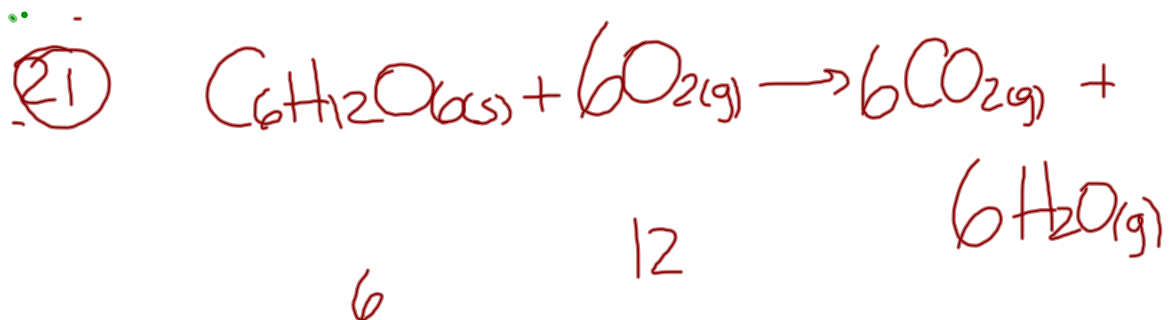


## Homework



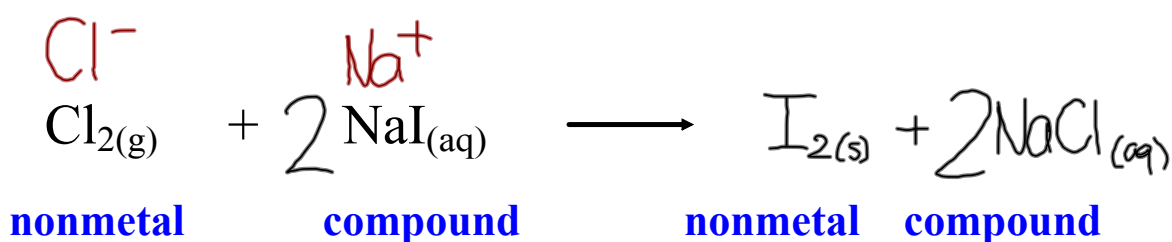
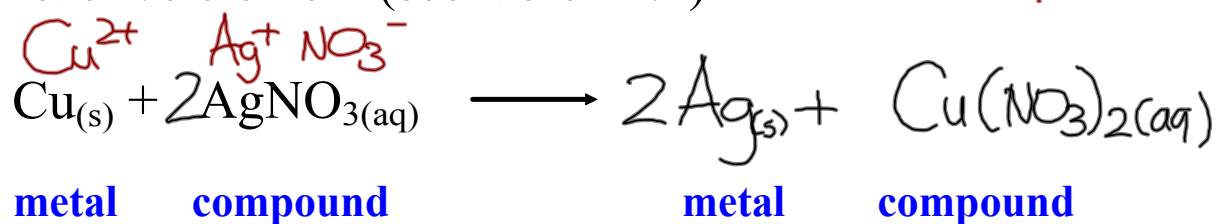
# Chemical Reactions

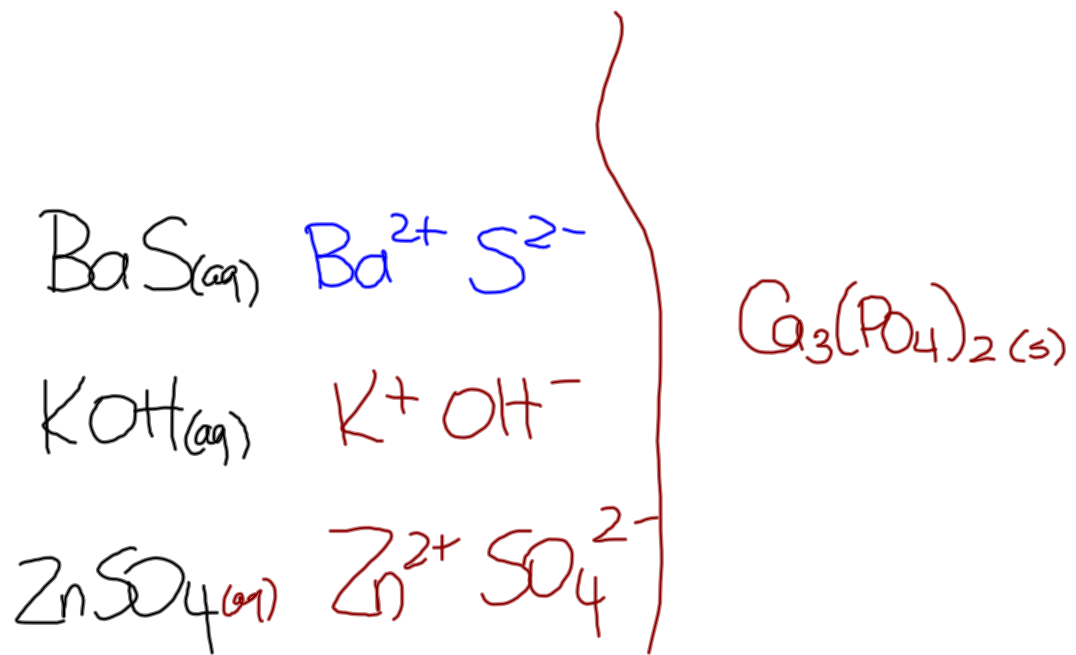
## IV. Single Replacement Reaction

Reaction of an element with a compound to produce a new element and an ionic compound.

⇒ usually occurs in aqueous solution

⇒ reaction will only occur if the element is replacing a less reactive element (see table 11.2)





	$\text{Cl}^- \text{ Br}^- \text{ I}^-$	$\text{S}^{2-}$		$\text{NO}_3^-$
High (aq)		Group 1, $\text{NH}_4^+$ , Group 2		all
Low (s)		most		none

## FORMATION

elements  $\rightarrow$  compound

## DECOMPOSITION

compound  $\rightarrow$  elements

## COMBUSTION

element/  
compound +  $O_2(g)$   $\xrightarrow{\text{"burned"}}$  most common oxides  
(gases)

## SINGLE REPLACEMENT

element + compound  $\rightarrow$  element + compound  
(solution)

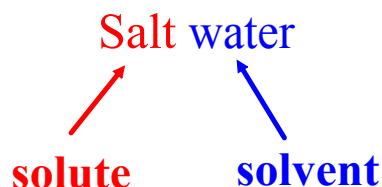
## Chemical Reactions in Solution

**Solution** - homogeneous (uniform) mixture of a solute and a solvent.

⇒ solute - substance dissolved

⇒ solvent - substance doing dissolving (liquid)

Ex.



If the amount of solute that can dissolve in a solvent is large, then the solute is said to have a *high solubility*.

If the amount of solute that can dissolve in a solvent is small, then the solute is said to have a *low solubility*.

Solid substances formed from reactions in solutions are known as **precipitates**.

## Solubility Rules

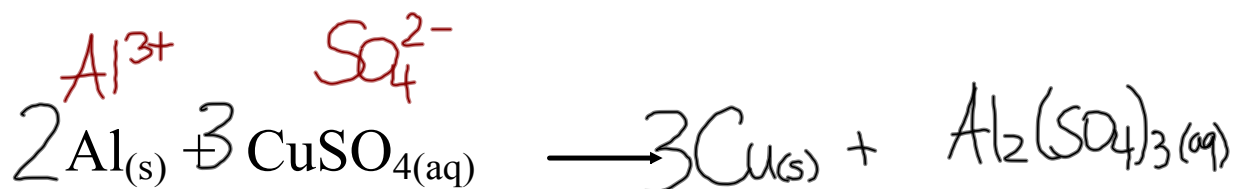
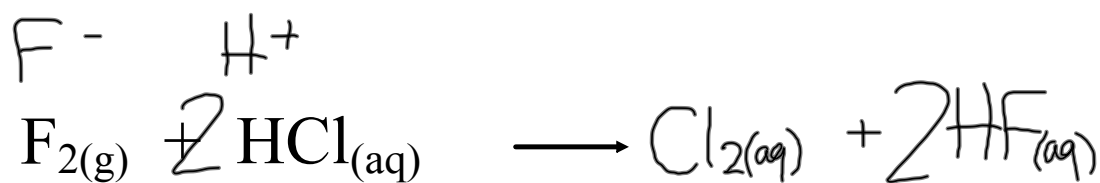
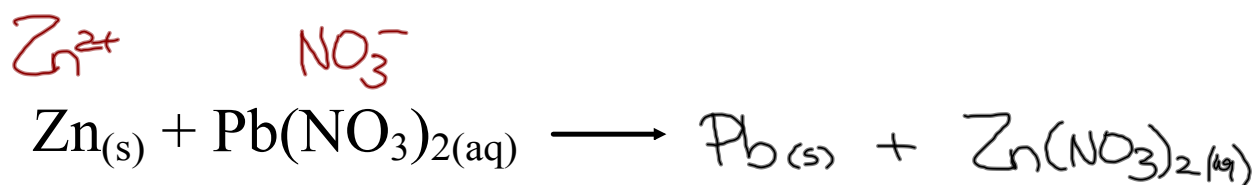
- Group 1 Compounds have a high solubility
- Compounds containing ammonium ( $\text{NH}_4^+$ ) have a high solubility
- All acids have a high solubility
- Elements have a low solubility (except chlorine)
- Solubility varies for molecular compounds

**Table 11.2****Activity Series of Metals**

	Name	Symbol
Decreasing reactivity ↓	Lithium	Li
	Potassium	K
	Calcium	Ca
	Sodium	Na
	Magnesium	Mg
	Aluminum	Al
	Zinc	Zn
	Iron	Fe
	Lead	Pb
	(Hydrogen)	(H) <sup>+</sup>
	Copper	Cu
	Mercury	Hg
	Silver	Ag



## Practice Problems



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