Answer to Question #50810, Chemistry, Physical Chemistry

IN A 1 L POT At 420 degree temperature HI dissociates and in equilibrium 1472 g HI 18.6 G H2 and 546.1 g I2 IS FOUND.what is the equilibrium constant? the ans is 0.1398 but how????
atomic mass of I =127

Solution:
$2HI \rightarrow H_2 + I_2$

$$n = \frac{m}{M_r}$$

$$c = \frac{n}{V} = \frac{m}{M_r \times V}$$

$$[HI] = \frac{1472}{128 \times 1} = 11.5\ M$$

$$[H_2] = \frac{18.6}{2 \times 1} = 9.3\ M$$

$$[I_2] = \frac{546.1}{254 \times 1} = 2.15\ M$$

$$K = \frac{[H_2][I_2]}{[HI]^2} = \frac{2.15 \times 9.3}{11.5^2} = 0.1512$$

Answer:
0.1512