

16<sup>2</sup> ⑨

	$\text{HBrO}$	$\rightleftharpoons$	$\text{H}^+$	+	$\text{BrO}^-$
I	0.55		0		0
$\Delta$	-x		+x		+x
E	0.55-x		x		x

$\text{pH} = 4.48$   
 $-4.48 = \log[\text{H}^+]$   
 $[\text{H}^+] = 3.31 \times 10^{-5}$

$$K_a = \frac{[\text{H}^+][\text{BrO}^-]}{[\text{HBrO}]} = \frac{(x)(x)}{0.55-x}$$

Feb 28-7:39 AM

pH of Salts

0.1M  $\text{NaF}$  (TOOT PASTE)  $\text{pH} = ?$

Complete ionic:  $\text{Na}^+ + \text{F}^- + \text{H}_2\text{O} \rightarrow \text{Na}^+ + \text{OH}^- + \text{HF}$

Net ionic:  $\text{F}^- + \text{H}_2\text{O} \rightleftharpoons \text{OH}^- + \text{HF}$

	$\text{F}^-$	+	$\text{H}_2\text{O}$	$\rightleftharpoons$	$\text{OH}^-$	+	$\text{HF}$
I	0.1				0		0
$\Delta$	-x				+x		+x
E	0.1-x				x		x

$K_b = \frac{[\text{OH}^-][\text{HF}]}{[\text{F}^-]} = \frac{(x)(x)}{0.1-x} = 1.47 \times 10^{-11}$

$x = 1.21 \times 10^{-6} = [\text{OH}^-]$   
 $\text{pOH} = -\log[\text{OH}^-] = 5.92$   
 $\text{pH} = 8.08$

$K_a(\text{HF}) = 6.8 \times 10^{-4}$   
 $K_a + K_b = K_w$   
 $K_b = 1.47 \times 10^{-11}$

① Add  $\text{H}_2\text{O}$   
 ② Balance eqn  
 ③ Net ionic eqn

Feb 28-8:07 AM

0.08M  $\text{Na}_2\text{CO}_3$  Find pH.

$$\overset{+1}{\text{Na}}_2\overset{-2}{\text{CO}_3} + 2\overset{+1}{\text{H}}\overset{-1}{\text{OH}} \rightleftharpoons 2\overset{+1}{\text{Na}}\overset{-1}{\text{OH}} + \overset{+1}{\text{H}}_2\overset{-2}{\text{CO}_3}$$

2H+

$2\text{Na}^+$	$+\text{CO}_3^{2-}$	$+ 2\text{H}_2\text{O}$	$\rightleftharpoons$	$2\text{Na}^+$	$+ 2\text{OH}^-$	$+ \text{H}_2\text{CO}_3$
I 0.08						
Δ -x					+2x	+x
E 0.08-x				2x		x

$$K_b = \frac{[\text{OH}^-]^2 [\text{H}_2\text{CO}_3]}{[\text{CO}_3^{2-}]} = \frac{(2x)^2 (x)}{0.08 - x} = 415.3$$

pH = 14.607

$4x^3 = 33.24$   
 $x = 2.025$   
 $2x = 4.05 = [\text{OH}^-]$   
 $\text{pOH} = -0.607$

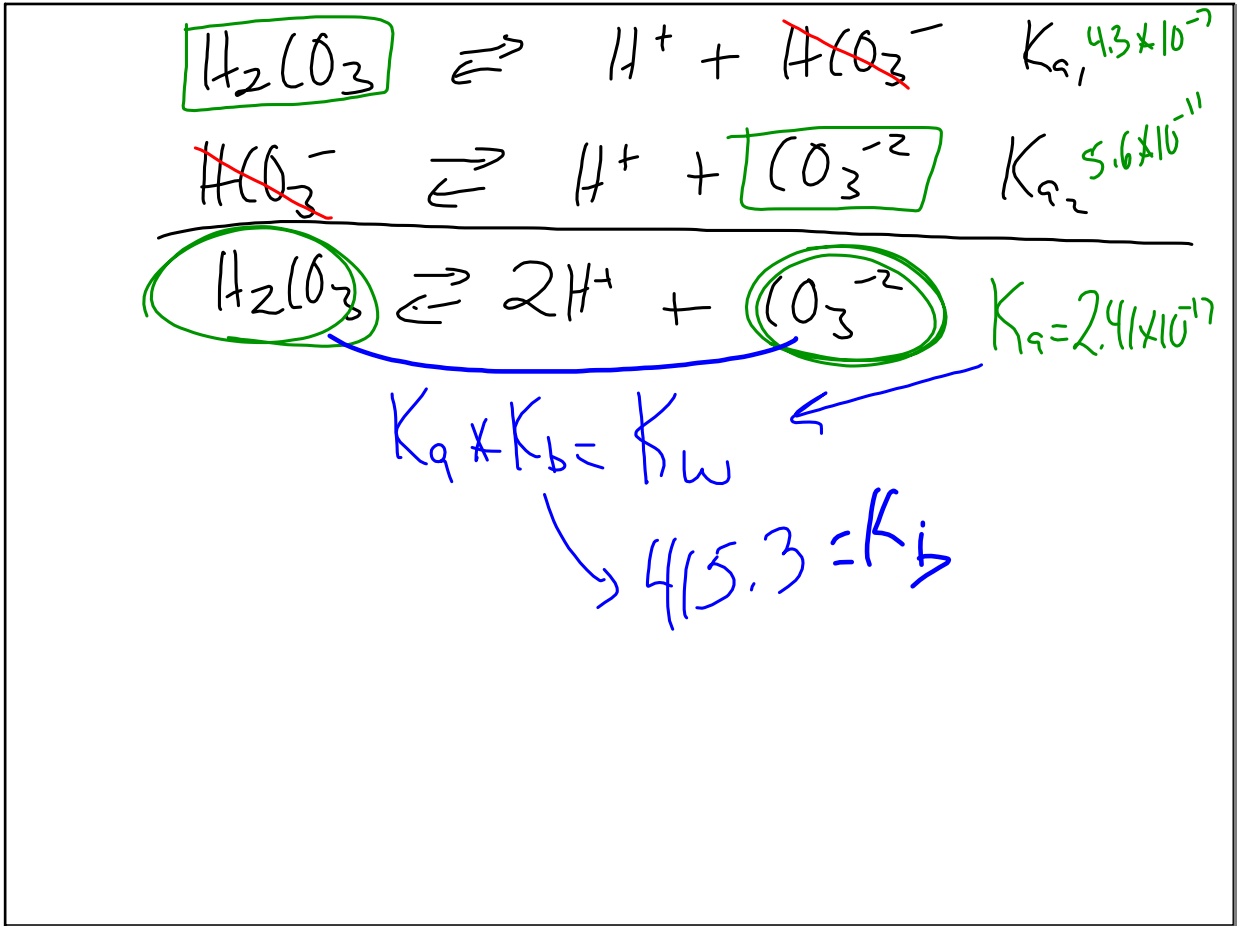
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$$\text{Na}_2\text{CO}_3 \rightarrow 2\text{Na} + \text{CO}_3^{2-}$$

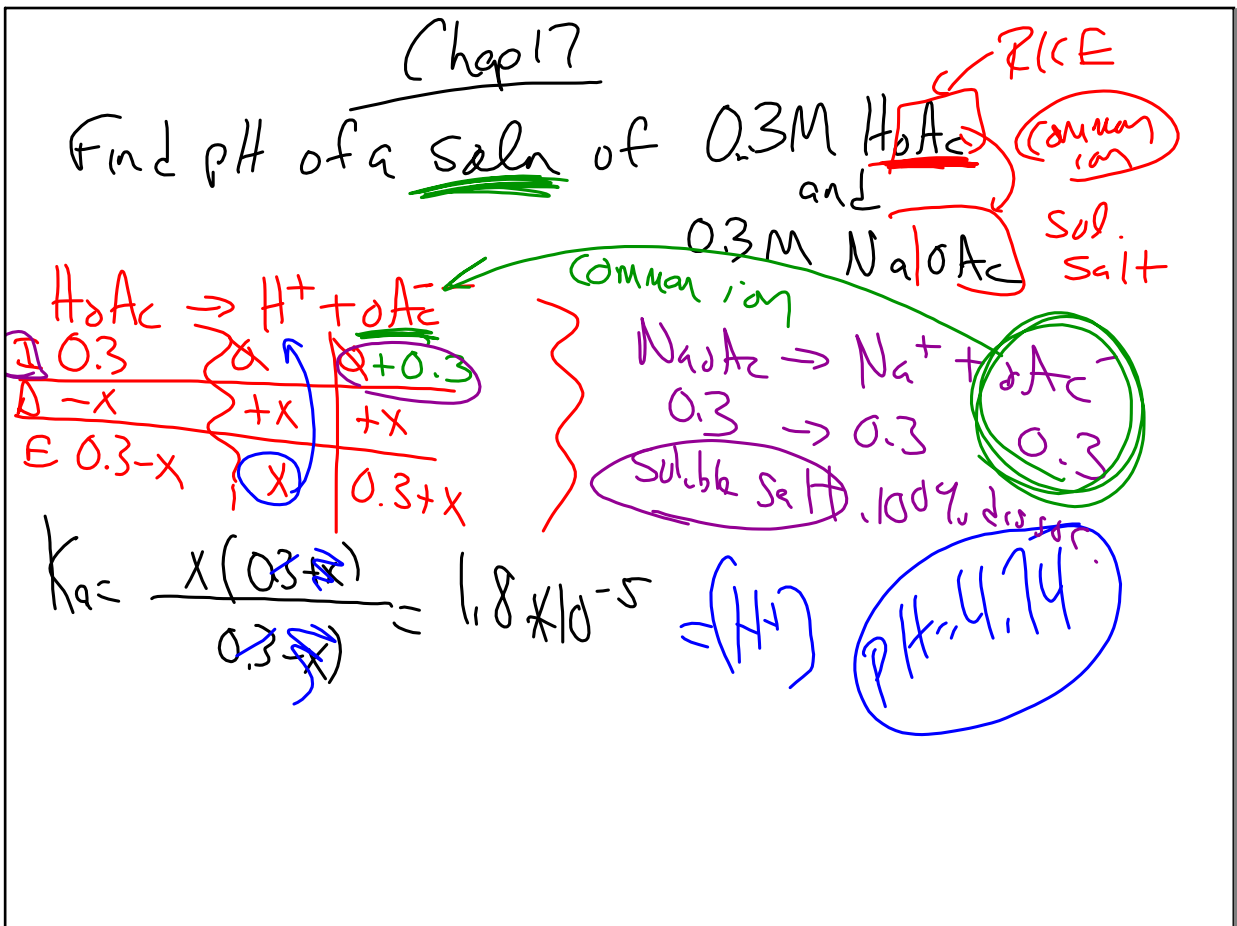
0.08	0.16	0.08
	2	

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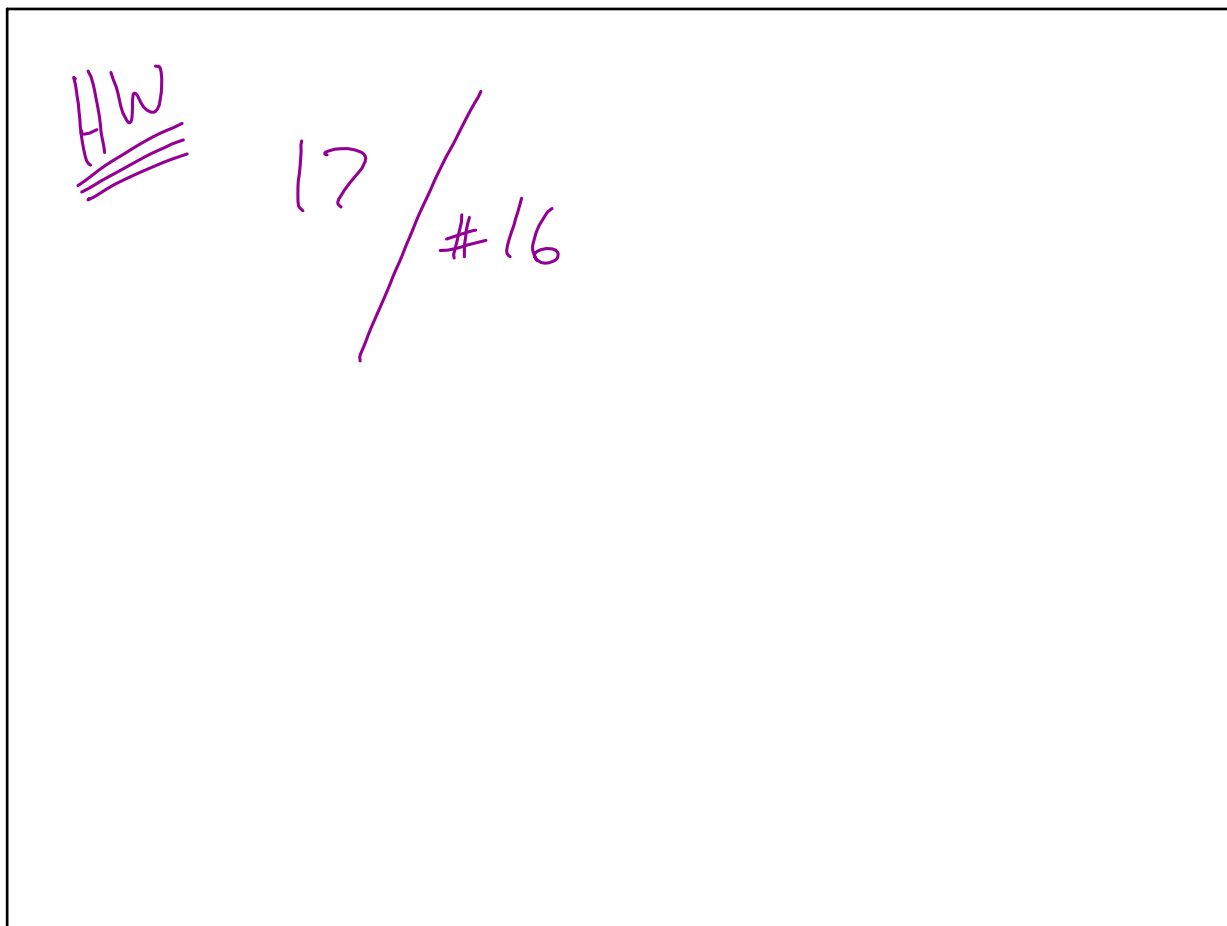
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Feb 28-8:55 AM



Feb 28-9:06 AM



Feb 28-9:15 AM