Lab 9

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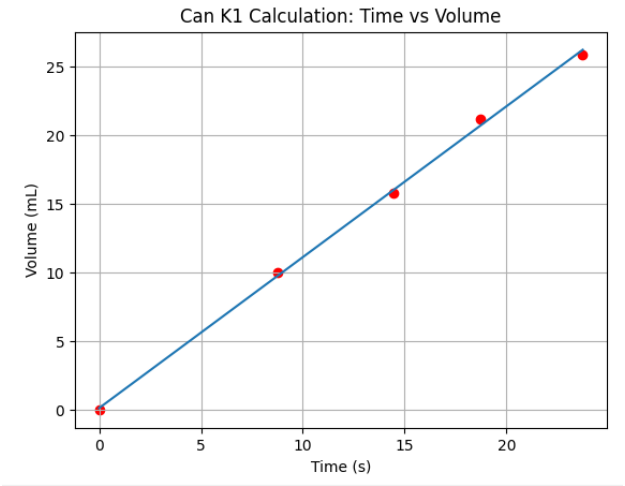
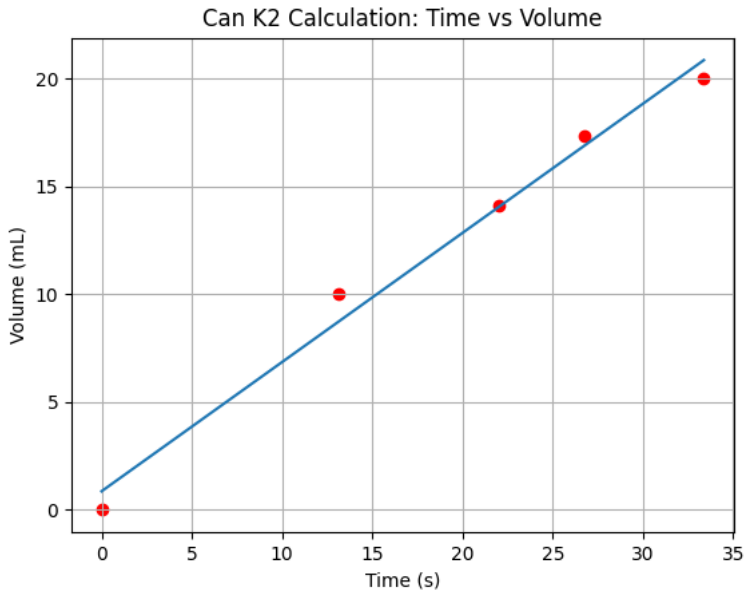
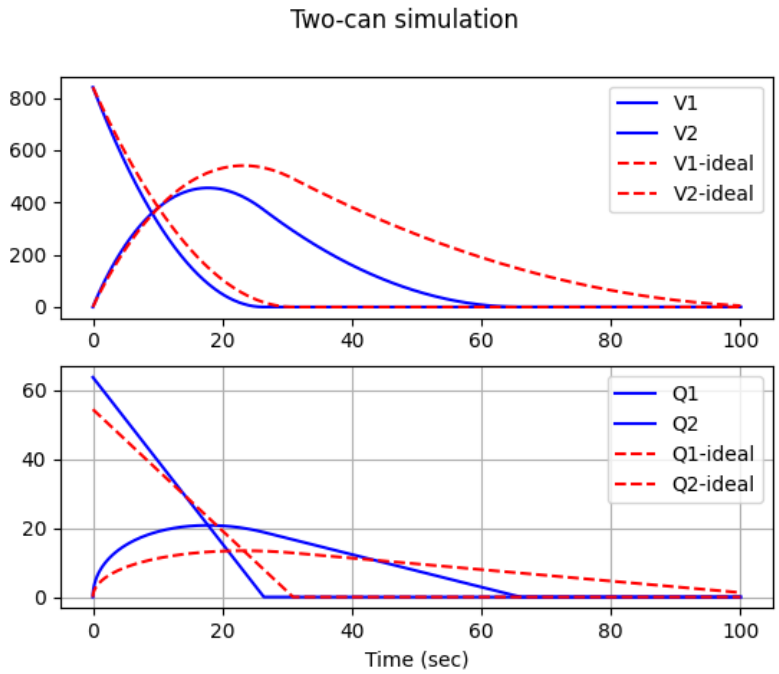
1. Overall, the lab experience was interesting. By taking what I learned in lecture and in previous labs, I was able to create fits to experimentally determine flow constants. The flow constants were then used in a simulation to predict the initial volume needed. Overall, I found the lab was kind of stressful, because you had such a small margin of error on the water filling. The results from the lab seemed to point that you could get a flow constant using correlations, and the simulation was interesting with how accurate and useful the information it provided were.
2. 



3. Found K1 = 1.0989 * 2; K2 = 0.487 * 2. Compared to the theoretical values of 1.877 and 0.577, these values are much higher. The difference in these K values is likely because the holes in the cans were different size and shapes in the calculations then they were in real life, causing them to drain much slower in the experiment.

4.



5. The experiments almost over filled the can, suggesting that they predicted the flow would leave faster than it did. The theoretical results were very different than the experimental results, and in general the experimental results of the two can setup were much closer to the simulation results. One big aspect that was missing was the fact that the flow was not instantly transferred from can one to can two, it had to fall. This could cause the simulation to not be accurate to reality.
6. When determining the flow coefficients, I would make sure to take at least four data points to make sure none of the data points are seriously wrong and throwing off the curve. On the final experiment, the results seemed consistent due to the ruler. I think the results could have also been improved if more data points were taken and they were double checked, and the time it takes the water to fall from one can to the next was considered in the simulation.