

Name: Key
Bk: _____ Date: _____

Chemistry 11 TYPES OF CHEMICAL REACTIONS

THERE ARE SIX MAJOR TYPES OF CHEMICAL REACTIONS OF IMPORTANCE TO CHEMISTRY 11:

combination

Type 1. SYNTHESIS Involves the "synthesis" of two or more substances to form a single compound.

GENERIC EQUATION: $A + B \rightarrow AB$

Examples: $S_8(s) + 8H_2(g) \rightarrow 8H_2S(g)$
 $C(s) + O_2(g) \rightarrow CO_2(g)$

Type 2. DECOMPOSITION Involves the breaking down "decomposing" of a single compound into simpler substances.

GENERIC EQUATION: $AB \rightarrow A + B$

Examples: $2Ag_2O(s) + \text{heat} \rightarrow 4Ag(s) + O_2(g)$
 $2H_2O(l) + \text{heat} \rightarrow 2H_2(g) + O_2(g)$

Type 3. SINGLE REPLACEMENT Involves one atom in a compound being replaced by another.

GENERIC EQUATIONS: $M + AB \rightarrow MB + A$
 $N + AB \rightarrow AN + B$

NOT ALL ELEMENTS CAN "BUMP" THE OTHER OUT OF A CHEMICAL COMPOUND. TO DETERMINE WHETHER OR NOT A BUMPING WILL OCCUR YOU MUST REFERR TO THE FOLLOWING ACTIVITY SERIES:

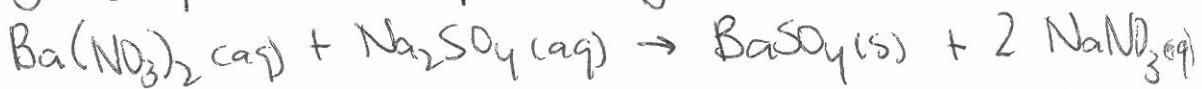
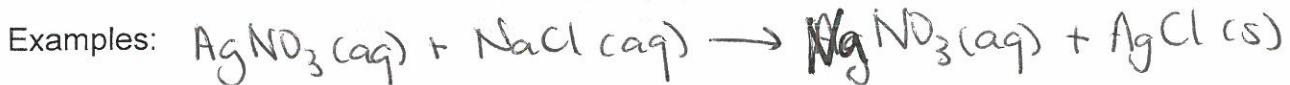
Examples: $CuCl_2(aq) + Fe(s) \rightarrow FeCl_2(aq) + Cu(s)$
 $2Kl(aq) + Cl_2(g) \rightarrow 2KCl(aq) + I_2(g)$

an atom can only bump out another }
atom if it has greater activity on the }
table. (higher up on the table)

ACTIVITY SERIES	
METALS	NONMETALS
	decreasing activity
lithium	fluorine
potassium	chlorine
calcium	bromine
sodium	iodine
magnesium	
aluminum	
zinc	
chromium	
iron	
nickel	
tin	
lead	
hydrogen	
copper	
silver	
mercury	
platinum	
gold	

Type 4. DOUBLE REPLACEMENT involves a complete exchange of atoms between two different compounds.

GENERIC EQUATION: $AB + XY \rightarrow AY + XB$



TYPE 5. NEUTRALIZATION (Specialized DOUBLE REPLACEMENT) involves

the reaction of an acid + a base to form salt + water

GENERIC EQUATION: $\text{HB} + \text{AOH} \rightarrow \text{AB} + \text{H}_2\text{O}$



TYPE 5. COMBUSTION is the general term for a rapid rxn with oxygen to produce a lot of heat (exothermic)

HYDROCARBON: a compound containing C's + H's

GENERIC EQUATION: $\text{C}_x\text{H}_y + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$

