Dougherty Valley HS Chemistry - AP
Equilibrium Study Materials
Quick Checks #1-3

S-30, 31, 32

Name: **Period:** **Seat#:**

Directions: Try these problems. If you can DO them, check the box (☑).
If you CANNOT do them, write some notes TO YOURSELF about what you need to study to succeed at these problems.

S30 – Quick Check #1

☐ **K_c and K_p**

Write the equilibrium expression (K_c) for: $ZnCO_3(s) \leftrightarrows Zn^{2+}(aq) + CO_3^{2-}(aq)$

$K_c =$

Write the equilibrium expression (K_p) for: $2\ NO(g) + Br_2(g) \leftrightarrows 2\ NOBr(g)$

$K_p =$

☐ **Manipulations**

$O_2(g) \leftrightarrows 2\ O(g)$ $K_p = 1.2 \times 10^{-10}$ What is the K_p for: $O(g) \leftrightarrows \frac{1}{2}\ O_2(g)$

☐ **Adding Reactions**

Calculate K_c for the reaction: $SnO_2(s) + 2\ CO(g) \leftrightarrows Sn(s) + 2\ CO_2(g)$

given the following information:

$SnO_2(s) + 2\ H_2(g) \leftrightarrows Sn(s) + 2\ H_2O(g)$ $K_c = 8.12$

$H_2(g) + CO_2(g) \leftrightarrows H_2O(g) + CO(g)$ $K_c = 0.771$

S31 – Quick Check #2

☐ **Reaction Quotient**

$H_2(g) + Br_2(g) \leftrightarrows 2\ HBr(g)$ $K_c = 5.5 \times 10^3$

$[H_2]=0.10$ M $[Br_2]=0.20$ M $[HBr]=8.5$ M

What will happen to the [HBr] as this reaction approaches equilibrium? (Show your calculation.)

☐ K_p & K_c

$2\ NO(g) + Br_2(g) \leftrightarrows 2\ NOBr(g)$ $\quad K_c = 1.2 \times 10^{-10}$ at 25 °C

Write the K_p expression for this reaction and calculate its value. [R = 0.0821 L·atm/mol·K]

☐ Le Châtelier's' Principle Demo

$Co(H_2O)_6^{2+}(aq) + 4\ Cl^-(aq) \rightleftharpoons CoCl_4^{2-}(aq) + 6\ H_2O(l)$

pink blue

a) add HCl(aq)	____	____	____	____
b) add $H_2O(l)$	____	____	____	____
c) increase the temperature	____	____	____	____
d) decrease the temperature	____	____	____	____
e) add $AgNO_3(aq)$	____	____	____	____

Note:
Predict (a) and (b) before the demonstration.
Watch (c) and determine whether the reaction is endo- or exo-thermic.
Predict (e) before the demonstration.

S33 – Quick Check #3

☐ ICE Box Problem

A solution is prepared by dissolving 0.050 mol of diiodocyclohexane, $C_6H_{10}I_2$, in the solvent CCl_4. The total solution volume is 1.00 L. When the reaction, $C_6H_{10}I_2 \leftrightarrows C_6H_{10} + I_2$, comes to equilibrium, the concentration of I_2 is 0.035 mol/L. What is are the concentrations of $C_6H_{10}I_2$ and C_6H_{10} at equilibrium?

$C_6H_{10}I_2$ ⇆	C_6H_{10} +	I_2

Struggled? Got some wrong? Do some self-study!