HONORS CHEMISTRY
HOMEWORK 10d. Name: _____

LE CHATELIER'S PRINCIPLE

1. For the reaction $2\ N_2 + 3\ H_2 \rightleftharpoons 2\ NH_3$
tell which way the equilibrium would shift if:
   a. Nitrogen was added
   b. Hydrogen was taken away
   c. Hydrogen was added
   d. Ammonia was taken away
   e. Some $NH_3$ was allowed to dissolve in water
   f. Pressure was increased

2. For the reaction. $2\ NO_2 \rightleftharpoons 2\ NO + O_2$
tell which way the equilibrium would shift if:
   a. some $NO_2$ was taken away
   b. some oxygen was taken away
   c. more NO was added
   d. the pressure was increased

3. For the reaction
$2\ KOH\ (aq) + H_2SO_4\ (aq) \rightleftharpoons K_2SO_4\ (aq) + 2\ H_2O\ (l)$
tell which way the equilibrium would shift if:
   a. Sulfuric acid was added
   b. KOH (or another base) was added
   c. Some KOH was taken away
   d. Some potassium sulfate was removed

4. For the reaction
$Na_2CO_3\ (aq) + 2\ HNO_3\ (aq) \rightleftharpoons 2\ NaNO_3\ (aq) + H_2O\ (l) + CO_2\ (g)$
tell which way the equilibrium would shift if:
   a. Sodium nitrate was added
   b. Sodium carbonate was added
   c. Nitric acid was removed
   d. The pressure was reduced