

For an increase in ...	The rate ...

Concentration Dependence

Mechanism matters:

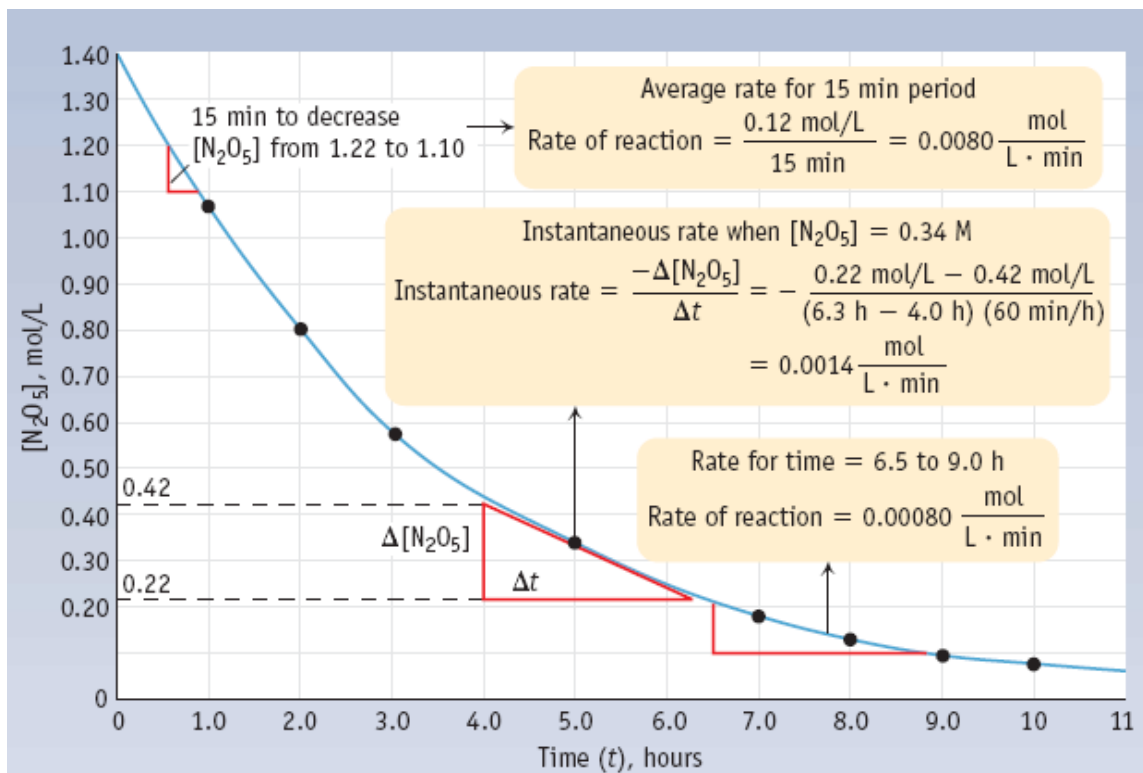
Different Types of "Rates":

Rate=

Rate over time=

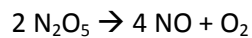
Instantaneous rate=

Initial rate=



What "Rate Laws" look like:

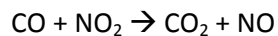
- **First order reaction**



- **Second order reaction**

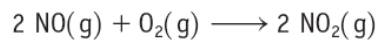


- **First order in CO and NO₂, second order overall**



- **Zero order**

Reaction	Starting Concentration	Initial Rate	Order
A → B			
C → D			
E → F			



Experiment	Initial Concentrations (mol/L)		Initial Rate (mol/L · s)
	[NO]	[O ₂]	
1	0.020	0.010	0.028
2	0.020	0.020	0.057
3	0.020	0.040	0.114
4	0.040	0.020	0.227
5	0.010	0.020	0.014