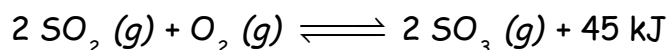


1. The basic premise of the collision theory is that particles must first \_\_\_\_\_ if a reaction is to occur. Additionally, that \_\_\_\_\_ must be effective. To be effective, the particles must \_\_\_\_\_ with the \_\_\_\_\_ and the proper amount of \_\_\_\_\_.
2. \_\_\_\_\_ is the study of reaction rates which is the rate at which the \_\_\_\_\_ disappear and the products \_\_\_\_\_.
3. There are five factors affecting the reaction rate:
  - a. \_\_\_\_\_ of the \_\_\_\_\_
  - b. \_\_\_\_\_ of the \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
  - e. \_\_\_\_\_
4. Use the collision theory to explain:
  - a. A mixture of hydrogen gas and chlorine gas reacts faster when the volume they occupy is decreased: \_\_\_\_\_  
\_\_\_\_\_
  - b. Iron filings rust faster than iron wire: \_\_\_\_\_  
\_\_\_\_\_
  - c. An increase in temperature increases the reaction rate: \_\_\_\_\_  
\_\_\_\_\_
5. Why do you think that industrial chemists are concerned with reaction rates?  
\_\_\_\_\_

6. \_\_\_\_\_ act as catalysts in our bodies. Outside the body, sugar burns only when temperatures are above 600 °C, but inside the body sugar burns (is oxidized) at normal body temperature, which is 37 °C. How is this possible? \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
7. Double arrows in an equation mean that the equation is \_\_\_\_\_.  
Brackets around a formula represent \_\_\_\_\_.
8. In a state of chemical equilibrium, the forward and reverse reactions are proceeding at the same \_\_\_\_\_.
9. \_\_\_\_\_ Principle states that when a stress is applied to a system in \_\_\_\_\_, the system reacts to \_\_\_\_\_ the stress.
10. Using the reaction below, predict the direction of the equilibrium displacement (left or right) when the following stresses are applied:



- a. increasing temperature \_\_\_\_\_
- b. decreasing pressure \_\_\_\_\_
- c. adding  $\text{SO}_2(g)$  \_\_\_\_\_
- d. removing  $\text{O}_2(g)$  \_\_\_\_\_

Will the  $[\text{SO}_3]$  increase or decrease in the above situations?

- a. \_\_\_\_\_ b. \_\_\_\_\_
- c. \_\_\_\_\_ d. \_\_\_\_\_