

In the presence of excess hydroxide ion,  $\text{Mg}^{2+}$  can be precipitated as  $\text{Mg}(\text{OH})_2(\text{s})$ . What amount (in mol) of solid sodium hydroxide must be added to a 0.10 M solution of  $\text{Mg}(\text{NO}_3)_2$  to just cause precipitation of  $\text{Mg}(\text{OH})_2(\text{s})$ . The solubility product constant of  $\text{Mg}(\text{OH})_2$  is  $7.1 \times 10^{-12} \text{ M}^3$ .

ANSWER:

In a separate experiment, the  $\text{Mg}(\text{OH})_2$  is precipitated by adding 0.10 mol of  $\text{Mg}(\text{NO}_3)_2$  to 1.0 L of a 0.10 M  $\text{NH}_3$  solution. What amount (in mol) of  $\text{NH}_4\text{Cl}$  must be added to this solution to just dissolve the precipitate? The  $\text{p}K_a$  of  $\text{NH}_4\text{Cl}$  is 9.24.

ANSWER: