Name ______________________ Date ____________ Class ____________

MATH SKILLS TRANSPARENCY MASTER **28**

Determining Equilibrium

Use with Chapter 17, Section 17.1

Reaction	Concentrations	Equilibrium Constant (K_{eq})
1. $2CH_4(g) \rightleftharpoons C_2H_2(g) + 3H_2(g)$	$[CH_4] = 0.500M$ $[C_2H_2] = 0.194M$ $[H_2] = 0.582M$	0.153
2. $HCONH_2(g) \rightleftharpoons NH_3(g) + CO(g)$	$[HCONH_2] = 1.9 \times 10^{-2}M$ $[NH_3] = 0.30M$ $[CO] = 0.30M$	4.8
3. $PCl_5(g) \rightleftharpoons PCl_3(g) + Cl_2(g)$	$[PCl_5] = 0.30M$ $[PCl_3] = 0.45M$ $[Cl_2] = 0.22M$	1.8
4. $N_2O_4(g) \rightleftharpoons 2NO_2(g)$	$[N_2O_4] = 0.754M$ $[NO_2] = 5.60 \times 10^{-2}M$	4.16×10^{-3}
5. $H_2(g) + I_2(g) \rightleftharpoons 2HI(g)$	$[H_2] = 0.110M$ $[I_2] = 0.500M$ $[HI] = 0.780M$	50.2

Name _____ Date _____ Class _____

MATH SKILLS TRANSPARENCY WORKSHEET 28

Determining Equilibrium

Use with Chapter 17, Section 17.1

The equilibrium constants for the reactions in the table are correct at a certain temperature. The concentrations given in the table, however, may or may not be correct when the system is at equilibrium at that temperature. Use the information in the table to answer the following questions.

1. On the basis of the K_{eq} values given in the table, which reaction mixture contains the largest amount of product(s) when at equilibrium? Explain.

2. Which reaction mixture contains the largest amount of reactants when at equilibrium? Explain.

3. Which reactions in the table have concentrations that represent the systems at equilibrium? Explain.

4. For each reaction that is not at equilibrium, change the concentration of *only one* of the reactants or products so that the ratio represents the system at equilibrium.