

Name: \_\_\_\_\_  
Blk: \_\_\_\_\_ Date: \_\_\_\_\_

**Chemistry 12**  
**REACTION KINETICS**  
***Lesson # 8 ACTIVATION ENERGIES***

ON THE POTENTIAL ENERGY DIAGRAM BELOW WE DESCRIBE WHAT HAPPENS AS A CHEMICAL REACTION OCCURS:

ACTIVATED COMPLEX:

ACTIVATED ENERGY ( $E_a$ ):

When two molecules approach one another they will start to convert KE into PE and climb the "energy hill", therefore "spending" their KE to "buy" PE. There THREE possible outcomes:

- 1.
  
- 2.
  
- 3.

A collision between two particles is EFFECTIVE if the collision results in a reaction:

Recall from lesson # 5 the COLLISION THEORY, a collision is only successful if the molecules collide with:

a.

b.

One of the main PRINCIPLES of Chemistry 12 is that OF EQUILIBRIUM !!!

A chemical reaction can go either from reactants to products or from products back to reactants.

To indicate the reversibility of chemical reactions we have to demonstrate it on the Potential Energy Diagram.

Where  $E_a(f) =$

and  $E_a(r) =$

NOTE: the activation energy is always ENDOTHERMIC: energy must be added to reach the activated complex.

ENDOTHERMIC REACTIONS:

EXOTHERMIC REACTIONS:

**Seatwork/Homework:** Exercises 33-45 pg 23-25

**PLO's:** B2, B3, B4, B5 and B6