

final formula

Reaction	$H_2CrO_4 + Pb(OH)_4 \rightarrow$ __ + __ Pb = +4					
AB	+	CD	→	AD	+	CB
	+		→		+	

	A	D	C	B
Element or Ion				
Ion Charge				
Cross Method Final Formula				

Reaction	$MgNO_3 + CrBr_2 \rightarrow$ ___ + ___ Cr = +2
AB + CD → AD + CB	
+ → +	

	A	D	C	B
Element or Ion				
Ion Charge				
Cross Method Final Formula				

Reaction	$V_2(CO_3)_3 + Li_3N \rightarrow$ ___ + ___ V = +3
AB + CD → AD + CB	
+ → +	

	A	D	C	B
Element or Ion				
Ion Charge				
Cross Method Final Formula				

$Fe(ClO_3)_3$ — A | B — Fe | ClO_3

$Pd(CN)_2$ — C | D — Pd | CN

Reaction	$Fe(ClO_3)_3 + Pd(CN)_2 \rightarrow$ _ + _ Fe = +3 Pd = +2
AB + CD → AD + CB	
$Fe(ClO_3)_3$ + $Pd(CN)_2$ → $Fe(CN)_3$ + $Pd(ClO_3)_2$	

	A	D	C	B
Element or Ion	Fe	CN	Pd	ClO_3
Ion Charge	+3	-1	+2	-1
Cross Method Final Formula	$Fe(CN)_3$		$Pd(ClO_3)_2$	

min work — formula

Reaction	$W(S_2O_3)_3 + Fe_3(PO_4)_2 \rightarrow$ _ + _ W = +6 Fe = +2
AB + CD → AD + CB	
$W(S_2O_3)_3$ + $Fe_3(PO_4)_2$ → $W(PO_4)_2$ + FeS_2O_3	

	A	D	C	B
Element or Ion	W	PO_4	Fe	S_2O_3
Ion Charge	+6	-3	+2	-2
Cross Method Final Formula	$W_3(PO_4)_6$ $W(PO_4)_2$		$Fe_2(S_2O_3)_2$ FeS_2O_3	

$W(S_2O_3)_3$ — A | B — W | S_2O_3

$Fe_3(PO_4)_2$ — C | D — Fe | PO_4

Note: $(CN)_2 \neq CN_2$ [needs ( )]

$(CN)_2$: 2C + 2N CN_2: 1C + 2N