

- 1) What is the main characteristic of strong acids & bases?  
Strong acids & bases ionize, or dissociate, 100%.
- 2) What are the six strong acids?  
The six acids at the top of Chart H: HI, HBr, HCl, HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub>, and HClO<sub>4</sub>
- 3) What is [H<sup>+</sup>] (or [H<sub>3</sub>O<sup>+</sup>]) of a solution of 0.25 M HNO<sub>3</sub>? How do you know?  
[H<sub>3</sub>O<sup>+</sup>] = 0.25 M since HNO<sub>3</sub> is a strong acid which dissociates 100%.
- 4) What must be true of all other acids? What happens to the strength of an acid as the strength of the H–X or O–H bond *increases*?  
All other acids are weak. As the strength of the H–X or O–H bond *increases*, the strength of the acid *decreases* since the H is held more strongly.
- 5) How do we compare the relative strengths of weak acids?  
By comparing their acid dissociation constants,  $K_a$ . The larger the  $K_a$ , the stronger the acid (and more ions, better electrolyte).
- 6) Use **Table 19-2** (pg. 605) to predict which aqueous solution would have the greater electrical conductivity: 0.1 M HClO or 0.1 M HF. Explain.  
The 0.1 M HF solutions would have the greater electrical conductivity. Because the  $K_a$  for HF ( $6.3 \times 10^{-4}$ ) is larger than that for HClO ( $4.0 \times 10^{-8}$ ), HF forms more ions in solution, and more ions means greater conductivity.
- 7) What compounds comprise the strong bases?  
Ionic hydroxide (OH<sup>-</sup>) compounds of the alkali metals [e.g. LiOH] and 3 of the alkaline earth metals [e.g. Sr(OH)<sub>2</sub>], which together form a “b” on the periodic table:, plus the two conjugate acids at the bottom of Chart H: NH<sub>2</sub><sup>-</sup> & O<sup>2-</sup>.
- 8) What is [OH<sup>-</sup>] of a solution that is 0.075 M Ba(OH)<sub>2</sub> (watch the stoichiometry!)?  
Since Ba(OH)<sub>2</sub> is a strong base that produces 2 OH<sup>-</sup> ions for every Ba(OH)<sub>2</sub>,  
[OH<sup>-</sup>] = 2(0.075 M) = 0.150 M
- 9) Aniline (C<sub>6</sub>H<sub>5</sub>NH<sub>2</sub>) and ethylamine (CH<sub>3</sub>CH<sub>2</sub>NH<sub>2</sub>) are both weak bases. According to **Table 19-4** (pg. 607), which one is more ionized in aqueous solution? Explain your reasoning.  
Ethylamine has a larger  $K_b$  ( $5.0 \times 10^{-4}$ ) than that of aniline ( $4.3 \times 10^{-10}$ ), so it is stronger and is more ionized in aqueous solution.

Li	
Na	
K	Ca
Rb	Sr
Cs	Ba