

TABLE 14.5 Reaction Kinetics: A Summary for the Hypothetical Reaction $A \longrightarrow \text{Products}$

Order	Rate Law	Integrated Rate Equation	Straight Line	$k =$	Units of k	Half-life
0	Rate = k	$[A]_t = -kt + [A]_0$	$[A]$ v. time	–slope	$\text{mol L}^{-1} \text{s}^{-1}$	$[A]_0/2k$
1	Rate = $k[A]$	$\ln[A]_t = -kt + \ln[A]_0$	$\ln [A]$ v. time	–slope	s^{-1}	$0.693/k$
2	Rate = $k[A]^2$	$\frac{1}{[A]_t} = kt + \frac{1}{[A]_0}$	$\frac{1}{[A]}$. time	slope	$\text{L mol}^{-1} \text{s}^{-1}$	$\frac{1}{k[A]_0}$