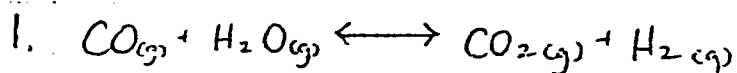


Equilibrium #7

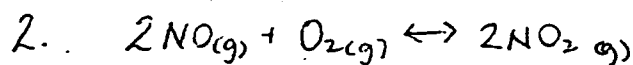


$$K_{eq} = \frac{[\text{CO}_2][\text{H}_2]}{[\text{CO}][\text{H}_2\text{O}]} = 4.0$$

$$K_{eq} = \frac{(0.10 + x)(0.10)}{(0.20)(0.20)} = 4.0$$

	CO	H ₂ O	CO ₂	H ₂
[Initial]	0.10	0.10	0.20	0.20
change	+0.10	+0.10	+x - 0.10	-0.10
[Eq ₂]	0.20	0.20	0.10 + x	0.10

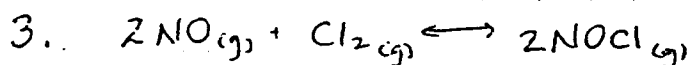
$x = 1.5 \text{ M}$ # of moles = $1.5 \text{ M} \times 2.0 \text{ L} = \underline{3.0 \text{ moles CO}_2 \text{ added.}}$



$$K_{eq} = \frac{[\text{NO}_2]^2}{[\text{NO}]^2 [\text{O}_2]}$$

$$K_{eq} = \frac{(0.12)^2}{(0.10)^2 (0.020)} = \underline{72}$$

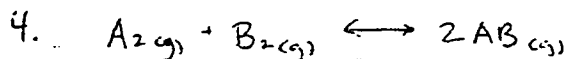
	NO	O ₂	NO ₂
[Initial]	0.30/5.0	0	0.80/5.0
change	+0.040	+0.020	-0.040
[Eq ₂]	0.10	0.020	0.12



$$K_{eq} = \frac{[\text{NOCl}]^2}{[\text{NO}]^2 [\text{Cl}_2]}$$

$$K_{eq} = \frac{(0.12)^2}{(0.28)^2 (0.34)} = \underline{0.54}$$

	NO	Cl ₂	NOCl
[Initial]	2.00/5.0	2.00/5.0	0
change	-0.12	-0.06	+0.12
[Eq ₂]	0.28	0.34	0.12



$$K_{eq} = \frac{[\text{AB}]^2}{[\text{A}_2][\text{B}_2]}$$

$$K_{eq} = \frac{(0.400)^2}{(0.200)(0.200)} = 4.00$$

$$K_{eq} = \frac{(0.500 - 2x)^2}{(0.200 + x)^2} = 4.00 \quad \text{take square root of both sides.}$$

$$\frac{0.500 - 2x}{0.200 + x} = 2.00 \quad x = 0.0250 \text{ M}$$

new $[\text{AB}] = 0.500 - 2(0.0250) = \underline{0.450 \text{ M}}$

Key-

Equilibrium # 7



$$K_{eq} = \frac{[CD]^2}{[C_2][D_2]} = 9.0 \times 10^{-2}$$

$$K_{eq} = \frac{(2x)^2}{(0.24-x)^2} = 9.0 \times 10^{-2}$$

	C_2	D_2	CD
[Initial]	0.24	0.24	0
change	-x	-x	+2x
[Eq ^m]	0.24-x	0.24-x	2x

take the square root of both sides

$$\frac{2x}{0.24-x} = 0.30 \quad x = 0.0313$$

$$[C_2] \text{ at eq}^m = 0.24 - 0.0313 = \underline{0.21M}$$