

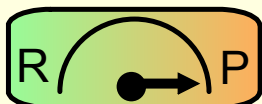
**What is the pH of each acid?**

**0.062 M HNO<sub>3</sub>**

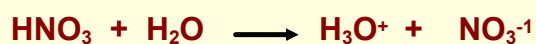
**0.062 M HNO<sub>2</sub>**

What is the pH of each acid?

0.062 M HNO<sub>3</sub>



Strong Acid - has 100% ionization



I	0.062		
S	-0.062	+0.062	+0.062
E	0	<b>0.062</b>	0.062

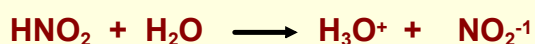
$\nearrow$  all products  
 [H<sub>3</sub>O<sup>+</sup>]

$$\text{pH} = -\log[\text{H}_3\text{O}^+] = -\log(\mathbf{0.062}) = \mathbf{1.21}$$

0.062 M HNO<sub>2</sub>



Weak acid - ionizes slightly  
K<sub>a</sub> = 7.2 E-5



I	0.062		
S	-x	+x	+x
E	0.062-x	<b>x</b>	x

$\nearrow$   
 [H<sub>3</sub>O<sup>+</sup>]

$$K_a = 7.2 \times 10^{-4} = \frac{[\text{H}_3\text{O}^+][\text{NO}_2^{-1}]}{[\text{HNO}_2]}$$

$$7.2 \times 10^{-4} = \frac{[x][x]}{[0.062 - x]}$$

$\nearrow$  negligible

$$(7.2 \times 10^{-4})(0.062) = x^2$$

$$x = \mathbf{0.00668} \text{ M} = [\text{H}_3\text{O}^+]$$

$$\text{pH} = -\log[\text{H}_3\text{O}^+] = -\log(\mathbf{0.00668}) = \mathbf{2.18}$$