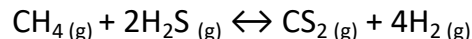


## Le Chatelier's Principle Worksheet

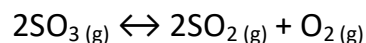
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1) For the reaction below, which way would the equilibrium shift, for each situation below, to the right or to the left?



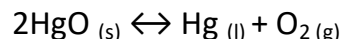
- (a) Decrease the concentration of dihydrogen sulfide. \_\_\_\_\_
- (b) Increase the pressure on the system. \_\_\_\_\_
- (c) Increase the temperature of the system. \_\_\_\_\_
- (d) Increase the concentration of carbon disulfide. \_\_\_\_\_
- (e) Decrease the concentration of methane (CH<sub>4</sub>). \_\_\_\_\_

2) What would happen to the position of the equilibrium when the following changes are made to the equilibrium system below?



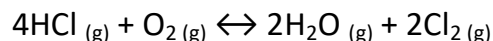
- (a) Sulfur dioxide is added to the system. \_\_\_\_\_
- (b) Sulfur trioxide is removed from the system. \_\_\_\_\_
- (c) Oxygen is added to the system. \_\_\_\_\_

3) What would happen to the position of the equilibrium when the following changes are made to the reaction below?



- (a) HgO is added to the system. \_\_\_\_\_
- (b) The pressure on the system increases. \_\_\_\_\_

4) When the **pressure** of the following mixture of gases is **decreased**, what will be the effect on the equilibrium position? \_\_\_\_\_



5) Predict the effect of **increasing pressure** for each of the following equilibria:

- (a)  $2\text{H}_2\text{O}(g) + \text{N}_2(g) \leftrightarrow 2\text{H}_2(g) + 2\text{NO}(g)$  \_\_\_\_\_
- (b)  $\text{SiO}_2(s) + 4\text{HF}(g) \leftrightarrow \text{SiF}_4(g) + 2\text{H}_2\text{O}(g)$  \_\_\_\_\_
- (c)  $\text{CO}(g) + \text{H}_2(g) \leftrightarrow \text{C}(s) + \text{H}_2\text{O}(g)$  \_\_\_\_\_

6) Predict the effect of **decreasing the temperature** on the position of the following equilibria.

- (a)  $\text{H}_2(g) + \text{Cl}_2(g) \leftrightarrow 2\text{HCl}(g) + \text{energy}$  \_\_\_\_\_
- (b)  $2\text{NH}_3(g) + \text{heat} \leftrightarrow \text{N}_2(g) + 3\text{H}_2(g)$  \_\_\_\_\_
- (c)  $\text{CO}(g) + \text{H}_2\text{O}(g) \leftrightarrow \text{CO}_2(g) + \text{H}_2(g) + \text{heat}$  \_\_\_\_\_