

Learning Check Q #20, 21, 23 pg. 438.

20. endothermic — heat is on the left side of the equation

a) if the system is heated then the reaction will shift to the right side

b) the reactant [] will start to ↓ and product [] will ↑

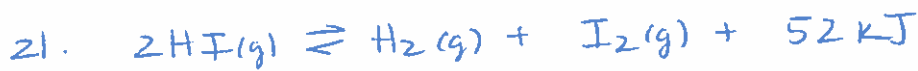
21. A catalyst does not shift the equilibrium

23. exothermic — heat on the right side of the equation

a) if the system is heated then the reaction will shift to the left side

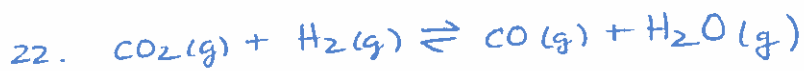
b) the reactant [] will ↑ and the product [] will ↓

Practice Problems Q #21-27 pg. 439



If the temperature ↑ then the reaction will shift towards the reactants

For 22-25 $V \uparrow$ $P \downarrow$



∵ there is the same # of particles on both sides of the equation there would be no shift.



$V \uparrow$ the reaction shifts to the side with more particles

∴ it shifts to the reactant side.



$V \uparrow$ the reaction shifts to the right (product) side since there is more particles



$V \uparrow$ it will shift to the right side (product)

\therefore there are more particles.