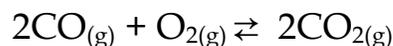
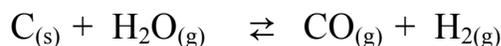


# Le Chatelier's Principle Worksheet and Key

1. If the reaction below is initially at equilibrium, and then each of the following changes are made, predict which direction the reaction rate will be fastest until equilibrium is once again established: **forward, reverse, or no change.**



- The amount of  $\text{O}_2$  is increased.
  - The amount of  $\text{CO}_2$  is decreased?
  - The amount of oxygen gas is decreased.
2. If the reaction below is initially at equilibrium, and then each of the following changes are made, predict which direction the reaction rate will be fastest until equilibrium is once again established: **forward, reverse, or no change.**



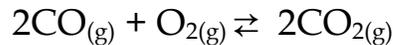
- adding  $\text{H}_2\text{O}_{(g)}$
  - removing carbon
  - removing  $\text{H}_2$
  - adding carbon
3. If the reaction below is initially at equilibrium, and then each of the following changes are made, predict which direction the reaction rate will be fastest until equilibrium is once again established: **forward, reverse, or no change.**



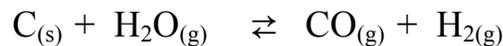
- adding  $\text{PCl}_3$
- removing  $\text{Cl}_2$
- removing  $\text{PCl}_3$
- adding  $\text{Cl}_2$

# Le Chatelier's Principle Key

1. If the reaction below is initially at equilibrium, and then each of the following changes are made, predict which direction the reaction rate will be fastest until equilibrium is once again established: **forward, reverse, or no change.**



- The amount of  $\text{O}_2$  is increased. **forward**
  - The amount of  $\text{CO}_2$  is decreased? **forward**
  - The amount of oxygen gas is decreased. **reverse**
2. If the reaction below is initially at equilibrium, and then each of the following changes are made, predict which direction the reaction rate will be fastest until equilibrium is once again established: **forward, reverse, or no change.**



- adding  $\text{H}_2\text{O}_{(g)}$  **forward**
  - removing carbon **reverse**
  - removing  $\text{H}_2$  **forward**
  - adding carbon **forward**
3. If the reaction below is initially at equilibrium, and then each of the following changes are made, predict which direction the reaction rate will be fastest until equilibrium is once again established: **forward, reverse, or no change.**



- adding  $\text{PCl}_3$  **reverse**
- removing  $\text{Cl}_2$  **forward**
- removing  $\text{PCl}_3$  **forward**
- adding  $\text{Cl}_2$  **reverse**