Title: **The Kinetics of Water Flow through a Buret**

Purpose : to determine the reactant order and rate constant for the process of water flowing through a buret.

Supplies needed:

one 50.00mL buret per team 1 stopwatch per team.

Procedure:

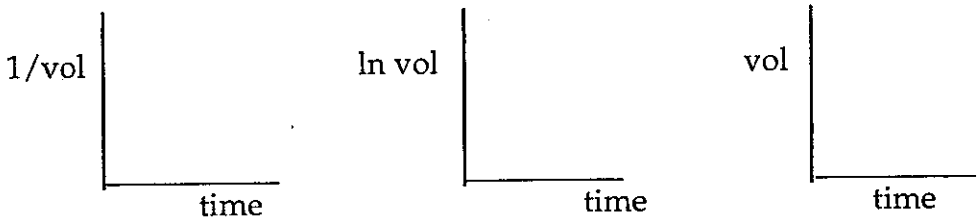
1. Clean a 50.00 mL buret until the water drains from the buret in sheets and no drops of water are clinging inside the buret. (They cling to impurities in the buret.)
2. Fill the buret to the top with distilled water. Opening the stopcock valve straight--up open, allow the water to drain from the buret.
3. As the water passes the 0.00 mL line start the stopwatch. Stop the timing when the water passes the 5.00 ml line
4. Turn the stopcock, shutting off the flow of water and refill the buret. Repeat the procedure at 5.00 ml intervals through the 35.00 ml line.
5. Repeat the experiment for a second trial.

Data and observations

volume out (mL)	time$_1$	time $_2$	time ($_{aver}$)	vol (remaining)	ln vol	1/vol$_{(r)}$
5.0						
10.						
15						
20						
etc						

Graphs

Construct graphs of the following:(Use **remaining** volumes.)



Questions:

1. Choosing the most linear graph, what is the reactant order for the water flow.
2. Write the rate law and determine the value of the rate constant. Specify the units on the rate constant.
3. Calculate the values for rate as $\frac{\Delta \text{volume}}{\Delta \text{ time}}$ for your first 6 volume readings. What can you conclude from these rate values?