

Solutions

Each answer shows the steps, then the **result**.

2.1

- Decrease

2.2

- NaCl (or any soluble chloride)

2.3

- Toward the solid (left, toward less dissolving)

3.1 B

- less soluble

3.2

(a)

- It decreases

(b)

- Adding F^- (a product) stresses the equilibrium, which shifts left to consume it, forming more solid CaF_2 — so less dissolves

3.3

- The added common ion raises the ion product Q above K_{sp} ; the system responds by precipitating solid until Q falls back to K_{sp}