

Chapter 12: Introduction and Sections 12.1 and 12.2

Directions: Read up to the end of section 12.2 of our Zumdahl text, answering these questions as you go.

1. What does the term "spontaneity" refer to? _____

a) What does it NOT mean? _____

2. Review: what does the term "normal conditions" mean?

Pressure = _____

(By the way, what is our approximate room temperature in °C? _____)

3. Chemical kinetics = _____

a) Why is this an important area of chemistry? _____

4. A reaction mechanism = _____

5. What are the units for the reaction rate of a chemical reaction?

Rate =

6. How does the reaction rate change over time? _____

7. What do you call the rate at a particular time? _____

8. When is the reaction rate the greatest? _____

a) Why? _____

9. For the reaction $2\text{NO}_2(\text{g}) \rightarrow 2\text{NO}(\text{g}) + \text{O}_2(\text{g})$, what is the rate law?

Rate =

a) Why can you ignore the concentrations of the products? _____

b) $k =$ _____ (This takes into account the activation energy and the temperature of the reaction.)

c) $n =$ _____ (We'll be getting to this in the next section.)

d) Both k and n have to be determined by _____.

10. What's the difference between the differential rate law and the integrated rate law?

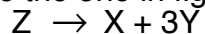
a) Differential rate law = _____

b) Integrated rate law = _____

11. How do you decide which kind of rate law to determine? _____

12. What is the practical use for knowing the rate law of a chemical reaction? _____

13. In the space below, draw a graph like the one in figure 12.1 for the following reaction:



Make sure to take the coefficients into account. Label the x and y axes (but no values are necessary).