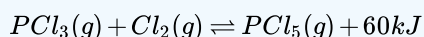


13.E: Exercises

? Additional Exercises

1. What is the relationship between the K_{sp} expressions for a chemical reaction and its reverse chemical reaction?
2. What is the relationship between the K_w value for H_2O and its reverse chemical reaction?
3. For the equilibrium



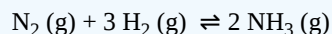
list four stresses that serve to increase the amount of PCl_5 .

4. For the equilibrium



list four stresses that serve to increase the amount of NO_2 .

5. Does a very large K_{eq} favor the reactants or the products? Explain your answer.
6. Is the K_{eq} for reactions that favor reactants large or small? Explain your answer.
7. Write the Equilibrium Constant Expression for the following



8.
 - a. Write the equation for NaCl dissolving in water.
 - b. Write the equilibrium constant expression for NaCl dissolving in water. (Remember to leave out things that are not mixed or whose concentration remains constants- In this case, solids or liquids in the chemical equation.)
 - c. Solve for the solubility equilibrium constant of NaCl if the concentrations of a saturated solution are $[Na^+] = 6.14 M$ and $[Cl^-] = 6.14 M$

? Answers

1. They are reciprocals of each other.
- 2.
3. increase the pressure; decrease the temperature; add PCl_3 ; add Cl_2 ; remove PCl_5
- 4.
5. favor products because the numerator of the ratio for the K_{eq} is larger than the denominator
- 6.
7. $K_{eq} = [NH_3]^2 / [N_2][H_2]^3$
8.
 - a. $NaCl(s) \rightleftharpoons Na^+(aq) + Cl^-(aq)$
 - b. $K_{sp} = [Na^+][Cl^-]$
 - c. $K_{sp} = 37.7$

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