Exercise 14.2a
Acid-Base Theories

Name: _____

Date: _____ Per: _____

DIRECTIONS: Answer the following in the space provided.

1. Summarize the three main acid-base theories in the table below:

	Acid	Base
Arhennius Model:		
Brønsted-Lowry Model:		
Lewis Model:		

2. Acids may donate one or more _____ when they ionize. An acid capable of donating only one of these particles is referred to as _____ , whereas acids that donate more than one are referred to as _____ . H_2SO_4 is considered a(n) _____ acid because it donates _____ of these particles and H_3PO_3 is considered a(n) _____ acid because it donates _____.

3. Acids that donate multiple protons in solution do so _____. Each ionization requires additional _____ because the anion produced from the previous ionization exerts a greater _____ on the remaining protons. This means that in each step, the acid becomes _____.

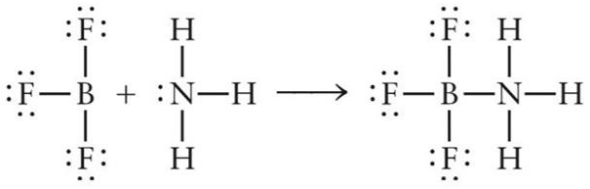
4. For the following polyprotic acids, write the equations for each ionization step.

	H_3PO_4	H_2CO_3
Step 1		
Step 2		
Step 3		

$HCl + H_2O \rightarrow H_3O^+ + Cl^-$ $NH_3 + H_2O \rightleftarrows NH_4^+ + OH^-$

5. According to Arrhenius, HCl would be classified as a(n) _____ because _____ _____. NH_3 would be classified as a(n) _____ because _____ _____.

6. In the diagram at right, the Lewis acid is _____ and the Lewis base is _____.



   a. Explain why: _____
   _____
   _____
   _____

7. Explain how H^+ is a Lewis acid. _____
   _____