AP Chemistry Daily Videos
5.4 Elementary Reactions

Video #1

1. Relate reaction mechanism to walk directly to class versus a circuitous route.

2. Why are intermediates not included in the overall reaction?

3. *Note, unlike typical rate laws, a rate law from a reaction mechanism can be derived based on the elementary step's coefficients.

4. Pause the video at 1:20 and attempt the problem, then evaluate how you did and identify any errors.

A reaction occurs according to the proposed three-step mechanism below

Step 1:	$A + A \rightarrow C$
Step 2:	$C + B \rightarrow D + F$
Step 3:	$D + B \rightarrow E + F$
Overall:	?

(a) Write the rate law for each elementary step.
(b) What is the overall chemical equation for the reaction?
(c) It is unlikely that this overall reaction occurs in a single elementary step, explain why.

5. Pause the video at 3:06 and attempt the problem, then evaluate how you did and identify any errors.

A two-step reaction mechanism is proposed for a reaction, as represented below:

Step 1:	$NO(g) + Cl_2(g) \rightarrow NOCl_2(g)$
Step 2:	$NOCl_2(g) + NO(g) \rightarrow 2\ NOCl(g)$

(a) Write the rate law for elementary step 1.
(b) Identify the intermediate and justify your choice.
(c) What is the overall chemical equation for the reaction above?