

Skill Practice 66

Le Chatelier's Practice

Name: _____

Date: _____

Hour: _____

- Consider the following reaction: $\text{PCl}_5(\text{g}) \rightleftharpoons \text{PCl}_3(\text{g}) + \text{Cl}_2(\text{g})$.
 - If at equilibrium the concentration of PCl_5 is 2 M, the concentration of PCl_3 is 3 M and the concentration of Cl_2 is 4 M, calculate the equilibrium constant.
 - Will more reactants or more products be produced if the pressure decreases? Explain.
 - Assume the reaction is endothermic. In order to increase the amount of products would you want to increase or decrease the temperature? Explain.
- The amount of products of a certain reaction increased when the temperature was raised. Is the reaction endothermic or exothermic? (Hint: think of LeChatelier's Principle and whether the energy would be written on the left or right side of the equation.)
- Nitrogen and hydrogen gases react to form ammonia: $\text{N}_2(\text{g}) + 3 \text{H}_2(\text{g}) \rightleftharpoons 2 \text{NH}_3(\text{g})$. It is an exothermic reaction.
 - Would more $\text{NH}_3(\text{g})$ be produced if the pressure was increased? Explain.
 - Would more $\text{NH}_3(\text{g})$ be produced if the temperature was increased? Explain.
 - Describe what would happen if some H_2 were removed from the container.
- Consider the following equilibrium: $\text{SO}_2\text{Cl}_2(\text{g}) \rightleftharpoons \text{SO}_2(\text{g}) + \text{Cl}_2(\text{g})$. The ΔH of the reaction is 121.4 kJ. Consider LeChatelier's principle when answering the following questions.
 - Would more SO_2Cl_2 be produced if the pressure was increased? Explain.
 - Would more SO_2Cl_2 be produced if the temperature was increased? Explain.
 - Describe what would happen if some Cl_2 were removed from the container.

