# INTRODUCTION TO CHEMISTRY

## CML-101

## Tutorial 3

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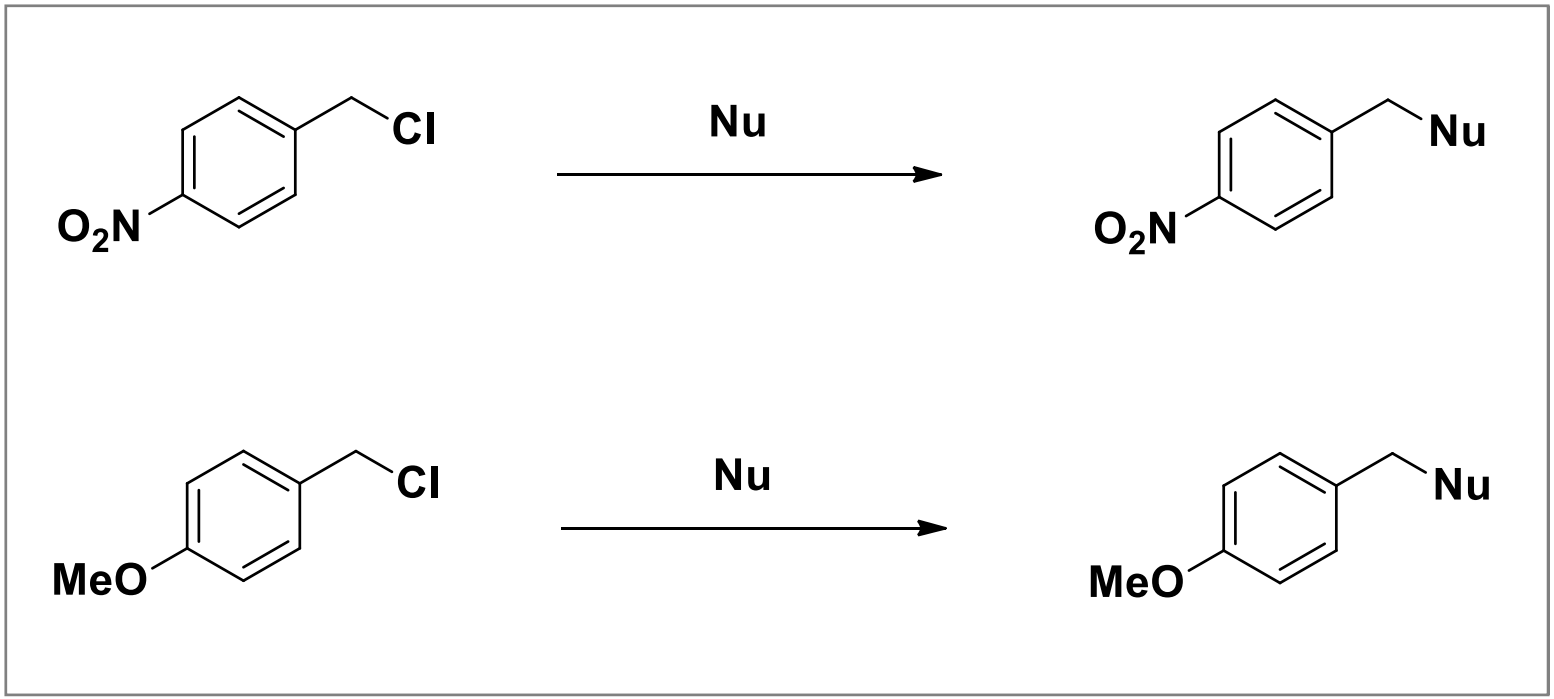
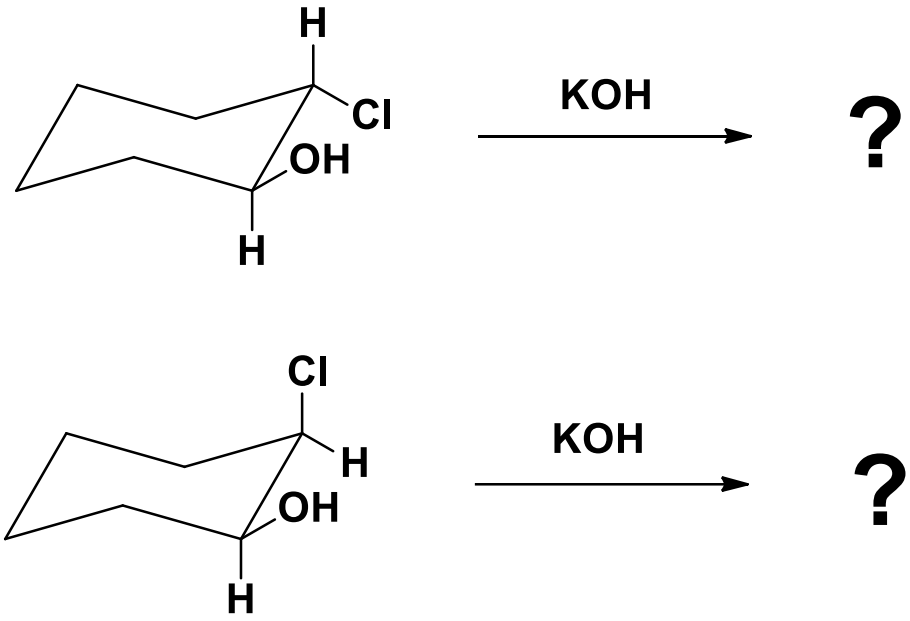
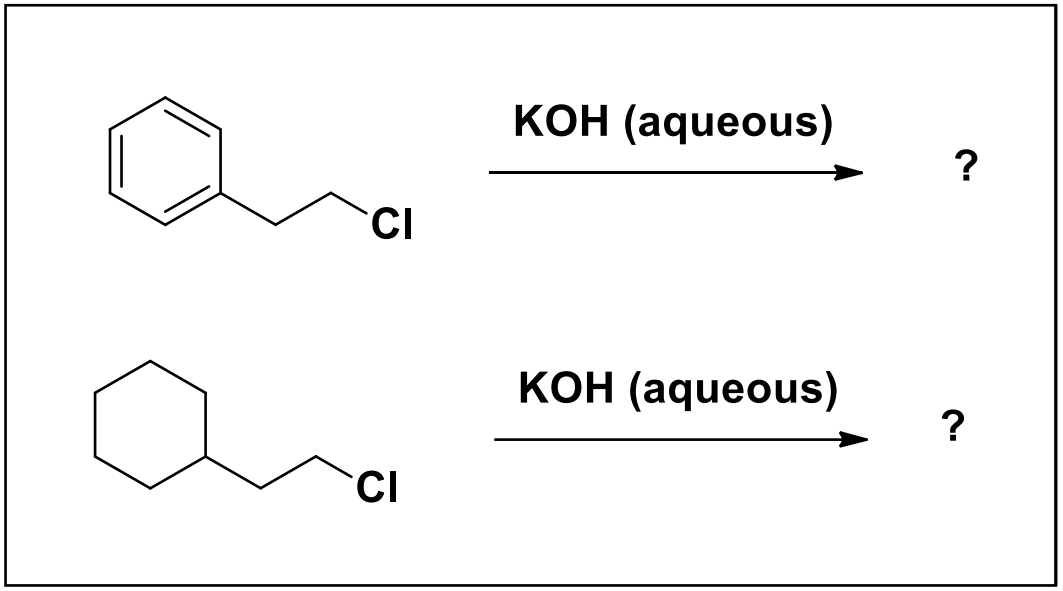
# Q1: Predict the reaction mechanism and compare the rates in two different sets of reactions.



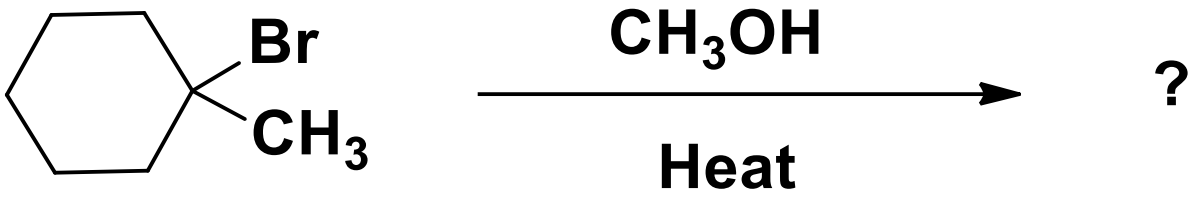
# Q2: Predict the products structure in the following two sets of reactions



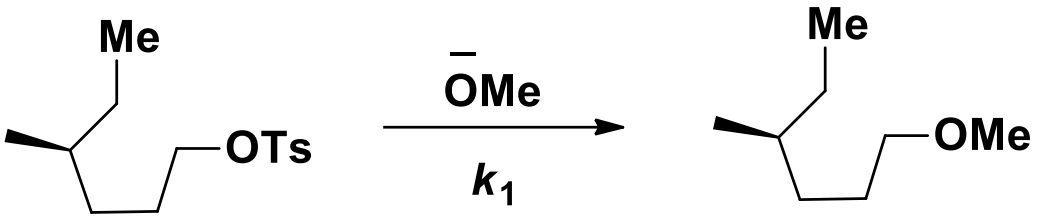
**Q3: Compare the rate of the following reactions given. Also, comment on the intermediate species involved during the reaction.**

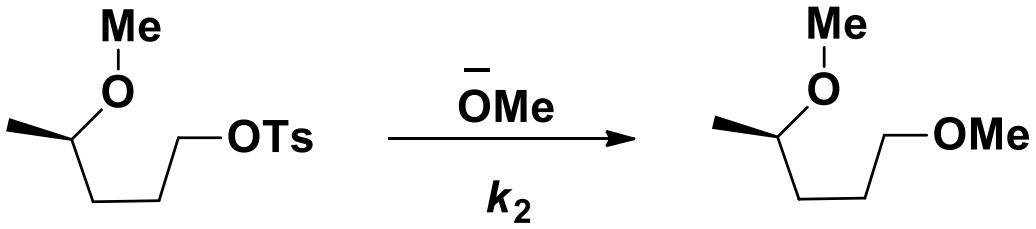


**Q4: Predict the mechanism and products in the following reaction.**

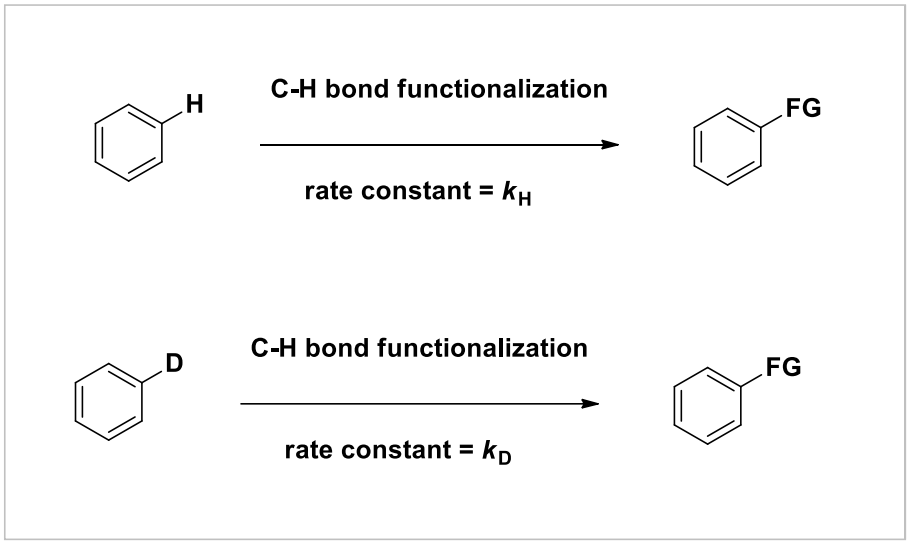


# Q5: Compare the rates in the following reactions with mechanism

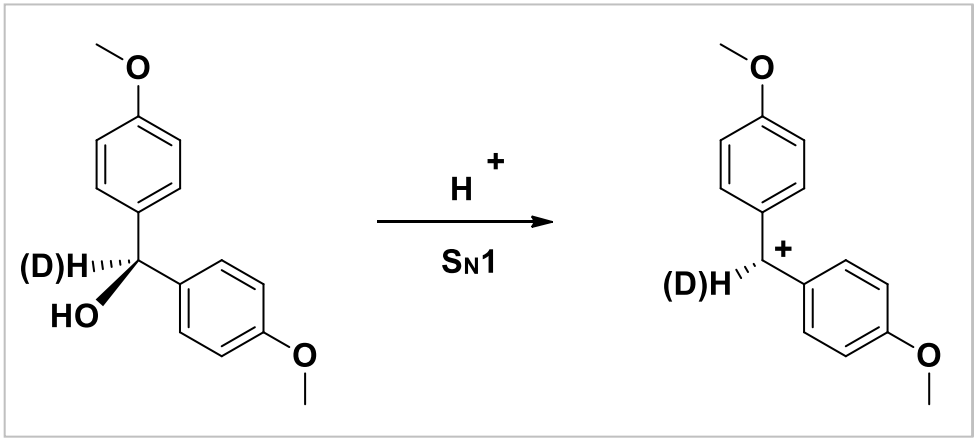


# Q6: Predict primary kinetic isotope effects (pKIE) and secondary kinetic isotope effects (sKIE) in the given two cases.




Case 1




Case 2

# Q7: Explain all the following facts in a given sets of problem (SN1/SN2).

## Problems :

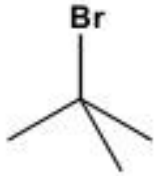
### 1) $S_N2$ reaction by $EtO^-$ in EtOH:

| | $CH_3CH_2-Br$ | $CH_3CH_2CH_2-Br$ | $Me_2HCCH_2-Br$ | $Me_3CCH_2-Br$ |
|---|---|---|---|---|
| relative rate | 1 | $2.8X10^{-1}$ | $3.0X10^{-2}$ | $24.2X10^{-6}$ |

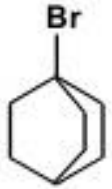
Explain ?

### 2) Rate of solvolysis in EtOH :

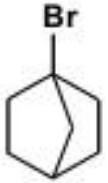
A)




1



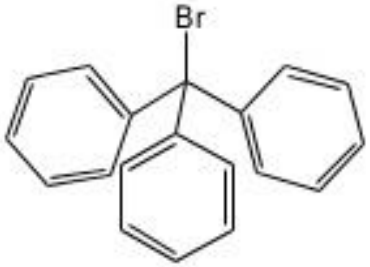

$10^{-6}$



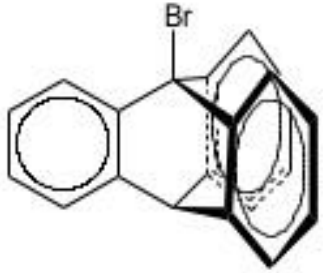

$10^{-14}$

Explain?

B)




1




$10^{-23}$

1-bromotriptycene

Explain ?

Q8: Predict the product structure with mechanism. Explain each step of the following reaction.