We used a phenoxide anion as a nucleophile in the presence of 2 competing electrophiles in an Sn2 reaction in this experiment. We also determined that there was a \_\_\_\_ ratio of the analyzed products. During this experiment, we added 0.616 g of 2,4-dimethylphenol, 0.8 mL of 20% NaOH, and 0.8 mL of ethanol to a 25 mL RBF. A few mistakes happened from here on out, resulting in a lower percent yield than expected. After setting up the reflux, we were ready to add our mixture of 1-bromopropane and 2-bromopropane. While adding this, my partner added a little too much at one time, resulting in a little noticeable jump in the solution. During the refluxing process, the solution in the RBF was light yellow, which was strange to our lab manager as it was expected to be dark yellow. Later during the experiment, we isolated the ether layer, and it was kept from the Erlenmeyer flask into a beaker. After adding 2 rounds of unmeasured anhydrous MgSO4, we presumed that the solution was dried. However, after filtering the contents of the beaker into an RBF, it was noted that more MgSO4 could have been added as there were still some clumps, though not very large.

In terms of the complete chemical reaction mechanism, the oxygen of the 2,6-dimethylphenol acted as the electrophile because it accepts electrons from the reaction with the NaOH, H2O and the ethanol. The bromines from the 1-bromopropane and 2-bromopropane left as leaving groups. The oxygen, which just gained an electron pair, allowed the molecule to be a better nucleophile with the negative charge. This reaction is more likely to be an SN2 reaction rather than Sn1 due to the strong nucleophile and due to the strong nucleophile and non-bulky base. Our \_\_\_ integration value tells us that for every \_\_\_ moles of product 1 formed, only 1 mole of product 2 is formed. This analysis theoretically shows us that the reaction rate for product 1 will be greater than that of product 2. If phenol replaced 2,6-dimethylphenol, the reaction would favor the production of product 2, in turn changing the mole ratio. This is seen because the starting reactant was less bulky which reduces sterics in the one-step SN2 reaction.

Conclusion:

This Sn2 reaction took place as we added 2,6-dimethylphenol, 20% NaOH, and ethanol to a RBF, which was then refluxed with an additional mixture of 1-bromopropane and 2-bromopropane. Once reflux was complete, the contents were rinsed with 10 mL portions of ether, 1 M NaOH, and water. The dried filtrate evaporated via the Rotary Evaporator and was submitted for 1H NMR analysis. The NMR spectra showed an increased absorption for the CH2 triplet of product. This allows us to conclude that the reaction rate for product 1 is greater than product 2. This lab was not a success however, as the graph from the 1H NMR analysis did not accurately show the septet. This may have been due to contamination, or the loss of some of our product by human error throughout the procedure.