1. Identify the Bronsted-Lowry acid/base pairs (acid, base, conjugate base, conjugate acid) in the following reactions.

   (a) $HNO_3(aq) + H_2O(\ell) \longrightarrow H_3O^+(aq) + NO_3^-(aq)$

   (b) $CH_3NH_2(aq) + H_2O(\ell) \rightleftharpoons CH_3NH_3^+(aq) + OH^-(aq)$

   (c) $CO_3^{2-} + H_2O(\ell) \rightleftharpoons HCO_3^-(aq) + OH^-(aq)$

2. Write the formula for the conjugate base of each acid.

   (a) $HSO_3(aq)$

   (b) $HF(aq)$

3. Write the formula for the conjugate acid of each base.

   (a) $NH_3(aq)$

   (b) $HSO_4^-(aq)$

4. Answer with the correct number of significant figures.

   (a) $-log(2.3 \times 10^{-5}) =$

   (b) $-log(1.45 \times 10^{-8} =$

   (c) $10^{-1.6} =$

   (d) $10^{-5.87} =$

5. HCO_3^- is amphoteric. Write a chemical reaction to show how it can act as an acid and another reaction to show how it can act as a base.

6. Calculate the missing components of the table (answer in the correct number of significant figures).

$[H_3O^+]$ (M)	$[OH^-]$ (M)	pH	pOH	Acidic or Basic?
3.5×10^{-3}				
	3.7×10^{-7}			
		4.25		
			2.92	

7. Like all equilibrium constants, the value of K_w depends on temperature. At body temperature (37 °C), $K_w = 2.4 \times 10^{-14}$. What are the $[H_3O^+]$ and pH of pure water at body temperature?