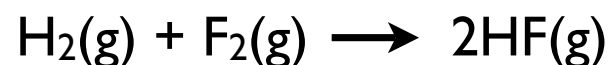


For the following reaction  $\Delta_{\text{R}}G^{\circ} = -542 \text{ kJ mol}^{-1}$  at 298K  
If I start out with a contain that has a pressure of  
1 atm of  $\text{H}_2(\text{g})$  and 1 atm of  $\text{F}_2(\text{g})$ ,  
at equilibrium what will the partial pressure of  $\text{HF}(\text{g})$  be?



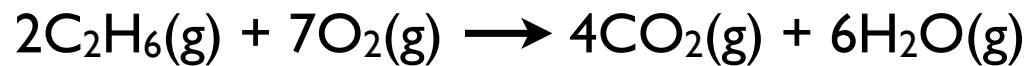
- A. approximately 1 atm
- B. approximately 0 atm
- C. approximately 2 atm
- D. approximately 4 atm
- E. there is no way to know

For the following reaction  $\Delta_{\text{R}}G^{\circ} = +740 \text{ kJ mol}^{-1}$  at 298K  
If I start out with a contain that has a pressure of  
1 mole of  $\text{Fe}_2\text{O}_3$ ,  
at equilibrium how much solid Fe will I have?



- A. approximately 0 moles
- B. approximately 1 moles
- C. approximately 2 moles
- D. approximately 3/2 moles
- E. there is no way to know

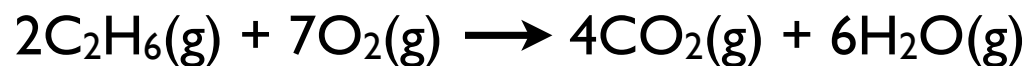
For the following reaction what is the change value for H<sub>2</sub>O?



R	C <sub>2</sub> H <sub>6</sub>	O <sub>2</sub>	CO <sub>2</sub>	H <sub>2</sub> O
I	1.0	1.4	1.8	0
C	-2x	?	?	?

- A. -2x
- B. +2x
- C. +3x
- D. +6x

For the following reaction what is the equilibrium value for  $\text{CO}_2$ ?



R	$\text{C}_2\text{H}_6$	$\text{O}_2$	$\text{CO}_2$	$\text{H}_2\text{O}$
I	1.0	1.4	1.8	0
C	$-2x$	?	?	?

- A.  $1.8 - 2x$
- B.  $1.8 + 2x$
- C.  $1.8 + 4x$
- D.  $1.0 + 6x$

# Acids and Bases

## Brønsted-Lowry Definition

Acid is a proton ( $\text{H}^+$ ) donor

Base is a proton ( $\text{H}^+$ ) acceptor

For example  
Hydrochloric Acid (HCl)