2)

		zero order	1st order	2nd order
vol in cm³	t in min	[A]	ln [A]	1/[A]
37,1	5	37,1	3,6136	0,0270
29,8	10	29,8	3,3945	0,0336
24,3	15	24,3	3,1905	0,0412
19,6	20	19,6	2,9755	0,0510
12,3	30	12,3	2,5096	0,0813
8,3	40	8,3	2,1163	0,1205
5,0	50	5	1,6094	0,2000

For a zero order reaction, rate = k   (k = - slope of line)

For a 1st order reaction,   rate = k[A]   (k = - slope of line)

For a 2nd order reaction,   rate = k[A]²   (k = slope of line)

The graph that is linear indicates the order of the reaction with respect to A.

For a **first order reaction**, as shown in the following figure, the plot of the logrithm of [A] versus time is a straight line with k = - slope of the line. Other graphs are curved for a first order reaction.

k=-slope of line   y = -0,0441x + 3,8449   **k = 0,0441 min⁻¹**

[A] vs time

y = -0,6917x + 36,285

R² = 0,9388

ln [A] vs time

y = -0,0441x + 3,8449

R² = 0,9991

1/[A] vs time

y = 0,0036x - 0,0092

R² = 0,9194