

Name: _____

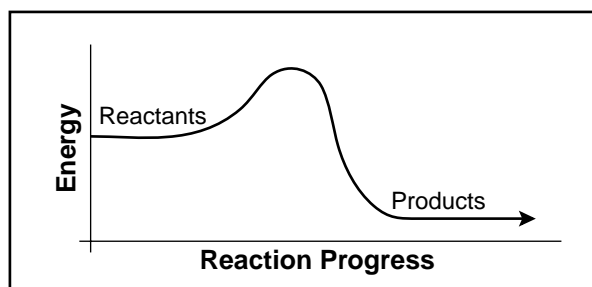
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- Which of these is required to calculate the rate of a reaction?
 - The change in enthalpy over time for the reaction
 - The time it takes for the reaction to go halfway to completion
 - The change in concentration of either the product or reactant over time
 - The change in temperature for the reaction over time

- Which of these decreases as the activation energy for a reaction increases?
 - Number of inactivated complexes
 - Entropy
 - Amount of reactants
 - Reaction rate

- The collision theory explains why reactions occur and how certain factors increase or decrease the rate of reaction. The collision theory involves all of the following EXCEPT that —
 - reacting substances must collide with the correct orientation
 - reacting substances must collide
 - reacting substances must collide spontaneously
 - reacting substances must collide with enough energy to form the activated complex

Use the diagram below to answer question 4.



- How would the addition of a catalyst affect this reaction?
 - The presence of a catalyst would decrease the activation energy.
 - The catalyst would increase the activation energy.
 - The presence of a catalyst would make the reaction more spontaneous.
 - The catalyst would be consumed during the reaction and make more product.

- Which of these will NOT appear in the net chemical equation that describes a complex reaction?
 - Coefficients
 - Intermediates
 - Limiting reactants
 - State of matter



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Use the formula below to answer question 6.

$$\text{Rate} = k[\text{NO}]^2[\text{Cl}_2]$$

- 6 The formula shows the rate law for a certain reaction. Which of the following gives the correct result when the concentration of NO is doubled?
- A The reaction rate is unaffected.
 B The reaction rate doubles.
 C The reaction rate triples.
 D The reaction rate quadruples.
- 7 The rate of reaction can never proceed faster than that of the rate-determining step because —
- A the rate-determining step must exceed the rate of reaction
 B all rate-determining steps require a catalyst
 C the rate-determining step is always the first step in any reaction
 D the rate of reaction is always limited by the slowest overall step
- 8 Reactions may be classified with an overall order, as well as orders with respect to the individual substances reacting. Which of these is classified as third order overall?
- A $\text{Rate} = k[\text{A}]^2[\text{B}][\text{C}]$
 B $\text{Rate} = k[\text{A}]^3[\text{B}]$
 C $\text{Rate} = k[\text{A}]^2[\text{B}]$
 D $\text{Rate} = k[\text{B}]^3[\text{C}]$

Use the table below to answer question 9.

Student	Sample size	Temperature (C°)
Hema	10 g Sugar cube	0°C
Aaron	15 g Sugar crystals	30°C
Nikki	25 g Sugar cube	100°C
Erick	20 g Sugar crystals	95°C

- 9 The table above shows the various conditions used when four students dissolved sugar. The student whose sample will dissolve the fastest is most likely —
- A Hema
 B Aaron
 C Nikki
 D Erick
- 10 Which of the following would NOT increase the rate of a reaction?
- A an increase in the concentration of reactants
 B the removal of a catalyst
 C an increase in solvent volume
 D an increase in temperature

