

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<sub>c</sub> and K<sub>p</sub>**

Write the equilibrium expression (K<sub>c</sub>) for:  $\text{ZnCO}_3(\text{s}) \rightleftharpoons \text{Zn}^{2+}(\text{aq}) + \text{CO}_3^{2-}(\text{aq})$

K<sub>c</sub> =

Write the equilibrium expression (K<sub>p</sub>) for:  $2 \text{NO}(\text{g}) + \text{Br}_2(\text{g}) \rightleftharpoons 2 \text{NOBr}(\text{g})$

K<sub>p</sub> =

#### **Manipulations**

$\text{O}_2(\text{g}) \rightleftharpoons 2 \text{O}(\text{g})$        $K_p = 1.2 \times 10^{-10}$       What is the K<sub>p</sub> for:  $\text{O}(\text{g}) \rightleftharpoons \frac{1}{2} \text{O}_2(\text{g})$

#### **Adding Reactions**

Calculate K<sub>c</sub> for the reaction:  $\text{SnO}_2(\text{s}) + 2 \text{CO}(\text{g}) \rightleftharpoons \text{Sn}(\text{s}) + 2 \text{CO}_2(\text{g})$

given the following information:

$\text{SnO}_2(\text{s}) + 2 \text{H}_2(\text{g}) \rightleftharpoons \text{Sn}(\text{s}) + 2 \text{H}_2\text{O}(\text{g})$      $K_c = 8.12$

$\text{H}_2(\text{g}) + \text{CO}_2(\text{g}) \rightleftharpoons \text{H}_2\text{O}(\text{g}) + \text{CO}(\text{g})$      $K_c = 0.771$

### S31 – Quick Check #2

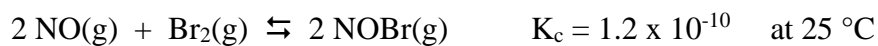
#### **Reaction Quotient**

$\text{H}_2(\text{g}) + \text{Br}_2(\text{g}) \rightleftharpoons 2 \text{HBr}(\text{g})$      $K_c = 5.5 \times 10^3$

$[\text{H}_2]=0.10 \text{ M}$      $[\text{Br}_2]=0.20 \text{ M}$      $[\text{HBr}]=8.5 \text{ M}$

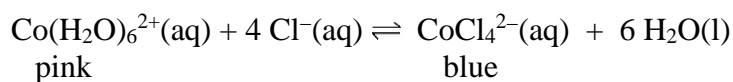
What will happen to the [HBr] as this reaction approaches equilibrium? (Show your calculation.)

**K<sub>p</sub> & K<sub>c</sub>**



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

**Le Châtelier's' Principle Demo**



a) add HCl(aq)	_____	_____	_____	_____
b) add H <sub>2</sub> O(l)	_____	_____	_____	_____
c) increase the temperature	_____	_____	_____	_____
d) decrease the temperature	_____	_____	_____	_____
e) add AgNO <sub>3</sub> (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<sub>6</sub>H<sub>10</sub>I<sub>2</sub>, in the solvent CCl<sub>4</sub>.

The total solution volume is 1.00 L. When the reaction, C<sub>6</sub>H<sub>10</sub>I<sub>2</sub> ⇌ C<sub>6</sub>H<sub>10</sub> + I<sub>2</sub>, comes to equilibrium, the concentration of I<sub>2</sub> is 0.035 mol/L. What are the concentrations of C<sub>6</sub>H<sub>10</sub>I<sub>2</sub> and C<sub>6</sub>H<sub>10</sub> at equilibrium?

C <sub>6</sub> H <sub>10</sub> I <sub>2</sub>	⇌	C <sub>6</sub> H <sub>10</sub>	+	I <sub>2</sub>

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