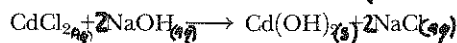


**Precipitation Reactions**

(See Example 5.2 and CD-ROM Screens 5.6 and 5.7)

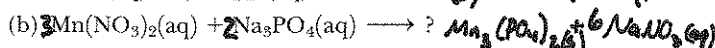
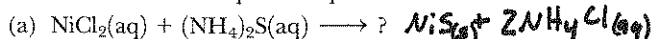
26. Balance the equation for the following precipitation reaction, and then write the net ionic equation. Indicate the state of each species (s, l, aq, or g).  $\text{Cd}^{2+} + 2\text{OH}^{-1} \rightarrow \text{Cd}(\text{OH})_2(\text{s})$



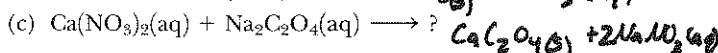
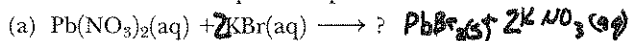
27. Balance the equation for the following precipitation reaction, and then write the net ionic equation. Indicate the state of each species (s, l, aq, or g).  $\text{Ni}^{2+} + \text{CO}_3^{2-} \rightarrow \text{NiCO}_3(\text{s})$



28. Predict the products of each precipitation reaction, and then balance the completed equation.

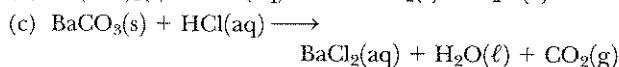
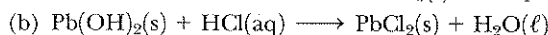
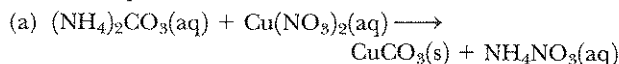


29. Predict the products of each precipitation reaction, and then balance the completed equation.

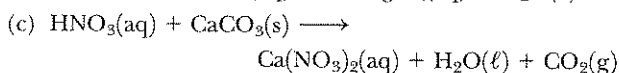
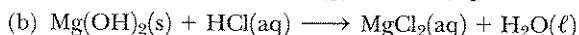
**Writing Net Ionic Equations**

(See Example 5.3 and CD-ROM Screen 5.5)

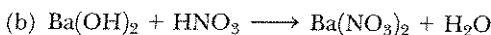
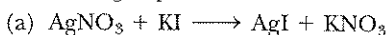
30. Balance each of the following equations, and then write the net ionic equation:



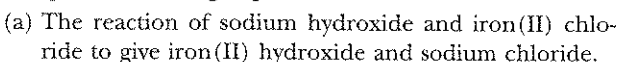
31. Balance each of the following equations, and then write the net ionic equation:



32. Balance each of the following equations, and then write the net ionic equation. Show states for all reactants and products (s, l, g, aq).



33. Write balanced equations for the following reactions, and then write net ionic equations. Show states for all reactants and products (s, l, g, aq).



- (b) The reaction of barium chloride with sodium carbonate to give barium carbonate and sodium chloride.

**Acids and Bases**

(See Exercises 5.5 and 5.6 and CD-ROM Screens 5.8 and 5.9)

34. Write a balanced equation for the ionization of nitric acid in water.

35. Write a balanced equation for the ionization of perchloric acid in water.

36. Oxalic acid,  $\text{H}_2\text{C}_2\text{O}_4$ , which is found in certain plants, can provide two hydrogen ions in water. Write balanced equations (like those for sulfuric acid on page 157) to show how oxalic acid can supply one and then a second  $\text{H}^+$  ion.

37. Phosphoric acid can supply one, two, or three  $\text{H}^+$  ions in aqueous solution. Write balanced equations (like those for sulfuric acid on page 157) to show this successive loss of hydrogen ions.

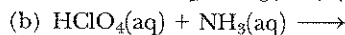
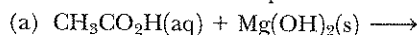
38. Write a balanced equation for reaction of the basic oxide, magnesium oxide, with water.

39. Write a balanced equation for the reaction of sulfur trioxide with water.

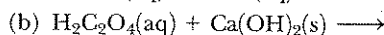
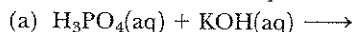
**Reactions of Acids and Bases**

(See Example 5.4, Exercise 5.7, and CD-ROM Screens 5.6 and 5.10)

40. Complete and balance the following acid-base reactions. Name the reactants and products.



41. Complete and balance the following acid-base reactions. Name the reactants and products.



42. Write a balanced equation for the reaction of barium hydroxide with nitric acid to give barium nitrate.

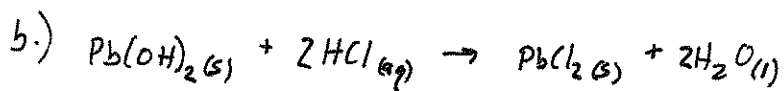
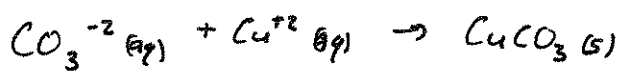
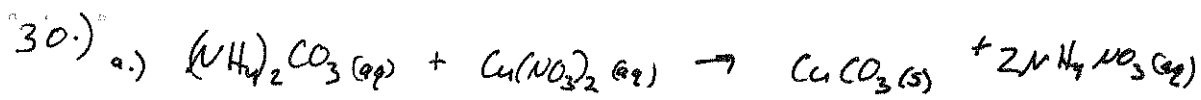
43. Write a balanced equation for the reaction of aluminum hydroxide with sulfuric acid.

**Gas-Forming Reactions**

(See Example 5.5 and CD-ROM Screens 5.6 and 5.11)

44. Siderite is a mineral consisting largely of iron(II) carbonate. Write a balanced equation for the reaction of the mineral with nitric acid, and name each reactant and product.

45. The beautiful red mineral rhodochrosite is manganese(II) carbonate. Write a balanced equation for the reaction of the mineral with hydrochloric acid. Name each reactant and product.



Net: No change from above

