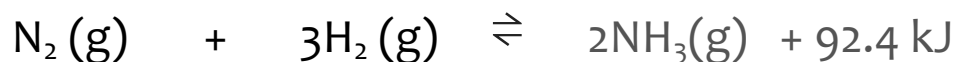


# LeChâtelier's Principle

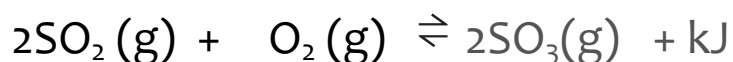
## STRESSful examples ☺

1. For the HABER REACTION, identify as many ways as possible in which the equilibrium concentration of ammonia gas can be increased in a closed vessel :

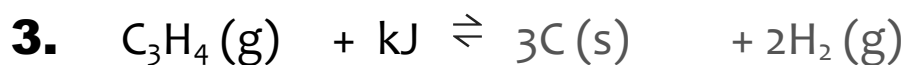


For the following reactions, show clearly how each stress will affect the concentrations of each reactant and product, which way the equilibrium will shift to offset the stress, and the net effect on the Keq value.

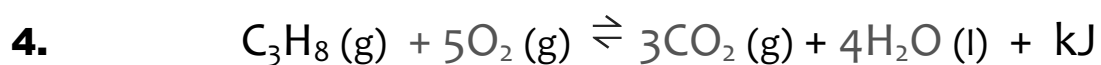
**2.**



| STRESS:                                     |  |  |  |  | EFFECT on K |
|---|--|--|--|--|-------------|
| [SO <sub>2</sub> ] ↑                        |  |  |  |  |             |
| [SO <sub>3</sub> ] ↓                        |  |  |  |  |             |
| ↑ Pressure<br>(by decreasing<br>the volume) |  |  |  |  |             |
| ↑ Temp.                                     |  |  |  |  |             |



| STRESS:                            |  |  |  |  | EFFECT on K |
|------------------------------------|--|--|--|--|-------------|
| [H <sub>2</sub> ] ↑                |  |  |  |  |             |
| ↑ [C <sub>3</sub> H <sub>4</sub> ] |  |  |  |  |             |
| ↓ Pressure<br>(increase volume)    |  |  |  |  |             |
| ↑ Temp.                            |  |  |  |  |             |



| STRESS:  |  |  |  |  |  | EFFECT on K |
|--|--|--|--|--|--|-------------|
| ↓ [C <sub>3</sub> H <sub>8</sub> ]   |  |  |  |  |  |             |
| ↑ [CO <sub>2</sub> ]   |  |  |  |  |  |             |
| ↑ Volume   |  |  |  |  |  |             |
| Temp. ↓  |  |  |  |  |  |             |
| Add catalyst   |  |  |  |  |  |             |
| <b>Add Ne to the closed reaction:</b>  |  |  |  |  |  |             |
| Volume remains the same.   |  |  |  |  |  |             |
| Volume adjusted to accommodate for increased pressure due to increased moles of gas. |  |  |  |  |  |             |

