1. Determine the reaction order for the decomposition of N_2O_5 and calculate the time t.

$[N_2O_5]_0$ (M)	$[N_2O_5]_t$ (M)	k ($\frac{1}{M \cdot s}$)
0.80	0.22	0.011

2. Determine the rate law for this reaction. Round orders to the nearest integer.

$$S_2O_8{}^{2-}(aq) + 3\,I^-(aq) \longrightarrow 2\,SO_4{}^{2-}(aq) + I_3{}^-(aq)$$

$[S_2O_8{}^{2-}]_0$ (M)	$[I^-]_0$ (M)	v_0 ($\frac{M}{s}$)
0.27	0.38	2.05
0.40	0.38	3.06
0.10	0.22	0.44

3. A first–order reaction has 24.0% of its reactant consumed in 19.7 min. Find the rate constant for this reaction, and determine how long will the reaction take to reach 85.5% consumed?

4. Determine the rate law for this base catalyzed reaction. Round orders to the nearest integer.

$$OCl^-(aq) + I^-(aq) \longrightarrow OI^-(aq) + Cl^-(aq)$$

$[OCl^-]_0$ (M)	$[I^-]_0$ (M)	$[OH^-]_0$ (M)	v_0 ($\frac{M}{s}$)
1.62×10^{-3}	1.62×10^{-3}	0.52	3.06×10^{-4}
1.62×10^{-3}	2.88×10^{-3}	0.52	5.44×10^{-4}
2.71×10^{-3}	1.62×10^{-3}	0.84	3.16×10^{-4}
1.62×10^{-3}	2.88×10^{-3}	0.91	3.11×10^{-4}

Homework Problem 33

1. Determine the rate law for this reaction. Round orders to the nearest integer.

$$\mathrm{Cr(H_2O)_6}^{3+}(\mathrm{aq}) + \mathrm{SCN^-(aq)} \longrightarrow \mathrm{Cr(H_2O)_5(SCN)}^{2+}(\mathrm{aq}) + \mathrm{H_2O\,(l)}$$

$[\mathrm{Cr(H_2O)_6}^{3+}]_0$ (M)	$[\mathrm{SCN^-}]_0$ (M)	v_0 ($\frac{\mathrm{M}}{\mathrm{s}}$)
1.21×10^{-4}	1.05×10^{-5}	2.11×10^{-11}
1.46×10^{-4}	2.28×10^{-5}	5.53×10^{-11}
1.66×10^{-4}	1.05×10^{-5}	2.82×10^{-11}
1.83×10^{-4}	3.11×10^{-5}	9.44×10^{-11}