

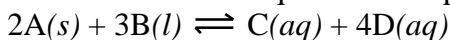
## Chemistry - Equilibrium HW2 - Keq

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Per: \_\_\_\_\_

1. Consider the general reaction:  $jA + kB \rightleftharpoons lC + mD$

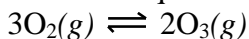
Write the correct equilibrium expression below.

2. Choose the correct equilibrium expression for the following reaction.



- A)  $\frac{[A]^2[B]^3}{[C][D]^4}$     B)  $[C][D]^4$     C)  $\frac{[C][4D]^4}{[2A]^2[3B]^3}$     D)  $\frac{[C][D]^4}{[A]^2[B]^3}$     E) none of these

3. Write the equilibrium expression for the reaction



4. For the reaction:  $F_2(g) \rightleftharpoons 2F(g)$

at a particular temperature, the concentrations at equilibrium were observed to be  $[F_2] = 1.6 \times 10^{-2}$  mol/L and  $[F] = 2.0 \times 10^{-4}$  mol/L. Calculate the value of the equilibrium constant ( $K_{eq}$ ) from these data. (The units are deleted.)

5. For the reaction:  $2NO(g) + O_2(g) \rightleftharpoons 2NO_2(g)$

at a certain temperature, the equilibrium concentrations were found to be  $[NO_2] = 2.8 \times 10^{-3} M$ ,  $[O_2] = 1.0 \times 10^{-2} M$ , and  $[NO] = 2.0 \times 10^{-3} M$ . Calculate the value of the equilibrium constant ( $K_{eq}$ ) from these data (delete units).

6. For the reaction:  $CO(g) + H_2O(g) \rightleftharpoons CO_2(g) + H_2(g)$

$K = 3.88$  at a certain temperature. If at this temperature in a certain experiment the equilibrium concentrations are  $[H_2] = 1.4 M$ ,  $[CO_2] = 1.8 M$ , and  $[H_2O] = 0.26 M$ , calculate  $[CO]$ .

7. For the reaction:  $2SO_2(g) + O_2(g) \rightleftharpoons 2SO_3(g)$

at a certain temperature, the equilibrium concentrations were observed to be  $[SO_2] = 0.581 M$ ,  $[O_2] = 7.50 \times 10^{-2} M$ , and  $[SO_3] = 0.650 M$ . Calculate the value of  $K$  for this system at this temperature.