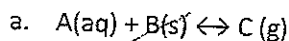


(#11-1)

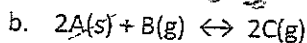
Can I determine the extent (favorability) of a chemical reaction?

Write the equilibrium expression for the following chemical reactions.

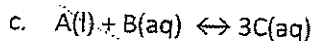
1. For each of the following, provide a K_c and a K_p expression.



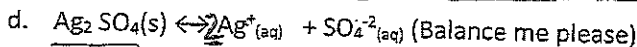
$$K_c = \frac{[C]}{[B]} \quad K_p = (P_c)$$



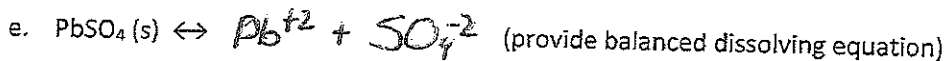
$$K_c = \frac{[C]^2}{[B]} \quad K_p = \frac{(P_c)^2}{(P_B)}$$



$$K_c = \frac{[C]^3}{[B]} \quad \boxed{\text{no } K_p \text{ (no gas)}}$$



$$K_c = K_{sp} = [Ag^+]^2 [SO_4^{2-}] \quad \boxed{\text{no } K_p}$$



$$K_c = K_{sp} = [Pb^{2+}] [SO_4^{2-}]$$

Reaction Extent

2. A reaction that goes to ^{its} greatly to extent produces a lot of (products) / reactants

3. A reaction that is product favored will have a (large K) / (small K)

4. Question 1d above has a K value = $1.0E-5$ and 1e has a K value = $6.3E-7$.

0.00001

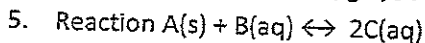
0.00000063

a. Which reaction will produce more product at equilibrium?

? \rightarrow 1d - larger K will have more product

b. Is the answer from letter a considered product favored?

$K = 1.0E-5$ is less than 1 and is reactant favored



a. Top beaker has a $K = 1.0E-10$ \rightarrow reactant favored

b. Bottom beaker has a $k = 1.0$

$$K = 1$$

Draw the beaker at equilibrium

$$K = \frac{[C]^2}{[B]} = \frac{1}{1} = 1$$

$$K = \frac{(2)^2}{4} = 1$$

