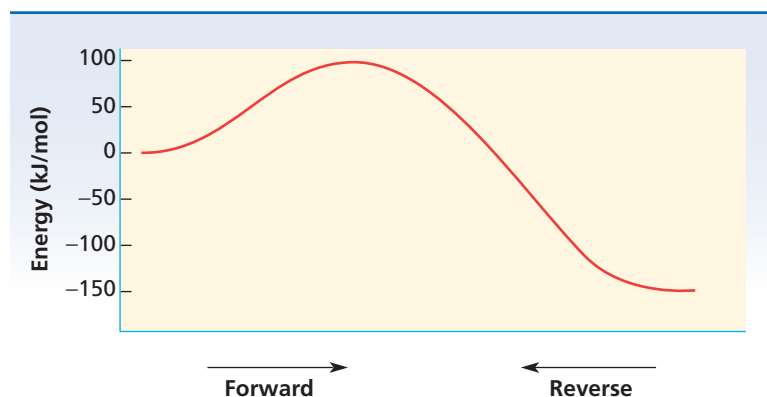


PRACTICE

Answers in Appendix E

- a. Use the method shown in the sample problem to redraw and label the following energy diagram. Determine the value of $\Delta E_{\text{forward}}$, $\Delta E_{\text{reverse}}$, E_a , and E_a' .
- b. Is the forward reaction shown in the diagram exothermic or endothermic? Explain your answer.



- a. Draw and label an energy diagram similar to the one shown in the sample problem for a reaction in which $E_a = 125$ kJ/mol and $E_a' = 86$ kJ/mol. Place the reactants at energy level zero.
 - b. Calculate the values of $\Delta E_{\text{forward}}$ and $\Delta E_{\text{reverse}}$.
 - c. Is this reaction endothermic or exothermic? Explain your answer.
- a. Draw and label an energy diagram for a reaction in which $E_a = 154$ kJ/mol and $\Delta E = 136$ kJ/mol.
 - b. Calculate the activation energy, E_a' , for the reverse reaction.

extension

Go to go.hrw.com for more practice problems that ask you to determine E_a and ΔE .

 **Keyword:** HC6RXKX

SECTION REVIEW

1. What is meant by reaction mechanism?
2. What factors determine whether a molecular collision produces a reaction?
3. What is activation energy?
4. What is an activated complex?
5. How is activation energy related to the energy of reaction?
6. What is the difference between an activated complex and an intermediate?
7. Explain why, even though a collision may have energy in excess of the activation energy, reaction may not occur.

Critical Thinking

8. **ANALYZING INFORMATION** Which corresponds to the faster rate: a mechanism with a small activation energy or one with a large activation energy? Explain your answer.