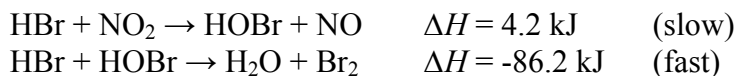
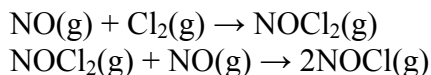


## Kinetics Worksheet 2

1. What is a reaction mechanism? An intermediate?
2. The gas-phase reaction  $2\text{HBr} + \text{NO}_2 \rightarrow \text{H}_2\text{O} + \text{NO} + \text{Br}_2$  is thought to occur by the following mechanism



- a. Draw the energy diagram that depicts this reaction mechanism. On the diagram, show the energy of the reactants, energy of the products, and relative activation energies of the two elementary steps.
  - b. Are there any intermediates in the complex reaction described above? Explain why or why not. If any intermediates exist, what are their formulas?
3. It is believed that the following two elementary steps make up the mechanism for the reaction between nitrogen monoxide and chlorine:



Write the equation for the overall reaction and identify any intermediates in the reaction mechanism.