This homework is due on Monday, April 25, at class time. The assignment will be accepted until the start of class on Tuesday, April 26, with a 20% penalty. Assignments turned in after class that day will receive no credit, though I will look through them if you want me to.

1. (10 points) Classify each of the following as an acid, base, or salt.
   a. \( \text{H}_2\text{SO}_3 \) ____________
   b. \( \text{Ba(OH)}_2 \) ______________
   c. \( \text{HF} \) ________________
   d. \( \text{Na}_2\text{SO}_4 \) ____________
   e. \( \text{NH}_3 \) ________________
   f. \( \text{NaOH} \) ________________
   g. \( \text{H}_3\text{PO}_4 \) ________________
   h. \( \text{HC}_2\text{H}_3\text{O}_2 \) ________________
   i. \( \text{Sr(OH)}_2 \) ________________
   j. \( (\text{NH}_4)_2\text{Cl} \) ________________

2. (4 points) Write the chemical equation for each of the following:
   a. The reaction of HBr with water:

   b. The reaction of NH\(_3\) with water:

3. (2 points) Write the chemical equation for the reaction between HCl and KOH (hint, this is a neutralization reaction).
4. (8 points) Work the following.
   
   a. What is the pH of a solution that is 0.010 M in HCl?

   b. What is the \([\text{H}^+]\) in a pH balanced shampoo with a pH of 7?

   c. What is the \([\text{H}^+]\) in a pool with a pH of 8.0?

   d. If the pH of a solution is 5.7, which is a reasonable \([\text{H}^+]\)? Circle one answer.
      
      i. \(7 \times 10^{-5}\) M     ii. \(5 \times 10^{-7}\) M     iii. \(2 \times 10^{-6}\) M     iv. \(6 \times 10^{-2}\) M