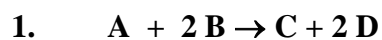


### Kinetics Worksheet #1

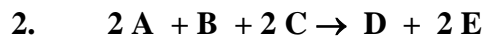
Ref: Mr. Dick Powell, Chemistry Teacher, Arlington, Texas, Personal Communication, July, 2003. Revised November, 2009.

For each of the following problems:

- (a) write the rate expression
- (b) calculate the **k** (rate constant) **including units**



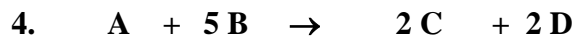
<u>Trial</u>	<u>A (M)</u>	<u>B (M)</u>	<u>Initial Rate Formation of C (M/min)</u>
1	0.10	0.10	$2.0 \times 10^{-4}$
2	0.30	0.30	$6.0 \times 10^{-4}$
3	0.30	0.10	$2.0 \times 10^{-4}$
4	0.40	0.20	$4.0 \times 10^{-4}$



<u>Trial</u>	<u>A (M)</u>	<u>B (M)</u>	<u>C (M)</u>	<u>Initial Formation of D (M/min)</u>
1	0.10	0.20	0.10	$5.0 \times 10^{-4}$
2	0.20	0.20	0.30	$1.5 \times 10^{-3}$
3	0.30	0.20	0.10	$5.0 \times 10^{-4}$
4	0.40	0.60	0.30	$4.5 \times 10^{-3}$



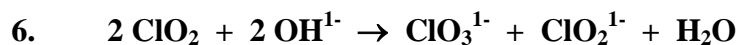
<u>Trial</u>	<u>NO (M)</u>	<u>H<sub>2</sub> (M)</u>	<u>Initial Rate of Disappearance of NO (M/s)</u>
1	0.630	0.122	0.305
2	0.210	0.122	0.0339
3	0.210	0.244	0.0678
4	0.105	0.488	0.0339



<u>Trial</u>	<u>A (M)</u>	<u>B (M)</u>	<u>Initial Rate of Form. of C (M/s)</u>
1	0.010	0.010	2.0
2	0.010	0.040	8.0
3	0.030	0.020	12
4	0.060	0.020	24



<u>Trial</u>	<u>A (M)</u>	<u>B (M)</u>	<u>Initial Rate of Reaction (M/s)</u>
1	0.10	0.10	0.0090
2	0.40	0.10	0.144
3	0.10	0.50	0.045



<u>Trial</u>	<u><math>\text{ClO}_2^-</math> (M)</u>	<u><math>\text{OH}^-</math> (M)</u>	<u>Initial Rate of Reaction (M/s)</u>
1	0.015	0.015	$3.88 \times 10^{-4}$
2	0.030	0.015	$1.55 \times 10^{-3}$
3	0.015	0.030	$7.76 \times 10^{-4}$
4	0.030	0.030	$3.11 \times 10^{-3}$



<u>Trial</u>	<u>NO (M)</u>	<u><math>\text{Cl}_2</math> (M)</u>	<u>Initial Rate (M/hr)</u>
1	0.50	0.50	1.14
2	1.00	0.50	4.56
3	1.00	1.50	13.68