

Kinetics Order Overview

For the general reaction: $aA \rightarrow \text{Products}$

	Zero Order	First Order	Second Order
Rate Law	Rate = k	Rate = $k[A]$	Rate = $k[A]^2$
Integrated Rate Law	$[A] = -kt + [A]_0$	$\ln [A] = -kt + \ln [A]_0$	$[A]^{-1} = kt + [A]_0^{-1}$
Plot Needed For Straight Line	$[A]$ versus t	$\ln [A]$ versus t	$[A]^{-1}$ versus t
Relationship of Rate Constant to the Slope of Straight Line	Slope = $-k$	Slope = $-k$	Slope = k
Half-life	$t_{1/2} = [A]_0/2k$	$t_{1/2} = 0.693/k$	$t_{1/2} = 1/(k[A]_0)$