

Finding an Experimental Rate Law

Rate Law - communicates how the concentration of each reactant affects overall rate.

initial rate — $\text{Rate} = k [A]^m [B]^n$ — concentration of

↑
constant

The order of a reaction. (Sum of exponents)

e.g. $\text{Rate} = k [A]^m [B]^n$ order = $m + n$

Example p.544 Handout.

Trial	[A]	[B]	Initial Rate
1	0.100	0.100	2.00×10^{-3}
2	0.200	0.100	4.00×10^{-3}
3	0.200	0.200	16.0×10^{-3}

] 2x

1. Effect of [A] — Trials 1 + 2 [B] same
[A] is doubled, Rate is 2x (double)

2. Effect of [B] — Trials 2 + 3 [A] is same
[B] doubled

p. 545 #16-18
p. 555 #64,
69, 70, 71

$\frac{\Delta \text{Rate}}{4} = \frac{\Delta [B]}{2^2}$ exponent

Rate Law —
 $\text{Rate} = k [A] [B]^2$