

AP Chemistry Daily Videos

5.10 Multistep Reaction Energy Profile

Video #1

1. What is the relationship between slow steps and activation energy?

2. Pause the video at 4:25 and attempt the problem, then evaluate how you did and identify any errors.

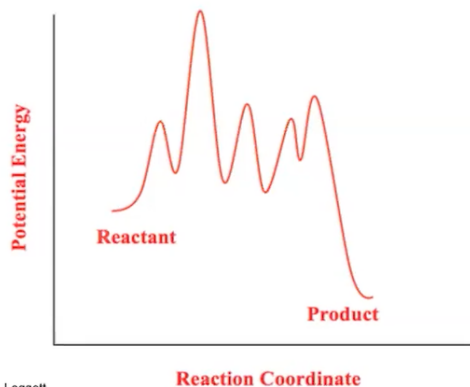
Stop the video and sketch a reaction profile for the mechanism shown.



STEP 1:	$\text{H}_2\text{O}_2(aq) + \text{I}^-(aq) \xrightarrow{k_1} \text{H}_2\text{O}(l) + \text{OI}^-(aq)$	SLOW	Exothermic
STEP 2:	$\text{H}^+(aq) + \text{OI}^-(aq) \xrightarrow{k_2} \text{HOI}(aq)$	FAST	Exothermic
STEP 3:	$\text{HOI}(aq) + \text{H}^+(aq) + \text{I}^-(aq) \xrightarrow{k_3} \text{I}_2(aq) + \text{H}_2\text{O}(l)$	FAST	Exothermic

3. Pause the video at 6:13 and attempt the problem, then evaluate how you did and identify any errors. Before checking your work, identify each step as endothermic or exothermic. Circle where transition states form and box in where you'd find intermediates.

How many steps would be in a mechanism represented by the reaction profile shown? Which step would be the slow step?



Source: Dena K. Leggett

