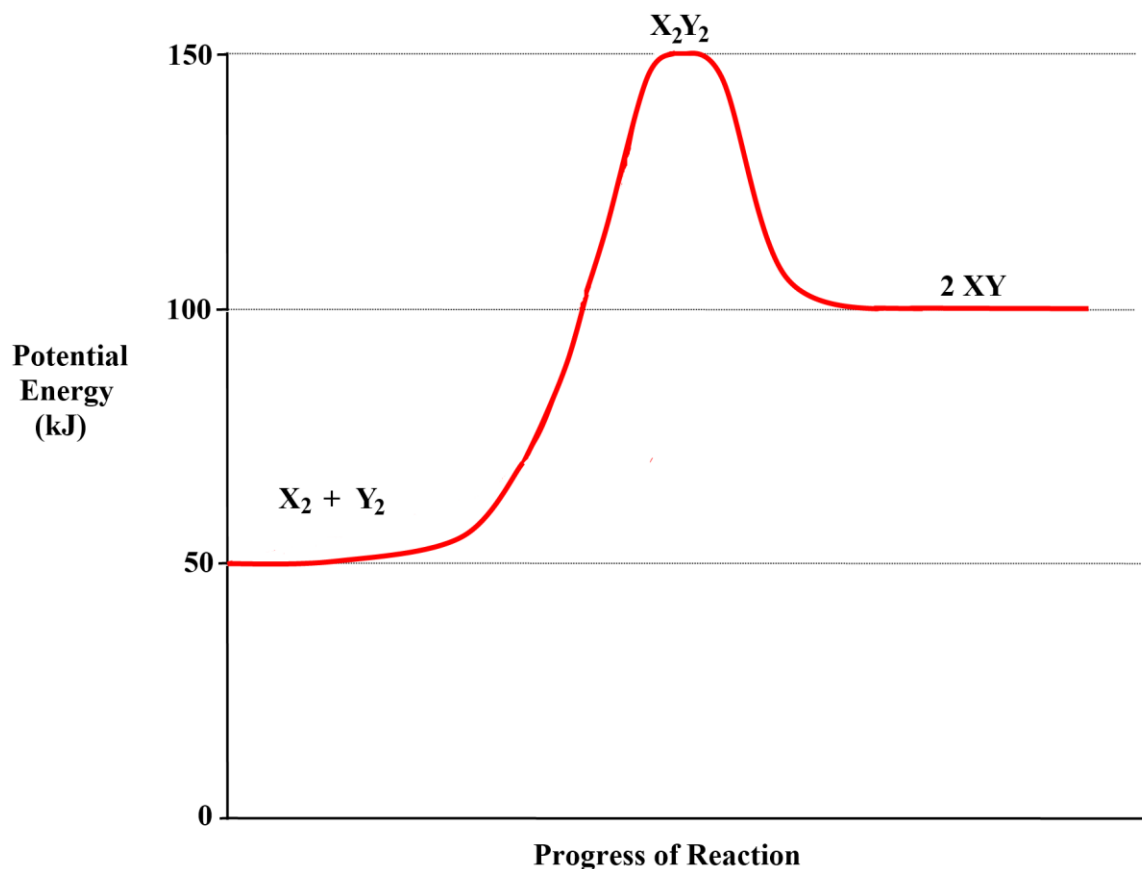


## Potential Energy Diagrams Worksheet

CK-12 Foundation Chemistry

Name \_\_\_\_\_ Date \_\_\_\_\_

Use the following Potential Energy Diagram to answer questions 1 - 12.

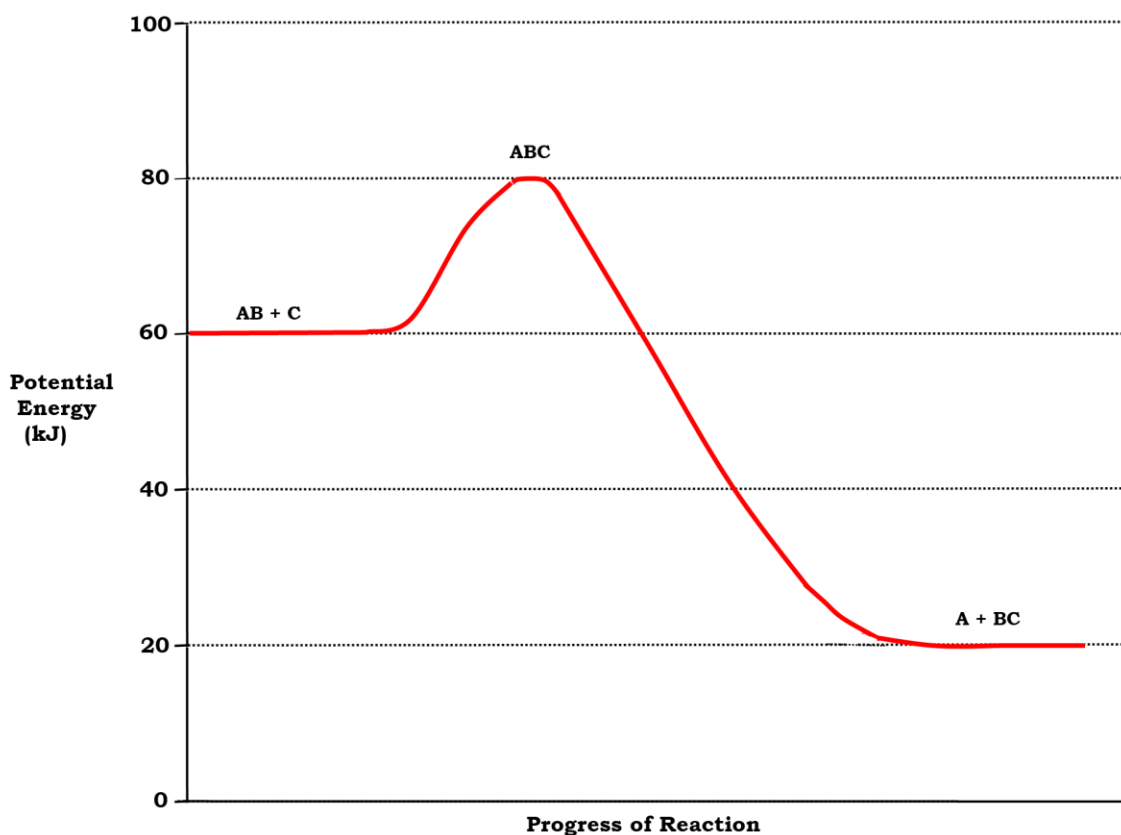


1. Is the overall reaction as shown exothermic or endothermic? \_\_\_\_\_
2. What is the activation energy for the forward reaction? \_\_\_\_\_
3. What is the activation energy for the reverse reaction? \_\_\_\_\_
4. What is the enthalpy change for ( $\Delta H$ ) for the forward reaction? \_\_\_\_\_
5. What is the  $\Delta H$  for the reverse reaction? \_\_\_\_\_
6. Is the reverse reaction exothermic or endothermic? \_\_\_\_\_
7. Which species is the activated complex? \_\_\_\_\_
8. Which species or group of species has the *highest* potential energy? \_\_\_\_\_

## 2 | Potential Energy Diagrams Worksheet

9. Which species or group of species has the *weakest* bonds? \_\_\_\_\_
10. Which species or group of species has the *strongest* bonds? \_\_\_\_\_
11. Which do you think would be *faster* at that the same temperature, the forward or reverse reaction? \_\_\_\_\_
12. What is the threshold energy for the forward reaction? \_\_\_\_\_
13. In general, as reactant particles begin a collision, the potential energy \_\_\_\_\_ (increases, decreases, stays the same) and the kinetic energy \_\_\_\_\_ (increases, decreases, stays the same).
14. Describe what happens to two reactant particles that collide with less than the activation energy.

Use the following Potential Energy Diagram to answer questions 15 - 22.



15. What is the activation energy for the forward reaction? \_\_\_\_\_
16. What is the activation energy for the reverse reaction? \_\_\_\_\_

### 3 | Potential Energy Diagrams Worksheet

17. What is the  $\Delta H$  for the forward reaction? \_\_\_\_\_
18. What is the  $\Delta H$  for the reverse reaction? \_\_\_\_\_
19. Is the forward reaction exothermic or endothermic? \_\_\_\_\_
20. What is the threshold energy for the forward reaction? \_\_\_\_\_
21. Which bond is stronger,  $A - B$  or  $B - C$ ? \_\_\_\_\_
22. Give a reason for your answer in question 21.