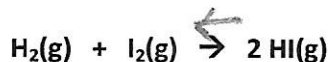


RICE Table Problems 2 cont.

3) For the reaction:



the equilibrium constant, K_{eq} , is 55

If the initial concentration of the hydrogen and iodine before reacting were both 0.1 mol/L and no HI was present, what is the hydrogen iodide concentration in mol/L at equilibrium?

R	H_2	+	I_2	\rightleftharpoons	2HI
					\emptyset
I	0.1		0.1		$+2x$
C	$-x$		$-x$		
E	$0.1-x$		$0.1-x$		$2x$

$$K_{eq} = \frac{[\text{HI}]^2}{[\text{H}_2][\text{I}_2]}$$

$$55 = \frac{(2x)^2}{(0.1-x)^2}$$

$$\sqrt{55} = \sqrt{\frac{(2x)^2}{(0.1-x)^2}}$$

$$7.4 = \frac{2x}{0.1-x}$$

$$(7.4)(0.1-x) = 2x$$

$$0.74 - 7.4x = 2x$$

$$0.74 = 9.4x$$

$$\frac{0.74}{9.4} = \frac{9.4x}{9.4}$$

$$x = 0.079 \frac{\text{mol}}{\text{L}}$$

$$[\text{HI}] = 2(0.079)$$

$$= 0.16 \frac{\text{mol}}{\text{L}}$$

4) For the reaction:



no RICE table needed because the \rightleftharpoons conc are given

the equilibrium concentration of a A, B, C and D in mol/L are respectively 0.11 - x, 0.11 - x, and x and x. The equilibrium constant for the reaction is 100. What is the concentration for C in mol/L at equilibrium?

$$K_{eq} = \frac{[\text{C}][\text{D}]}{[\text{A}][\text{B}]} = \frac{(x)(x)}{(0.11-x)^2} = 100 = \frac{x^2}{(0.11-x)^2}$$

$$10 = \frac{x}{0.11-x}$$

$$x = (0.11-x) 10$$

$$x = 1.1 - 10x$$

$$11x = 1.1$$

$$x = 0.1 \text{ mol/L} = [\text{C}]$$