

Advanced Chemistry
More Practice Reaction Rates

NAME: _____ PER: _____

Instructions: Complete the following problems. SHOW ALL WORK in the empty space below the questions.
Remember the units. Round to the correct number of significant figures.

Concept Questions

- The speed at which a chemical reaction occurs is known as _____.
 - molarity
 - reaction rate
 - mole ratio
 - concentration
- All the following are factors that affect reaction rates EXCEPT
 - physical state of the products
 - reactant concentrations
 - reaction temperature
 - presence of a catalyst
- What typically happens to rate of the reaction if the concentration of one or more of the reactants is increased?
 - reaction proceeds slower
 - reaction proceeds faster
 - there is no change to the rate of reaction
 - none of the above are correct
- If you decrease the temperature of the reaction, the reaction rate will generally _____.
 - decrease
 - increase
 - stays the same
 - none of above are correct
- Agents that increase reaction rates without being used up in the reaction are known as
 - reactants
 - products
 - catalysts
 - molarity
- Which of the following are the correct units to express the rate of reaction?
 - molarity (mol/L)
 - molar mass (g/mol)
 - mole ratio (mol/mol)
 - molarity per second (M/s)
- Which one of the following is **not** a valid expression for the rate of the reaction below?
$$2A + B \rightarrow 2C + 3D$$
 - $-\frac{1}{2} \frac{\Delta[A]}{\Delta t}$
 - $+\frac{1}{3} \frac{\Delta[D]}{\Delta t}$
 - $+\frac{1}{2} \frac{\Delta[C]}{\Delta t}$
 - $+\frac{1}{1} \frac{\Delta[B]}{\Delta t}$

Practice Problems

6. Consider the reaction: $A + B \rightarrow 2 C + 2 D$
If B is disappearing at a rate of 0.0205 M/s, the rate of appearance of C is _____ M/s.

7. Consider the reaction: $3 A + 2 B \rightarrow 2 C + 3 D$
If A is disappearing at a rate of 0.0105 M/s, the rate of appearance of C is _____.

8. Consider the reaction: $A + 2 B \rightarrow 3 C + 3 D$

If the rate of appearance of D is 0.00174 M/s, the rate of appearance for C is _____.

5. The reaction represented in the data table below is $A \rightarrow 2B$. Use the data table to answer questions A-C below.

| Time (s) | Concentration (M) of A | Concentration (M) of B |
|----------|------------------------|------------------------|
| 0.0 | 0.0453 | 0.0 |
| 20.0 | 0.0348 | 0.0210 |
| 40.0 | 0.0268 | 0.0370 |
| 60.0 | 0.0206 | 0.0494 |

A) Given the following data, the average rate of disappearance for [A] between the time interval of 20 s to 40 s is _____ M/s

B) Given the following data, the average rate of disappearance for [A] between the time interval of 40 s to 60 s is _____ M/s.

C) Given the following data, the average rate of appearance for [B] between the time intervals of 20 s to 40 s is _____ M/s.