- Example

  Calculate the [H_3O^+], [OH^-], pH, and pOH for .1M HNO_3

  Since HNO_3 is a strong acid, so all the hydrogen ions will be dissociated in water to form H_3O^+

$$[\ {}_3\ {}^+] = .1$$

$$= -\log([\ {}_3\ {}^+]) = -\log(.1) = 1$$

$$= \qquad - \qquad = 14 - 1 = 13$$

$$[\qquad {}^-] = 10^{-} \qquad = 10^{-13}$$

  Calculate the [H_3O^+], [OH^-], pH, and pOH for .05M NaOH

  This works the same way, but NaOH is a strong base so we can find the concentration of OH^- first and work backward to find the concentration of H_3O^+

$$[\qquad {}^-] = [\qquad\qquad] = .05$$

$$= -\log([\qquad {}^-]) = -\log(.05) = 1.30$$

$$= 14 - \qquad\qquad = 14 - 1.3 = 12.70$$

$$[\ {}_3\ {}^+] = 10^{-12.7} = 2\quad 10^{-13}$$