

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 five acids at the top of Chart H: HI, HBr, HCl, HNO₃, H₂SO₄, plus HClO₄

3) What is [H⁺] (or [H₃O⁺]) of a solution of 0.25 M HNO₃? How do you know?

[H₃O⁺] = 0.25 M since HNO₃ 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 (note: there was a typo in the original WS) 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 (6.3×10^{-4}) is larger than that for HClO (4.0×10^{-8}), HF forms more ions in solution, and more ions means greater conductivity.

7) What compounds comprise the strong bases?

Ionic hydroxide (OH⁻) compounds of the alkali metals [e.g. LiOH] and 3 of the alkaline earth metals [e.g. Sr(OH)₂], which together form a “b” on the periodic table:, plus the two conjugate acids at the bottom of Chart H: NH₂⁻ & O²⁻.

Li	
Na	
K	Ca
Rb	Sr
Cs	Ba

8) What is [OH⁻] of a solution that is 0.075 M Ba(OH)₂ (watch the stoichiometry!)?

Since Ba(OH)₂ is a strong base that produces 2 OH⁻ ions for every Ba(OH)₂,
[OH⁻] = 2(0.075 M) = 0.150 M

9) Aniline (C₆H₅NH₂) and ethylamine (CH₃CH₂NH₂) 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 (5.0×10^{-4}) than that of aniline (4.3×10^{-10}), so it is stronger and is more ionized in aqueous solution.