

## Unit 9: Ch 18 – LeChatelier’s Principle

### FACTORS AFFECTING EQUILIBRIUM (EQ):

➤ \_\_\_\_\_ changes in \_\_\_\_\_, \_\_\_\_\_, or \_\_\_\_\_ will cause the EQ to \_\_\_\_\_.

### ➤ LECHATelier’S PRINCIPLE:

○ Therefore, the \_\_\_\_\_ (*reaction*) responds to \_\_\_\_\_ the \_\_\_\_\_ and return to \_\_\_\_\_.

▪ **WHY?** → Keep \_\_\_\_\_ **CONSTANT**

### ➤ 1. CONCENTRATION:

○  $\text{H}_2\text{CO}_3(\text{aq}) \rightleftharpoons \text{CO}_2(\text{aq}) + \text{H}_2\text{O}(\text{l})$

▪ \_\_\_\_\_ concentration of \_\_\_\_\_ → EQ shifts \_\_\_\_\_

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○ **NOTE:** EQ constant (*K*) value \_\_\_\_\_ change in \_\_\_\_\_ EQ shift

### ➤ 2. PRESSURE:

○ \_\_\_\_\_ in *pressure* \_\_\_\_\_ affects \_\_\_\_\_ *reactants* and *products*.

○  $\text{N}_2(\text{g}) + 3 \text{H}_2(\text{g}) \rightleftharpoons 2 \text{NH}_3(\text{g})$

▪ \_\_\_\_\_ pressure: EQ shifts to the side with \_\_\_\_\_ moles of \_\_\_\_\_ and vice versa.

▪ *Increase* pressure: EQ shifts → \_\_\_\_\_

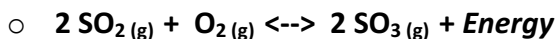
○ **NOTE:** EQ constant (*K*) value \_\_\_\_\_ change in \_\_\_\_\_ EQ shift.

➤ **3. TEMPERATURE:**



▪ \_\_\_\_\_ thermic = \_\_\_\_\_ heat (\_\_\_\_\_ side)

• \_\_\_\_\_ temperature = EQ shifts → \_\_\_\_\_



▪ \_\_\_\_\_ thermic = \_\_\_\_\_ heat (\_\_\_\_\_ side)

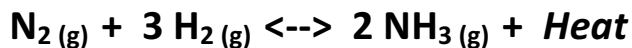
• \_\_\_\_\_ temperature = EQ shifts → \_\_\_\_\_

○ **NOTE:** EQ constant (*K*) \_\_\_\_\_ during \_\_\_\_\_ EQ shift \_\_\_\_\_.

▪ \_\_\_\_\_ thermic = \_\_\_\_\_ temp → EQ constant (*K*) \_\_\_\_\_

▪ \_\_\_\_\_ thermic = \_\_\_\_\_ temp → EQ constant (*K*) \_\_\_\_\_

**PUTTING IT ALL TOGETHER:**



Stress Type	EQ Shift	[N <sub>2</sub> ]	[H <sub>2</sub> ]	[NH <sub>3</sub> ]	EQ Constant ( <i>K</i> )
Add N <sub>2</sub>					
Remove H <sub>2</sub>					
↓ Temperature					
↑ Pressure					