

Chemical Equilibrium

Section 18.1 Equilibrium: A State of Dynamic Balance

In your textbook, read about chemical equilibrium.

Complete each statement.

- When a reaction results in almost complete conversion of reactants to products, chemists say the reaction goes to _____.
- A reaction that can occur in both the forward and the reverse directions is called a(n) _____.
- _____ is a state in which the forward and reverse reactions balance each other because they take place at equal rates.
- At equilibrium, the concentrations of reactants and products are _____, but that does not mean that the amounts or concentrations are _____.
- Equilibrium is a state of _____, not one of _____.

In your textbook, read about equilibrium expressions and constants.

For each statement below, write *true* or *false*.

- _____ 6. The law of chemical equilibrium states that at a given pressure, a chemical system may reach a state in which a particular ratio of reactant to product concentrations has a constant value.
- _____ 7. The equation $\text{H}_2(\text{g}) + \text{I}_2(\text{g}) \rightleftharpoons 2\text{HI}(\text{g})$ is an example of a homogeneous equilibrium.
- _____ 8. If an equilibrium constant has a value less than one, the reactants are favored at equilibrium.
- _____ 9. The value for K_{eq} is constant only at a specific volume.
- _____ 10. If the equilibrium constant for a reaction at 300 K is 49.7, the concentration of the reactants will be greater than the concentration of the products.
- _____ 11. A heterogeneous equilibrium means that reactants and products are present in more than one state.
- _____ 12. The product of the forward chemical reaction is HI, for the equilibrium expression:

$$K_{\text{eq}} = \frac{[\text{HI}]^2}{[\text{H}_2][\text{I}_2]}$$