

TABLE 9.1.1 A summary of the characteristics of zero-order, first-order and second-order reactions.

Order	Reaction	Rate Law	Integrated Rate Law	Units of k	Half-life
0th	$A \rightarrow B$	$V = k$	$[A] = [A]_0 - kt$	$M \text{ sec}^{-1}$	$t_{1/2} = \frac{[A]_0}{2k}$
1st	$A \rightarrow B$	$V = k[A]$	$\ln[A] = \ln [A]_0 - kt$	sec^{-1}	$t_{1/2} = \frac{0.6931}{k}$
2nd	$2A \rightarrow B$	$V = k[A]^2$	$\frac{1}{[A]} = \frac{1}{[A]_0} + kt$	$M^{-1} \text{ sec}^{-1}$	$t_{1/2} = \frac{1}{k[A]_0}$
	$A+B \rightarrow C$	$V = k[A][B]$	$\ln \frac{[B][A]_0}{[A][B]_0} = k \left([B]_0 - [A]_0 \right) t$		–