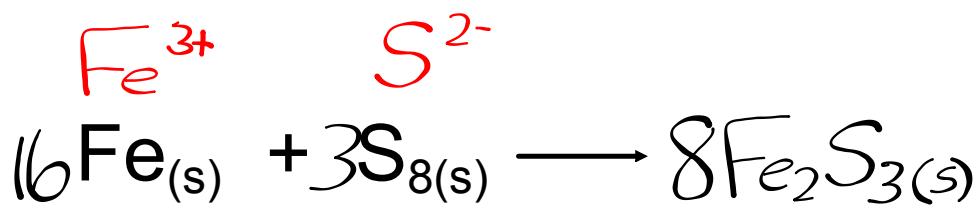
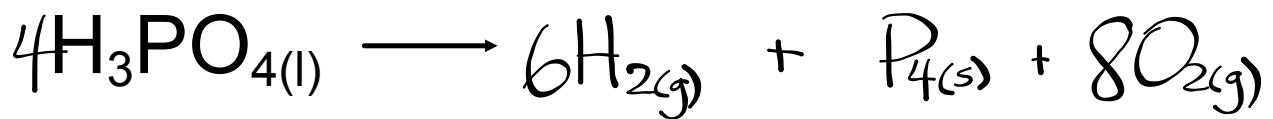
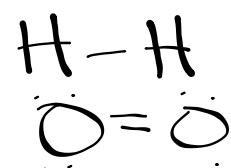


## Warm Up





Br Honai IF (2)  
P (4)  
S (8)

## Check Homework - Worksheet

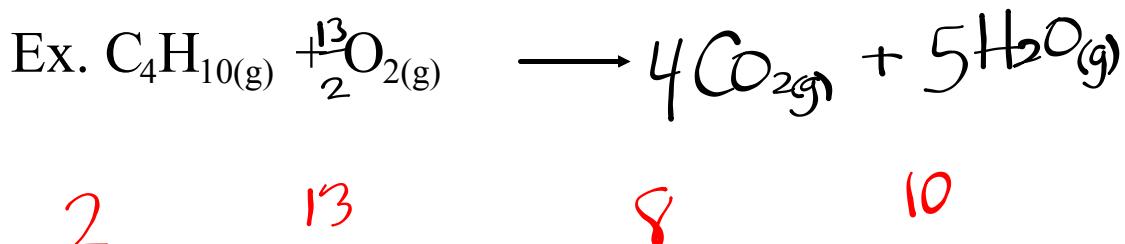
# Chemical Reactions

## III. Combustion Reaction

A complete combustion reaction is the burning of a substance with oxygen to produce the most common oxides of the elements in the substance being burned.

### Most Common Oxides:

- Carbon :  $\text{CO}_{2(g)}$
- Hydrogen:  $\text{H}_2\text{O}_{(g)}$
- Sulfur:  $\text{SO}_{2(g)}$
- Nitrogen:  $\text{NO}_{2(g)}$
- A metal: Oxide of metal with most common ion charge



## FORMATION

elements → Compound

## DECOMPOSITION

Compound → elements

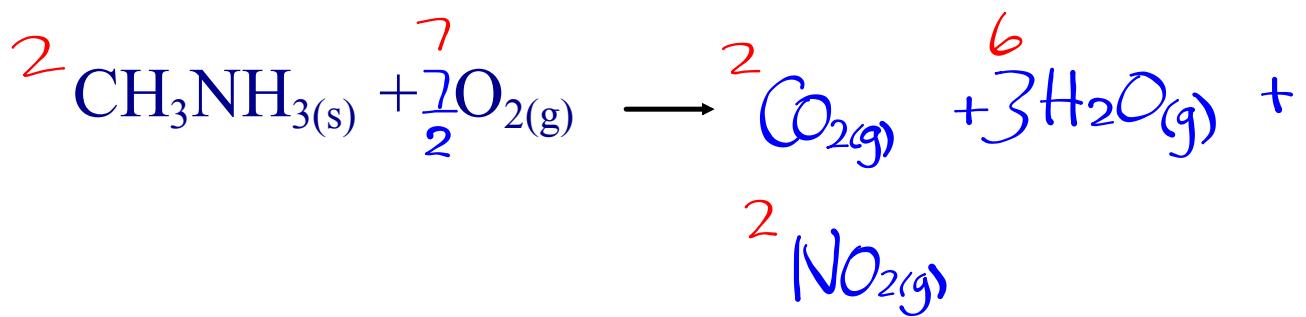
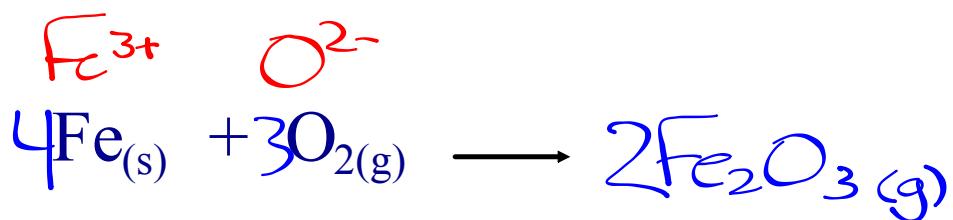
## COMBUSTION

element/compound +  $O_{2(g)}$  → most common  
oxides

22.4 L/mol



$$5.75 \cancel{\text{mol O}_2} \times \frac{22.4 \text{ L O}_2}{1 \cancel{\text{mol O}_2}} = \underline{3.89 \text{ L O}_2}$$



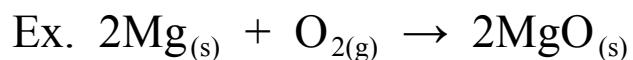
# Homework

- p. 331 #13, 14**
- p. 332 #15, 16**
- p. 337 #20, 21**

# Chemical Reactions

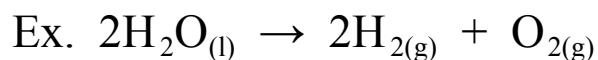
## I. Formation Reactions

elements              compound



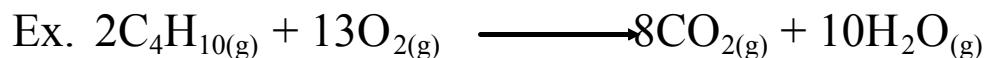
## II. Decomposition Reactions

compound              elements



## III. Combustion Reaction

substance + oxygen     $\longrightarrow$  most common oxides



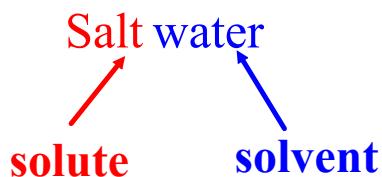
## Chemical Reactions in Solution

**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

# 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)

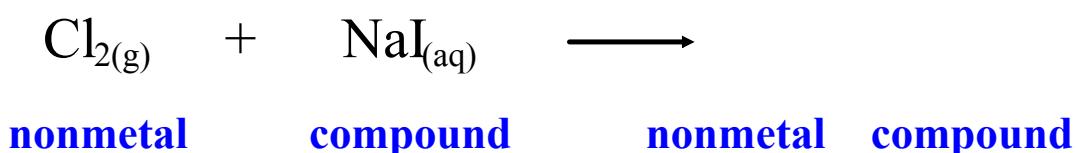
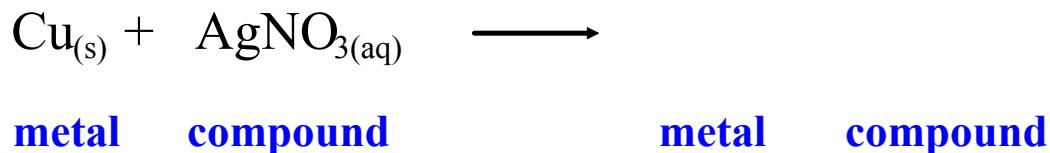


Table 11.2		
Activity Series of Metals		
	Name	Symbol
Decreasing reactivity ↓	Lithium	Li
	Potassium	K
	Calcium	Ca
	Sodium	Na
	Magnesium	Mg
	Aluminum	Al
	Zinc	Zn
	Iron	Fe
	Lead	Pb
	(Hydrogen)	(H) <sup>+</sup>
	Copper	Cu
	Mercury	Hg
	Silver	Ag

## Practice Problems



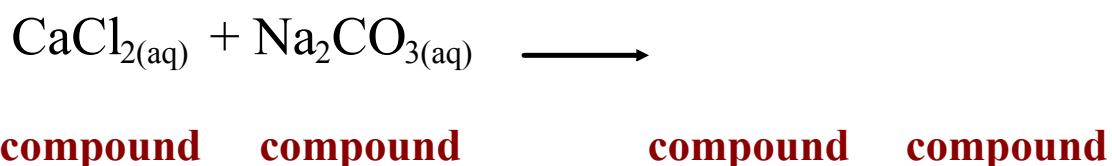
p. 334 #17

# Chemical Reactions

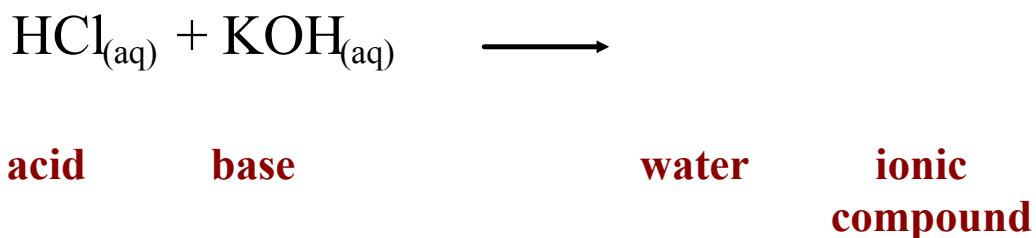
## V. Double Replacement Reaction

Reaction that occurs between two ionic compounds in solution. Ions will "change partners".

⇒ if one of the products has low solubility, it may form a precipitate (solid). This double replacement reaction is called **precipitation**.



A second type of double replacement reaction is **neutralization** reaction, which is a reaction between an acid and a base, to form water and an ionic compound.



## Practice Problems



**p. 335      #18,19  
p. 339      #22-27**

## Combustion Reactions

Write a balanced chemical equation for the following combustion reactions:

