Review Sheet: Unit 12 **Name**_____

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:

$$2\ SO_2\ (g) + O_2\ (g) \rightleftharpoons 2\ SO_3\ (g) + 45\ kJ$$

   a. increasing temperature _____

   b. decreasing pressure _____

   c. adding $SO_2(g)$ _____

   d. removing $O_2(g)$ _____

   Will the $[SO_3]$ increase or decrease in the above situations?

   a. _____ b. _____

   c. _____ d. _____