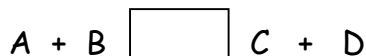


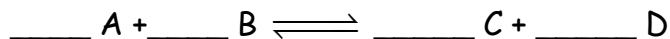
A reaction in which the _____ can react to form the _____ is called a _____ reaction.



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

At equilibrium:

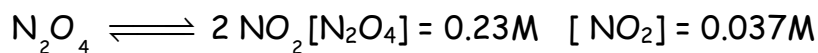
- the _____ of the reactants and products does not _____.
- the concentration of reactants can be _____ to, _____, or _____ the concentration of the products.



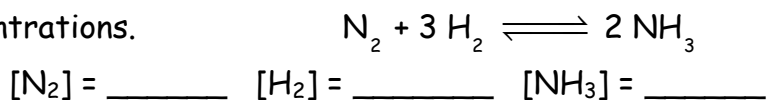
$$K_{eq} = \frac{[\]^c [\]^d}{[\]^a [\]^b}$$

| 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.