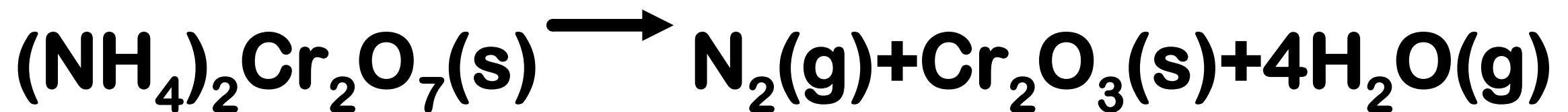


# Chemical Equations

represent identities and relative amounts of reactants and products in a reaction

example:



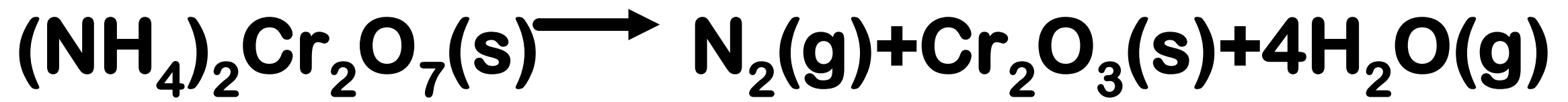
# indications of a reaction

- \* **release of energy as heat and light**
- \* **production of a gas**
- \* **formation of a precipitate (solid that separates from the solution)**
- \* **color change**

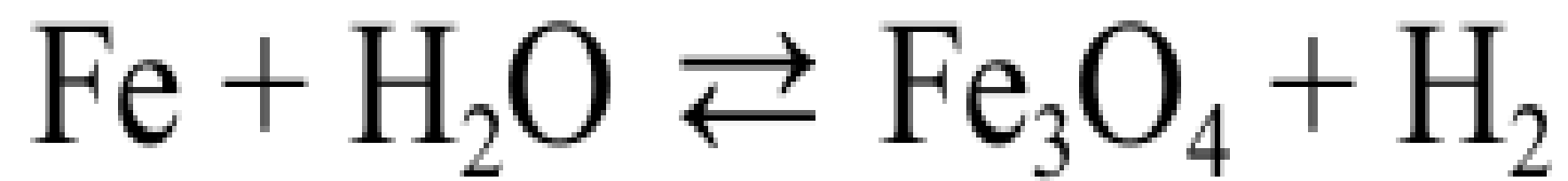
**these are only clues to a reaction**

# **characteristics of chemical reactions**

- \* represent known facts**
- \* must contain correct formulas**
- \* law of conservation of mass must be satisfied**
- \* coefficients are used to balance an equation**



**An equation is balanced when the same number of atoms of each element appear on each side of the equation.**



$\rightarrow$  **result of a reaction**

$\rightleftharpoons$  **reversible reaction**

$(s)$  **solid or precipitate**

$\downarrow$  **precipitate**

$(l)$  **liquid**

$(aq)$  **solution in water**

$(g)$  **gas**

$\uparrow$  **gaseous product**

$\xrightarrow{\Delta}$  *or*  $\xrightarrow{\text{heat}}$  **reactants are heated**

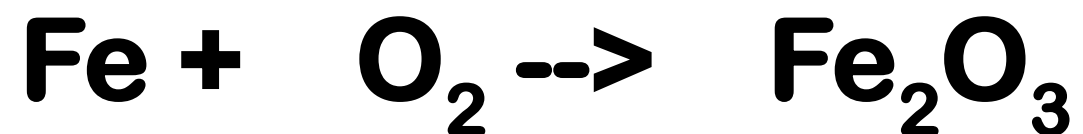
$\xrightarrow{2 \text{ atm}}$  **pressure of the reaction**

$\xrightarrow{\text{pressure}}$  **pressure greater than atmospheric**

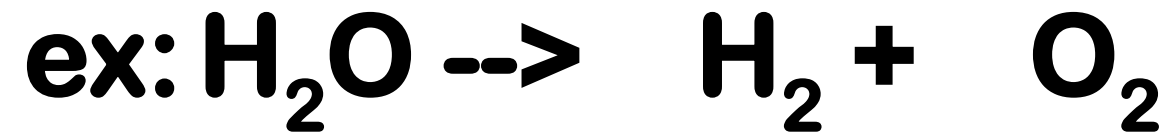
$\xrightarrow{0^\circ \text{ C}}$  **temperature of the reaction**

$\xrightarrow{\text{MnO}_2}$  **catalyst used in reaction**

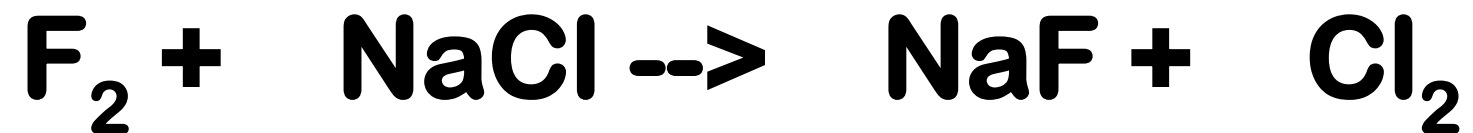
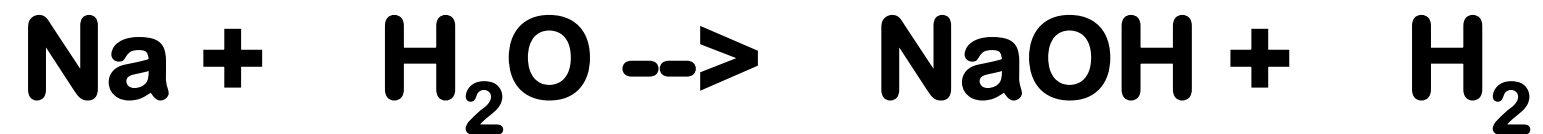
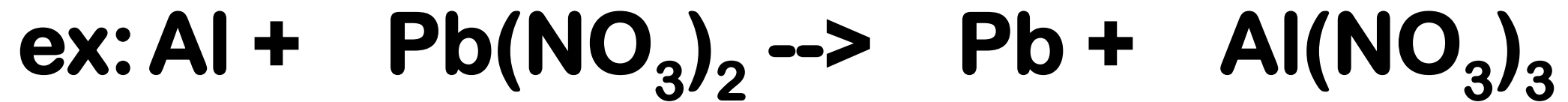
# synthesis / composition reaction



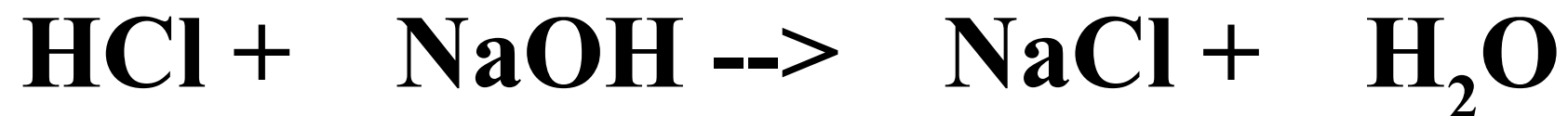
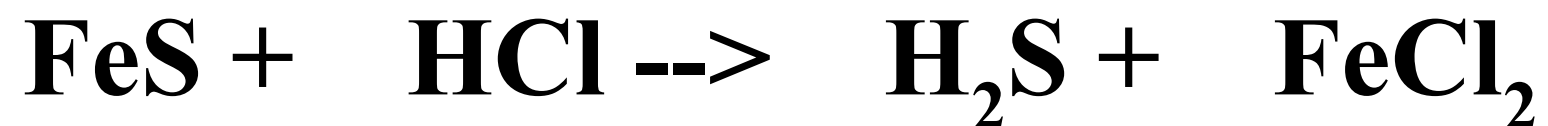
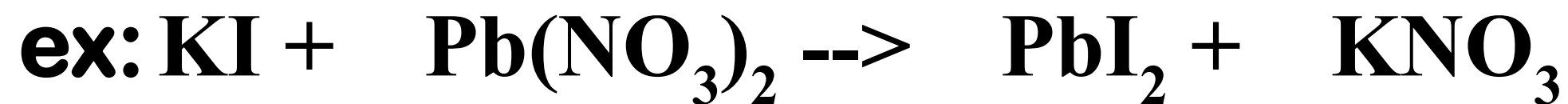
# decomposition reaction



# single replacement reaction



## double replacement reaction



# combustion reaction

substance combines with oxygen to form heat and light

