

## 4.15 Kb Calculations

2 important changes:

- $K_b$  must be calculated ...  $K_a$  is in table  $K_b = \frac{K_w}{K_a} = \frac{1.00 \times 10^{-14}}{K_a}$
- resulting  $\text{sol}^n$  is basic so  $[\text{OH}^-]$  is used (not  $[\text{H}_3\text{O}^+]$ )

Example #1 What is the pH of a 0.10 M  $\text{sol}^n$  of NaCN? → do as last step.

spectator  $\swarrow$   
~~NaCN~~

$\text{CN}^- + \text{H}_2\text{O} \rightleftharpoons$

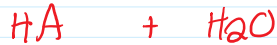
I	
C	
E	

MUST "accept" an "H", so acting as a base

Example #2: The pOH of a 0.50 M  $\text{sol}^n$  of weak acid HA is 10.64.

What is  $K_b$  for  $\text{A}^-$ ?

given weak acid HA, so you must work in  $K_a$  for your ICE table



I	
C	
E	

... then "flip" to  $K_b$  as last step.

→ pOH ...  
make it  
pH = 3.36

