

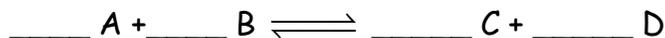
A reaction in which the \_\_\_\_\_ can react to form the \_\_\_\_\_ is called a \_\_\_\_\_ reaction.



Chemical \_\_\_\_\_ occurs when the \_\_\_\_\_ in a \_\_\_\_\_ reaction form \_\_\_\_\_ at the same \_\_\_\_\_ that \_\_\_\_\_ form \_\_\_\_\_.

At equilibrium:

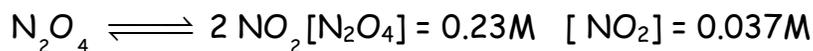
- the \_\_\_\_\_ of the reactants and products does not \_\_\_\_\_.
- the concentration of reactants can be \_\_\_\_\_ to, \_\_\_\_\_, or \_\_\_\_\_ the concentration of the products.



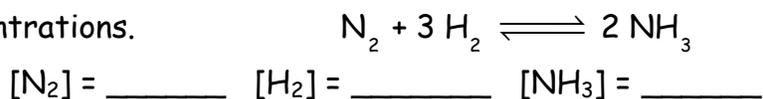
$$K_{eq} = \frac{[ \ ]^c [ \ ]^d}{[ \ ]^a [ \ ]^b}$$

If $K_{eq}$ is	_____ reaction is favored
= 1	neither
< 1	
> 1	

Ex. #1: Calculate  $K_{eq}$  for the following reaction using the given equilibrium concentrations. Then determine whether the forward or reverse reaction is favored.



Ex. #2: Calculate  $K_{eq}$  for the following reaction using the given equilibrium concentrations.



The \_\_\_\_\_ reaction is favored.

LeChatelier's Principle:

When a \_\_\_\_\_ is applied to a system in equilibrium, the system reacts in a way to \_\_\_\_\_ the stress.

STRESS	SYSTEM WILL SHIFT
addition of a chemical	
removal of a chemical	
increase in temperature	
decrease in temperature	
* increase in pressure	
* decrease in pressure	
addition of a catalyst	

\* applies to reactions involving gases only

examples:  $N_2 (g) + 3 H_2 (g) \rightleftharpoons 2 NH_3 (g) + \text{heat}$

- When  $H_2$  is added to the system, the reaction shifts to the \_\_\_\_\_ to use up the extra  $H_2$ . The amount of \_\_\_\_\_ produced will increase.
- What if \_\_\_\_\_ is removed, the reaction shifts to the \_\_\_\_\_ trying to replenish the  $N_2$ .
- When the temperature increases, the reaction shifts to the \_\_\_\_\_.
- When the pressure of the system increases, the reaction shifts to the \_\_\_\_\_, toward the side with \_\_\_\_\_ particles.
- When a catalyst is added \_\_\_\_\_.

When an equilibrium system shifts to the:	[products]	[reactants]
right		
left		

The Chemistry Quiz  
CR1.                      CR2.

1.                      2.                      3.                      4.                      5.