Name: Key
Period: _____ Date: _____

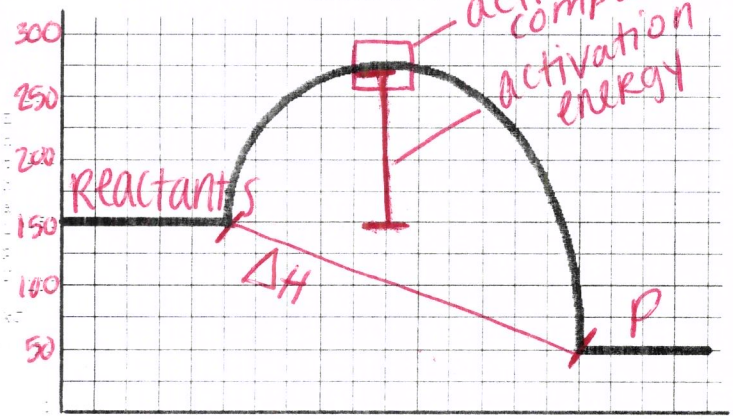
# Unit 11A: Reactions and Energy Study Guide_L

1. The heat content of a substance is called its enthalpy and the symbol for this is ΔH.
2. If the heat of reaction value is a negative number, it indicates the reaction is exothermic.
3. In an endothermic reaction, the enthalpy of the products is higher than the enthalpy of the reactants.
4. In the reaction $2H_2 + O_2 \rightarrow 2H_2O \quad \Delta = -136.64$ kcal
   a. The reaction is (**exothermic**, endothermic)
   b. As this reaction proceeds, the temperature of the surroundings will (**increase**, decrease)
5. Energy which must be put into the reactants to get a reaction started is called activation energy
6. Enthalpy is stored heat energy or (**potential**, **kinetic**) energy. - moving/motion
7. Where is enthalpy, heat energy, stored in a chemical substance? _____
8. Endothermic reactions have a (+ - ) sign. ΔH

**USE THE FOLLOWING GRAPHS TO ANSWER THE NEXT 6 QUESTIONS.**

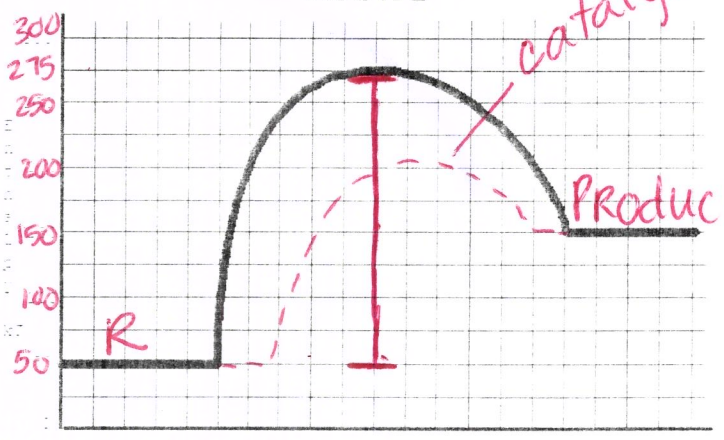
9. Graph (A , **B**) represents an endothermic reaction. gaining energy
10. What is the enthalpy of the reactants for graph A? 150
    What is the activation energy for graph A? 275 - 150 = 125
11. What is the enthalpy of the products for graph B? 150
    What is the activation energy for graph B? 225
12. In graph (**A**, B) temperature of the surrounding will increase as the reaction proceeds.
13. In graph (**A**, B) potential energy is decreasing.
14. In graph (A, **B**) the temperature of the system will increase as the reaction proceeds.

**GRAPH A**




$\Delta H = \sum H(\text{products}) - \sum H(\text{reactants})$
$\Delta H = 50 - 150 = -100$ exo

**GRAPH B**




ΔH = 150 − 50 = 100 endo

15. What is the Collision Theory?
    a. particles must collide
    b. particles must collide w/ correct orientation
    c. particles must collide w/ enough energy to form activated complex

16. What are the seven factors that affect the rate of reaction?
    a. physical state
    b. concentration
    c. temperature
    d. particle size
    e. pressure - only gas
    f. surface area
    g. catalyst & inhibitor

17. If temperature is increased, which part(s) of the collision theory is(are) being affected? (C) energy

18. If surface area is increased, which part(s) of the collision theory is(are) being affected? (A) collide

19. If pressure on a gas is increased, which part(s) of the collision theory is(are) being affected? (b) a&c

20. Reaction rate is shown by ~~#~~ of reactants (**increasing, decreasing**) or ~~#~~ of products (**increasing, decreasing**) over time.

21. A catalyst (**increases, decreases**) activation energy by Rate of chemical Rxn.

22. An inhibitor (**speeds up, slows down**) a chemical reaction.

23. Glow sticks are (**endothermic, exothermic**) reactions because they (**release, absorb**) light energy.

24. Making a 10 karat gold ring, mixing silver and gold, is a (**physical, chemical**) change.

25. Burning methane ($CH_4$) is an (**endothermic, exothermic**) (**physical, chemical**) change.

26. A + energy → B is an example of an (**endothermic, exothermic**) reaction.