

Solutions

2.1 B A concentration or pressure change disturbs the balance. The system responds toward a new equilibrium. Temperature changes can also change the equilibrium constant; a catalyst changes how quickly equilibrium is reached.

2.2 For the stated $A \rightleftharpoons B$ expression, $K = [B]/[A] = 0.8/0.2 = 4$.

2.3 False. Do not use a catalyst to claim a larger equilibrium yield. For heterogeneous equilibria, pure solids are omitted from the usual equilibrium expression.

2.4 equilibrium. equilibrium means A state with equal forward and reverse reaction rates.

3.1 $Q < K$, so net forward change raises the ratio toward 4. At equilibrium forward/reverse rates are equal; concentrations need not be equal. Temperature and the stated expression matter.