

	B	C	D	E	F	G	H	I
		Beaker A	Beaker A	Beaker B	Beaker B	Beaker C		
		KI	Na ₂ S ₂ O ₃	HCl	H ₂ O	KBrO ₃	Time / s	
						+ Starch		
10	Run	0.01	0.00025	0.1		0.04		
11	1	10	10	10	10	10	t ₁	
12	2	5	10	10	15	10	t ₂	
13	3	15	10	10	5	10	t ₃	
14	4	20	10	10	0	10	t ₄	
15	5	10	10	10	15	5	t ₅	
16	6	10	10	10	5	15	t ₆	
17	7	10	10	10	0	20	t ₇	
18	8	10	10	5	15	10	t ₈	
19	9	10	10	15	5	10	t ₉	
20	10	10	10	20	0	10	t ₁₀	

← Molarity

← Volume in mL

To calculate concentration use $M_1 * V_1 = M_2 * V_2$

Example Equation: C23

		[I ⁻]	[S ₂ O ₃ ²⁻]	[H ⁺]	H ₂ O	[BrO ₃ ⁻]	Rate	k
23	1	0.002	0.00005	0.02		0.008	=[S ₂ O ₃ ²⁻]/(6*t ₁)	
24	2	0.001	0.00005	0.02		0.008	=[S ₂ O ₃ ²⁻]/(6*t ₂)	
25	3	0.003	0.00005	0.02		0.008	=[S ₂ O ₃ ²⁻]/(6*t ₃)	
26	4	0.004	0.00005	0.02		0.008	=[S ₂ O ₃ ²⁻]/(6*t ₄)	
	∴	∴	∴	∴		∴	∴	

=(C\$10)*C11/(total mL)

Result of the formula is in the cell.

The dollar signs mean stay in this location. \$10 remain in row 10.

		Log[I ⁻]	Log[S ₂ O ₃ ²⁻]	Log[H ⁺]	H ₂ O	Log[BrO ₃ ⁻]	Log(rate)	
36	1	-2.69897	-4.30103	-1.69897		-2.09691	=LOG(H23)	
37	2	-3	-4.30103	-1.69897		-2.09691	=LOG(H24)	
38	3	-2.52288	-4.30103	-1.69897		-2.09691	=LOG(H25)	
39	4	-2.39794	-4.30103	-1.69897		-2.09691	=LOG(H26)	
		∴	∴	∴		∴	∴	

Example Equation: C36

=LOG(C23)

Enter a column of Δt. Using Δt calculate a rate for each run. Create a column of Log(Rate). To find x, y, z choose 4 runs in which the concentration of the ion of interest changes and the concentration for the other ions do not and plot Log(Rate) as y and Log(Concentration) as x. The slope is equal to the exponent. When the exponents have been determined calculate k using the equation to the right. Do this for all 10 runs and then calculate an average.

$$\text{Rate} = [\text{S}_2\text{O}_3^{2-}] / (6 * \Delta t)$$

$$\text{Rate} = k [\text{I}^-]^x [\text{BrO}_3^-]^y [\text{H}^+]^z$$

=Average(I23:Ixx)
where xx is the last row of k