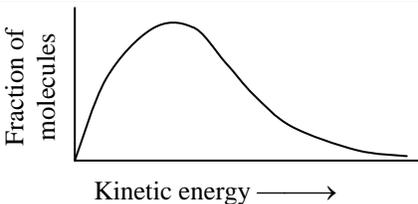
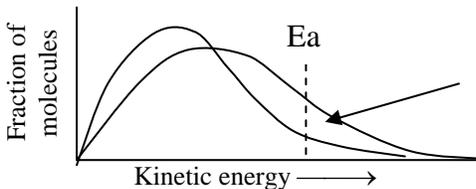
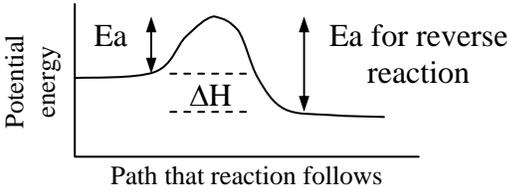
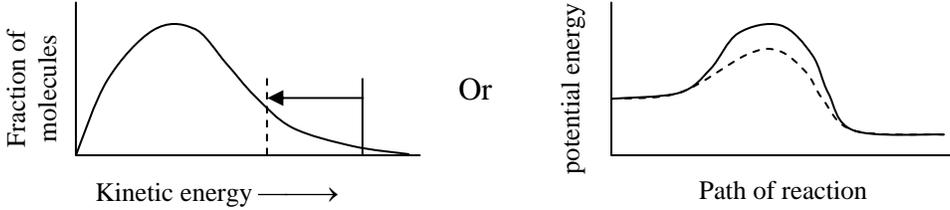


What name is given to the minimum energy required for a reaction?	Activation energy (or E_a).
Sketch a graph showing the typical distribution of kinetic energy (KE) among molecules.	
What is the name given to this graph? How is derived?	The Maxwell-Boltzmann graph. It can be shown experimentally (using a stream of vapor and two rotating disks).
Illustrate graphically how temperature influences reaction rate.	 <p>Temperature shifts the KE curve so that a greater fraction of molecules surpass the E_a.</p>
Explain the transition state theory? Give another name for transition state.	This theory suggests that as molecules come together, they gain potential energy as they slow down (i.e. as they lose kinetic energy). At the point where potential energy is at a maximum, new bonds have formed but old bonds are not yet completely broken. This transition state is also referred to as an activated complex.
Graphically represent the formation of the transition state. Label all relevant ranges on the graph. What are the units of the x- and y-axes?	 <p>* = site of activated complex</p>
How are exothermic changes drawn differently than endothermic changes?	The above diagram illustrates both an exothermic and endothermic change; from left to right ΔH is negative (i.e. the change is exothermic), and from right to left ΔH is positive (i.e. the change is endothermic).
What is true of the total energy during and after a transition?	The total energy remains constant. Any change in potential energy is mirrored by a change in kinetic energy (i.e. an increase in potential energy of 10 kJ will be matched by a decrease in kinetic energy of 10 kJ).

18.11

How do catalysts speed the rate of a reaction?	By lowering the energy of activation, thus allowing a greater fraction of molecules to react.
Illustrate graphically the effect of a catalyst on E_a (use a dashed line to identify the E_a when a catalyst is present).	 <p>Or</p>