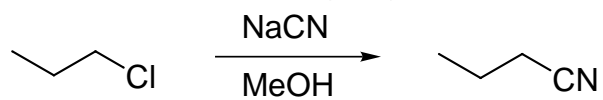
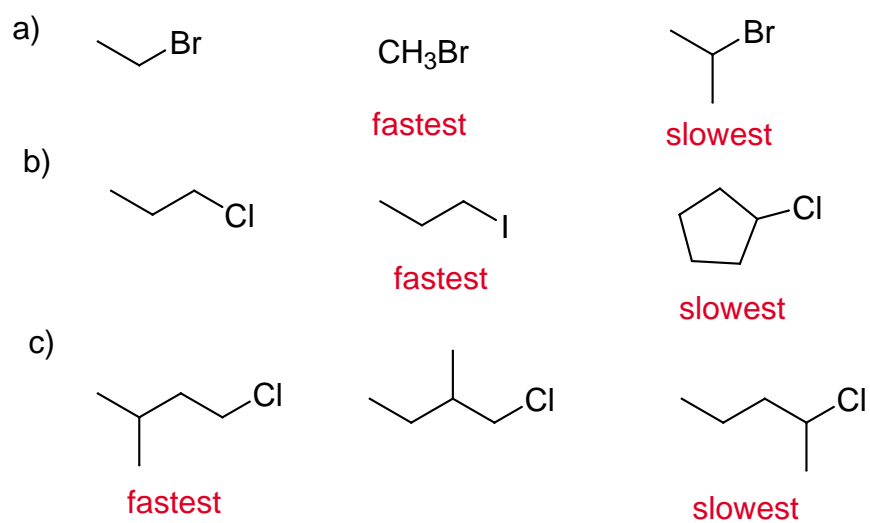


11. Predict the effect of the changes given below on the rate of the following reaction:



- a) change the halogen from Cl to I. **faster**
- b) change solvent from MeOH to DMSO **faster**
- c) change starting material from 1-chloropropane to 2-chloropropane **slower**

12. Rank the following sets in order of increasing S_N2 reactivity



13. Rank the members of the following groups in order of basicity, nucleophilicity, and leaving group ability. Explain your answers.

	basicity	nucleophilicity	leaving group ability
a) H_2O , OH^- , CH_3CO_2^-	$\text{OH}^- > \text{CH}_3\text{CO}_2^- > \text{H}_2\text{O}$	$\text{OH}^- > \text{CH}_3\text{CO}_2^- > \text{H}_2\text{O}$	$\text{H}_2\text{O} > \text{CH}_3\text{CH}_2\text{CO}_2^- > \text{OH}^-$
b) Br^- , Cl^- , F^- , I^-	$\text{F}^- > \text{Cl}^- > \text{Br}^- > \text{I}^-$	$\text{I}^- > \text{Br}^- > \text{Cl}^- > \text{F}^-$	$\text{I}^- > \text{Br}^- > \text{Cl}^- > \text{F}^-$
c) NH_2^- , NH_3 , PH_2^-	$\text{NH}_2^- > \text{PH}_2^- > \text{NH}_3$	$\text{PH}_2^- > \text{NH}_2^- > \text{NH}_3$	$\text{NH}_3 > \text{PH}_2^- > \text{NH}_2^-$
d) H_2O , H_2S , NH_3	$\text{NH}_3 > \text{H}_2\text{O} > \text{H}_2\text{S}$	$\text{H}_2\text{S} > \text{NH}_3 > \text{H}_2\text{O}$	$\text{H}_2\text{S} > \text{H}_2\text{O} > \text{NH}_3$
e) NaF , NaOH , NaSMe	$\text{NaOH} > \text{NaSMe} > \text{NaF}$	$\text{NaSMe} > \text{NaOH} > \text{NaF}$	$\text{SMe}^- > \text{OH}^- > \text{F}^-$