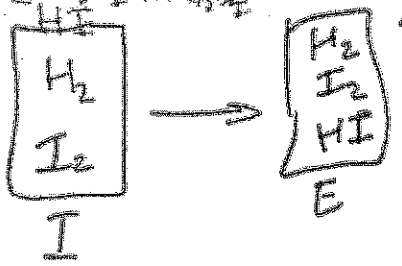
$1H_{2(g)} + 1I_{2(g)} \rightleftharpoons 2HI_{(g)}$

Initially I have 3.00 mol H_2 and 4.00 mol I_2 in a 1.0 L container. At equil. 2.00 mol H_2 react. Calculate the equil. position constant K.

$$Q = \frac{[HI_{(g)}]_I^2}{[H_{2(g)}]_I^1 [I_{2(g)}]_I^1} \quad K = \frac{[HI_{(g)}]_E^2}{[H_{2(g)}]_E^1 [I_{2(g)}]_E^1}$$



$[H_2]_I = \frac{3.00 \text{ mol}}{1 \text{ L}} = 3.00 M$

$[I_2]_I = \frac{4.00 \text{ mol}}{1 \text{ L}} = 4.00 M$

ICE BOX $[H_2]_C = \frac{2.00 \text{ mol}}{1 \text{ L}} = 2.00 M$

	H_2	I_2	HI
I	3.00M	4.00M	0M
C	−2.00M	−2.00M	+4.00M
E	1.00M	2.00M	4.00M

$$[I_2]_C = \left(\frac{2.00 M \text{ mol } H_2}{\text{L soln}}\right)\left(\frac{1 \text{ mol } I_2}{1 \text{ mol } H_2}\right) = 2.00 M$$

$$[HI]_C = (\text{ " })\left(\frac{2 \text{ mol } HI}{1 \text{ mol } H_2}\right) = 4.00 M$$

$[H_2]_E = 1.00 M$

$[I_2]_E = 2.00 M$

$[HI]_E = 4.00 M$

$$K = \frac{[HI_{(g)}]_E^2}{[H_{2(g)}]_E^1 [I_{2(g)}]_E^1}$$

$$K = \frac{(4.00 M)^2}{(1.00 M)^1 (2.00 M)^1}$$

$$K = 8.00$$