**Pre-Laboratory Exercise:** READ the Introduction Section of this lab, then answer the following questions using the information given. Show all work.

Hypothetical Reaction: 2A + B C + D General Rate Law: Rate = *k* [A]*n*[B]*m*

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| --- | --- | --- | --- | --- |
| **Experiment #** | **[A]** | **[B]** | **Reaction Time (sec)** | **Reaction Rate (sec-1)** |
| 1 | 0.10 M | 0.05 M | 150 |  |
| 2 | 0.20 M | 0.05 M | 70 |  |
| 3 | 0.30 M | 0.05 M | 50 |  |
| 4 | 0.20 M | 0.10 M | 18 |  |
| 5 | 0.20 M | 0.15 M | 8 |  |

1) Calculate the reaction rate in sec-1 for each experiment (1/reaction time).

2) Determine the order with respect to A. (Show a calculation or explain via inspection of the data).

3) Determine the order with respect to B. (Show a calculation or explain via inspection of the data).

4) What is the *overall order* of the reaction?

5) Write the rate law.

6) Calculate the units on the rate constant, *k*.