

CONCEPT: THE EQUILIBRIUM CONSTANT

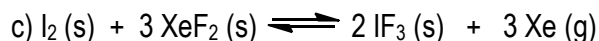
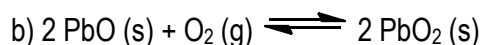
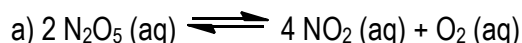
The equilibrium constant, K, is a number equal to the ratio of _____ to _____ at a given temperature.

- Its magnitude tells us how far to the left or to the right our chemical equation lies at a particular temperature.
- If K is greater than 1 then _____ are favored over _____ and _____ direction is favored.
- If K is less than 1 then _____ are favored over _____ and _____ direction is favored.

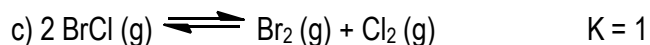
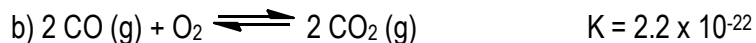
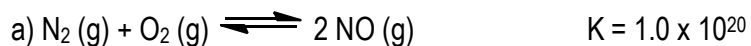
$$K =$$

The equilibrium constant, K, takes into account all states of matter except: _____ and _____.

EXAMPLE: Write the equilibrium expression for the following reaction.

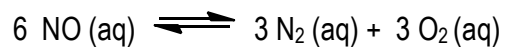


PRACTICE: State which is greater in amount: reactants or products, based on the given equilibrium constant, K.



PRACTICE: THE EQUILIBRIUM CONSTANT

PRACTICE: The decomposition of nitrogen monoxide can be achieved under high temperatures to create the products of nitrogen and oxygen gas.



a) What is the equilibrium equation for the reaction above?

b) Write the equilibrium expression for the reverse reaction.

PRACTICE: The equilibrium constant, K , for the $2 \text{ NO (g)} + \text{O}_2 \text{ (g)} \rightleftharpoons 2 \text{ NO}_2 \text{ (g)}$ is 6.9×10^2 . What is the $[\text{NO}]$ in an equilibrium mixture of gaseous NO , O_2 and NO_2 at 500 K that contains $1.5 \times 10^{-2} \text{ M O}_2$ and $4.3 \times 10^{-3} \text{ M NO}_2$?