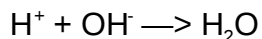
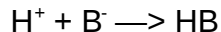


Student Packet: 9.3: Acid-Base Reactions: Student Handout**Basics**

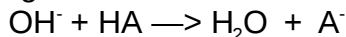
strong acid — strong base — produces water.



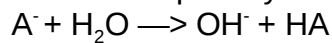
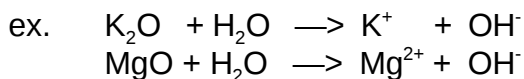
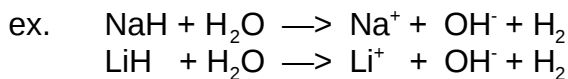
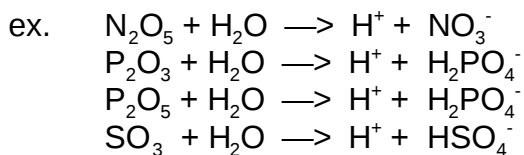
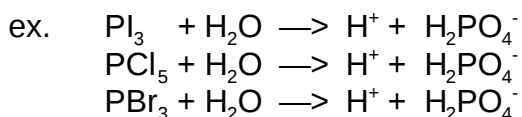
strong acid — weak base — conjugate acids of weak base forms.



strong base — weak acid — conjugate base of weak acid forms.

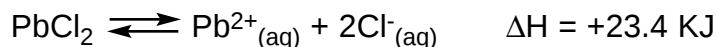


weak acid anion in water — forms weak acid plus hydroxide ions.

**Metal oxides are basic in water****Metal hydrides are basic in water****Nonmetallic oxides are acidic in water****Nonmetallic halides are acidic in solution**

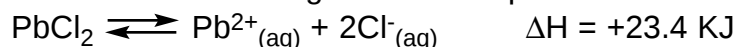
Student Packet: 9.3: Acid-Base Reactions: AssessMe questions

- 1) Predict what effect adding $\text{Pb}(\text{NO}_3)_2$ has on the position of the equilibrium.



- A) Shift equilibrium to the left. B) Shift equilibrium to the right.
C) No effect. D) Cannot be determined. E) I'm clueless

- 2) Predict what effect the addition of Ag^+ has on the position of the equilibrium.



- A) Shift equilibrium to the left. B) Shift equilibrium to the right.
C) No effect. D) Cannot be determined. E) I'm clueless

- 3) If aqueous solutions of KNO_3 and MgSO_4 are mixed, how many salts could be recovered by evaporation?

- A) 1 B) 2 C) 3 D) 4 E) I'm clueless

- 4) If aqueous solutions of $\text{Ba}(\text{NO}_3)_2$ and Na_2SO_4 are mixed, what will precipitate?

- A) BaSO_4 B) NaNO_3 C) $\text{Ba}(\text{OH})_2$ D) nothing E) I'm clueless

- 5) 10 ml of 1M H_2SO_4 are mixed with 15 ml of 0.8M NaOH . Characterize the solution.

- A) acidic B) basic C) neutral D) carbonaceous E) I'm clueless

- 6) 10 ml of 1M HCl are mixed with 15 ml of 0.8M NaOH . Characterize the new state of the solution.

- A) warmer
B) cooler
C) same temperature
D) green
E) I'm clueless

Student Packet: 9.3: Acid-Base Reactions: ShowMe questions

Write the net ionic equation for each of the reactions.

- 1) Water is added to a sample of phosphorous tribromide.

Acetic acid is added to a solution of potassium hydrogen carbonate.

Lithium oxide is added to water.

- 2) Potassium hydrocarbonate is dissolved in water.

Ammonium iodide crystals are added to a solution of potassium hydroxide.

Dilute sulfuric acid is added to barium acetate.

- 3) Water is added to a pure sample of sodium hydride.

Dinitrogen trioxide gas is bubbled through water.

Excess hydrobromic acid solution is mixed with a solution of sodium sulfite.

- 4) Sodium formate is added to water.

Excess sodium hydroxide is added to the solution of potassium dihydrogen phosphate.

Solid dinitrogen pentoxide is added to water.

- 5) Lithium fluoride is added to water.

Solutions of sodium acetate and dilute hydrobromic acid are mixed.

Water is added to a pure sample of potassium hydride.

Student Packet: 9.3: Acid-Base Reactions: TestMe questions

1) Water is added to a sample of pure sodium hydride. Write the net ionic equation. (Don't balance the equation)

- A) $\text{NaH} + \text{H}_2\text{O} \longrightarrow \text{Na}^+ + \text{OH}^- + \text{H}_2$
- B) $\text{NaH} + \text{H}_2\text{O} \longrightarrow \text{Na}^+ + \text{O}_2 + \text{H}^+$
- C) $\text{NaH} + \text{H}_2\text{O} \longrightarrow \text{NaOH} + \text{H}_2$
- D) $\text{NaH} + \text{H}_2\text{O} \longrightarrow \text{Na}^+ + \text{H}_2\text{O}_2$
- E) None of the above

2) Water is added to a sample of pure phosphorous pentachloride. Write the net ionic equation. (Don't balance the equation)

- A) $\text{H}_2\text{O} + \text{PCl}_3 \longrightarrow \text{H}^+ + \text{H}_2\text{PO}_4^- + \text{Cl}^-$
- B) $\text{H}_2\text{O} + \text{PCl}_5 \longrightarrow \text{H}^+ + \text{PO}_4^- + \text{Cl}_2$
- C) $\text{H}_2\text{O} + \text{PCl}_5 \longrightarrow \text{OH}^- + \text{PO}_4^- + \text{Cl}^-$
- D) $\text{H}_2\text{O} + \text{PCl}_5 \longrightarrow \text{H}^+ + \text{H}_2\text{PO}_4^- + \text{Cl}^-$
- E) None of the above

3) Sodium cyanide is dissolved in water. Write the net ionic equation. (Don't balance)

- A) $\text{CN}^- + \text{H}_2\text{O} \longrightarrow \text{H}^+ + \text{CO}_2 + \text{N}_2$
- B) $\text{CN}^- + \text{H}_2\text{O} \longrightarrow \text{HCN} + \text{OH}^-$
- C) $\text{CN}^- + \text{H}_2\text{O} \longrightarrow \text{HCN} + \text{H}_2\text{O}_2$
- D) $\text{CN}^- + \text{H}_2\text{O} \longrightarrow \text{HOOCN} + \text{OH}^-$
- E) None of the above

4) Ammonium chloride crystals are added to a solution of magnesium hydroxide. Write the net ionic equation. (Don't balance the equation)

- A) $\text{NH}_4^+ + \text{OH}^- \longrightarrow \text{NH}_3 + \text{H}_2\text{O}$
- B) $\text{NH}_4^+ + \text{OH}^- \longrightarrow \text{NH}_3 + \text{H}_2$
- C) $\text{NH}_4\text{Cl} + \text{OH}^- \longrightarrow \text{NH}_3 + \text{H}_2\text{O} + \text{Cl}^-$
- D) $\text{NH}_4^+ + \text{OH}^- \longrightarrow \text{NH}_3 + \text{ClO}^-$
- E) None of the above

5) Ammonium sulfate is added to a saturated solution of barium hydroxide. Write the net ionic equation. (Don't balance the equation)

- A) $\text{NH}_4^+ + \text{OH}^- \longrightarrow \text{NH}_3 + \text{H}_2\text{O}$
- B) $\text{Ba}^{2+} + \text{SO}_4^{2-} \longrightarrow \text{BaSO}_4$
- C) $\text{NH}_4^+ + \text{OH}^- \longrightarrow \text{NH}_3(\text{OH})_4^{4-}$
- D) $\text{NH}_4^+ + \text{SO}_4^{2-} + \text{Ba}^{2+} + \text{OH}^- \longrightarrow \text{BaSO}_4 + \text{H}_2\text{O} + \text{NH}_3$
- E) None of the above