Le Chatelier's Principle Worksheet

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

$CH_{4\,(g)} + 2H_2S_{\,(g)} \leftrightarrow CS_{2\,(g)} + 4H_{2\,(g)}$

(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_4). _____

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

$2SO_{3\,(g)} \leftrightarrow 2SO_{2\,(g)} + O_{2\,(g)}$

(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?

$2HgO_{\,(s)} \leftrightarrow Hg_{\,(l)} + O_{2\,(g)}$

(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? _____

$4HCl_{\,(g)} + O_{2\,(g)} \leftrightarrow 2H_2O_{\,(g)} + 2Cl_{2\,(g)}$

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

(a) $2H_2O_{\,(g)} + N_{2\,(g)} \leftrightarrow 2H_{2\,(g)} + 2NO_{\,(g)}$ _____

(b) $SiO_{2\,(s)} + 4HF_{\,(g)} \leftrightarrow SiF_{4\,(g)} + 2H_2O_{\,(g)}$ _____

(c) $CO_{\,(g)} + H_{2\,(g)} \leftrightarrow C_{(s)} + H_2O_{\,(g)}$ _____

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

(a) $H_{2\,(g)} + Cl_{2\,(g)} \leftrightarrow 2HCl_{\,(g)}$ + energy _____

(b) $2NH_{3\,(g)}$ + heat $\leftrightarrow N_{2\,(g)} + 3H_{2\,(g)}$ _____

(c) $CO_{\,(g)} + H_2O_{\,(g)} \leftrightarrow CO_{2\,(g)} + H_{2\,(g)}$ + heat _____