

## Quiz 15.3 – ICE Tables

Name: \_\_\_\_\_

**Question 1**

Consider the reaction:  $\text{C(s)} + \text{H}_2\text{O(g)} \rightleftharpoons \text{CO(g)} + \text{H}_2\text{(g)}$      $K_C = 5.63 \times 10^{-4}$

Give the equilibrium concentrations of all species if excess C(s) is placed in a chamber with  $[\text{H}_2\text{O(g)}] = 0.250 \text{ M}$

**Question 2**

Consider the reaction:  $\text{PCl}_5\text{(g)} \rightleftharpoons \text{PCl}_3\text{(g)} + \text{Cl}_2\text{(g)}$      $K_C = 0.0160$

An amount of pure  $\text{PCl}_5\text{(g)}$  is placed in an empty chamber. After equilibrium is reached, the product concentrations are measured as:  $[\text{PCl}_3] = [\text{Cl}_2] = 0.0134 \text{ M}$

What are the initial and equilibrium concentrations of  $\text{PCl}_5$ ?

**Question 3**

Consider the reaction:  $\text{Cl}_2\text{(g)} + \text{Br}_2\text{(g)} \rightleftharpoons 2 \text{BrCl(g)}$      $K_C = 7.20$

Find the equilibrium concentrations if a chamber is charged with  $0.500 \text{ mol Br}_2\text{(g)}$  and  $0.0500 \text{ mol BrCl}$  and the reaction is allowed to reach equilibrium

游子吟 (*Song of a Traveling Son*)

By 孟郊 (Meng Jiao)

慈母手中线, 游子身上衣。  
临行密密缝, 意恐迟迟归。  
谁言寸草心, 报得三春晖。

Thread in the hands of a loving mother  
Turns to clothes on the traveling son.  
She adds stitch after tight stitch until he leaves  
and worries about his return.  
A grass blade is bathed in spring sun;  
how can its inch-sized heart return such love?