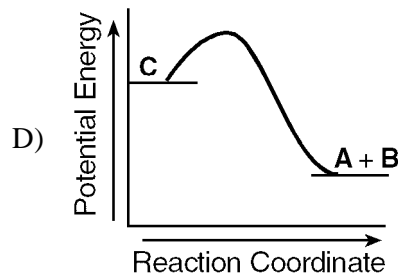
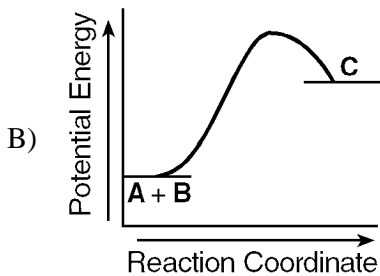
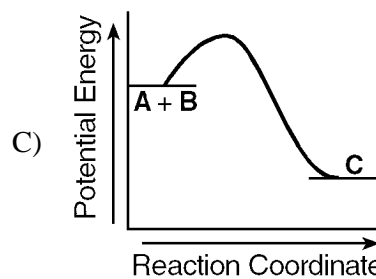
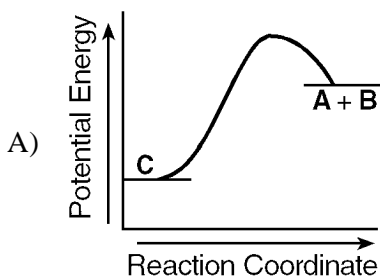


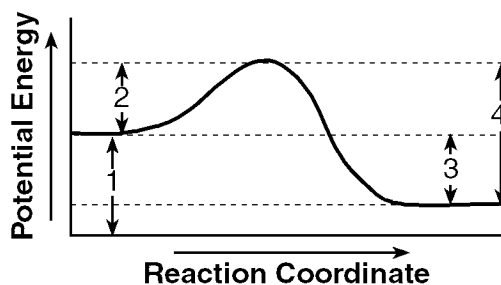
Name: \_\_\_\_\_

## Kinetics Review Questions

- \_\_\_ 1) Activation energy is required to initiate
- A) both exothermic and endothermic reactions
  - B) neither exothermic nor endothermic reactions
  - C) endothermic reactions, only
  - D) exothermic reactions, only
- \_\_\_ 2) A catalyst changes the rate of a chemical reaction by lowering the
- A) activation energy of the reaction
  - B) heat of the reaction
  - C) potential energy of the reactants
  - D) potential energy of the products
- \_\_\_ 3) Which potential energy diagram represents the reaction  $A + B \longrightarrow C + \text{energy}$ ?

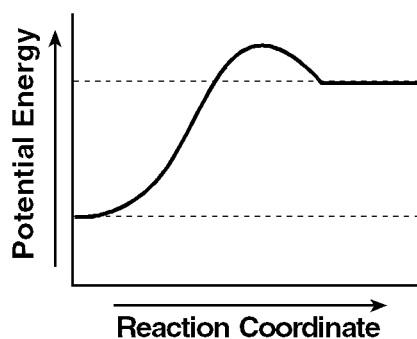


\_\_\_ 4)



The activation energy for the reverse reaction is represented by

- A) 1
- B) 2
- C) 3
- D) 4



\_\_\_ 5)

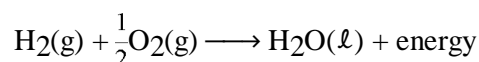
According to the potential energy diagram shown above, the chemical reaction in the forward direction is

- A) exothermic because it absorbs energy                      C) endothermic because it releases energy  
 B) endothermic because it absorbs energy                    D) exothermic because it releases energy

\_\_\_ 6) Raising the temperature speeds up the rate of a chemical reaction by increasing

- A) both the effectiveness and the frequency of the collisions  
 B) the effectiveness of the collisions, only  
 C) neither the effectiveness nor the frequency of the collisions  
 D) the frequency of the collisions, only

\_\_\_ 7) Consider the reaction:



Which of the following phrases *best* describes this reaction?

- A) exothermic, absorbing energy                              C) exothermic, releasing energy  
 B) endothermic, releasing energy                            D) endothermic, absorbing energy

\_\_\_ 8) Based on the *Heat of Reaction at 101.3 kPa and 298 K* chemistry reference table, how many kilojoules of heat are given off when 0.500 mole of  $\text{Al}_2\text{O}_3(\text{s})$  is formed from its elements?

- A) 13,404 kJ                      B) 3,351 kJ                      C) 838 kJ                      D) 1,676 kJ

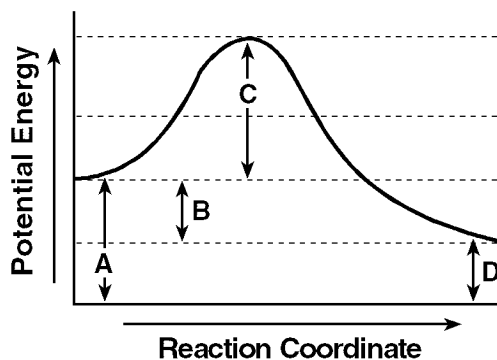
\_\_\_ 9) As the number of effective collisions of reacting particles increases, the rate of reaction

- A) decreases                      B) remains the same                      C) increases

\_\_\_ 10) Which condition will increase the rate of a chemical reaction?

- A) decreased temperature and increased concentration of reactants  
 B) increased temperature and decreased concentration of reactants  
 C) increased temperature and increased concentration of reactants  
 D) decreased temperature and decreased concentration of reactants

- \_\_\_ 11) The potential energy diagram of a chemical reaction is shown below.



Which letter in the diagram represents the heat of reaction ( $\Delta H$ )?

- A) A                                      B) B                                      C) C                                      D) D

Questions 12 and 13 refer to the following:

The table below records the production of 50 milliliters of  $\text{CO}_2$  in the reaction of  $\text{HCl}$  with  $\text{NaHCO}_3$ . Five trials were performed under different conditions as shown. (The same mass of  $\text{NaHCO}_3$  was used in each trial.)

Trial	Particle Size of $\text{NaHCO}_3$	Concentration of $\text{HCl}$	Temperature ( $^\circ\text{C}$ ) of $\text{HCl}$
<b>A</b>	small	1 M	20
<b>B</b>	large	1 M	20
<b>C</b>	large	1 M	40
<b>D</b>	small	2 M	40
<b>E</b>	large	2 M	40

- \_\_\_ 12) What trial would produce the *fastest* reaction?  
 A) trial A                                      B) trial B                                      C) trial C                                      D) trial D
- \_\_\_ 13) What two trials could be used to measure the effect of surface area?  
 A) trials A and C                                      C) trials A and B  
 B) trials B and D                                      D) trials A and D
- \_\_\_ 14) According to the *Heats of Reaction at 101.3 kPa and 298 K* chemistry reference table, the decomposition of which compound would be an exothermic reaction?  
 A)  $\text{NO}_2(\text{g})$                                       B)  $\text{CO}_2(\text{g})$                                       C)  $\text{NH}_3(\text{g})$                                       D)  $\text{H}_2\text{O}(\text{g})$
- \_\_\_ 15) In a chemical reaction, the difference between the potential energy of the products and the potential energy of the reactants is the  
 A) heat of reaction                                      C) activation energy  
 B) heat of fusion                                      D) free energy

- \_\_\_ 16) What change does the  $\Delta H$  of a chemical reaction represent?
- A) heat of reaction
  - B) entropy
  - C) free energy
  - D) activation energy