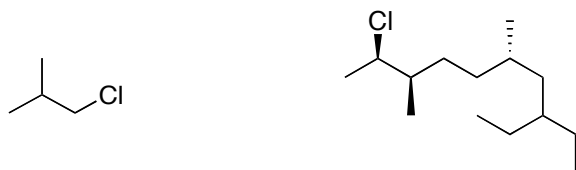
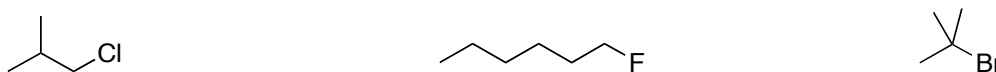


## Problem Set 7

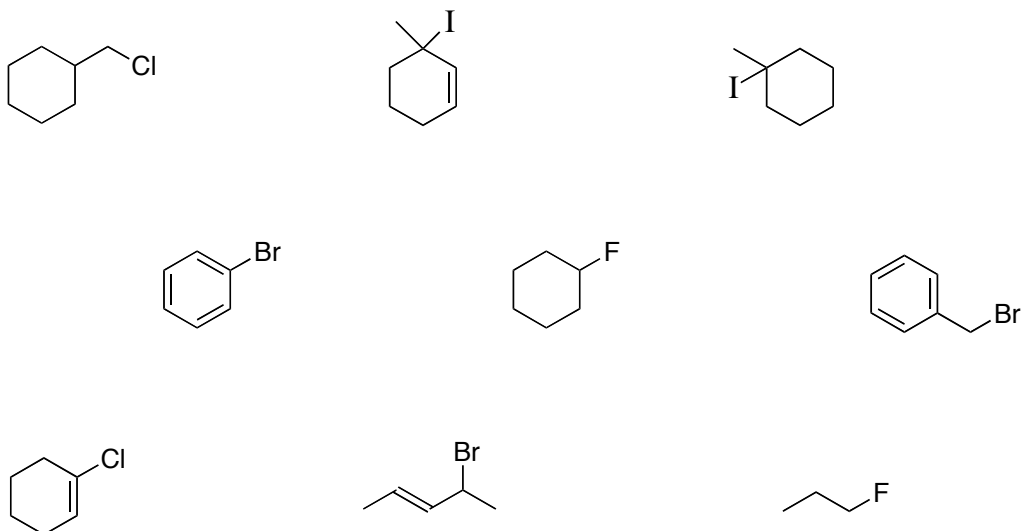
1. Name the following alkyl halides according to the IUPAC system.  
(Remember to use R/S designations if appropriate!)



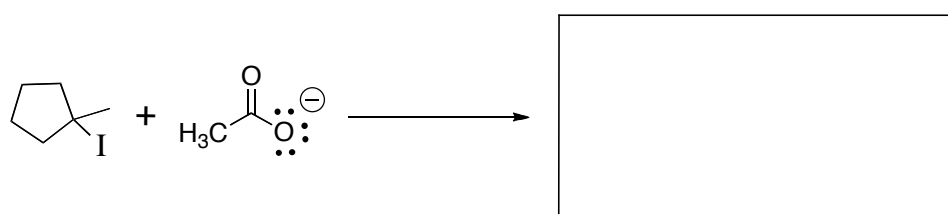
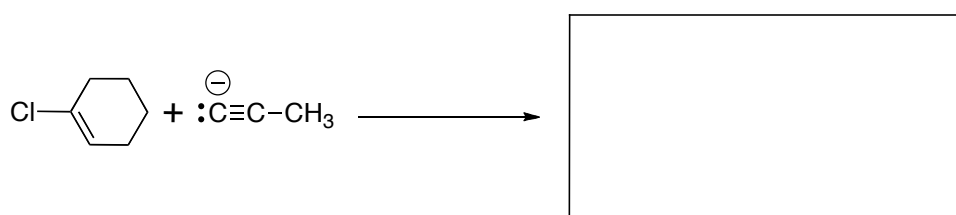
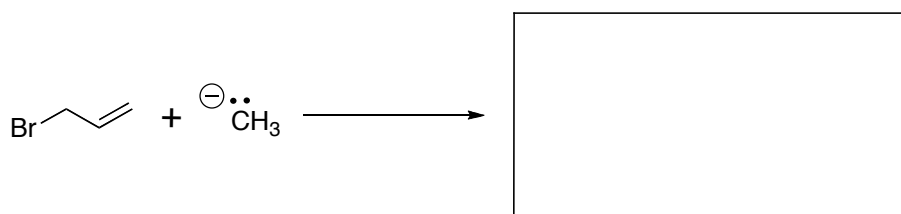
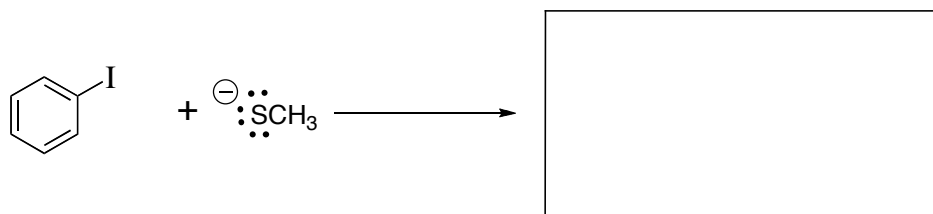
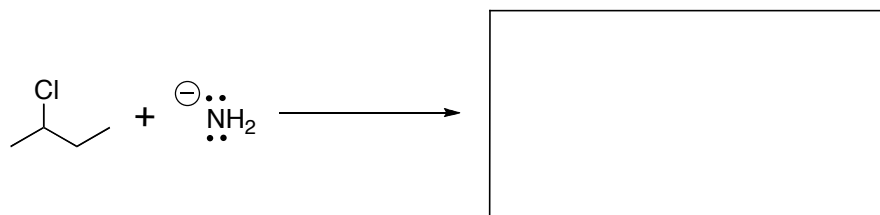
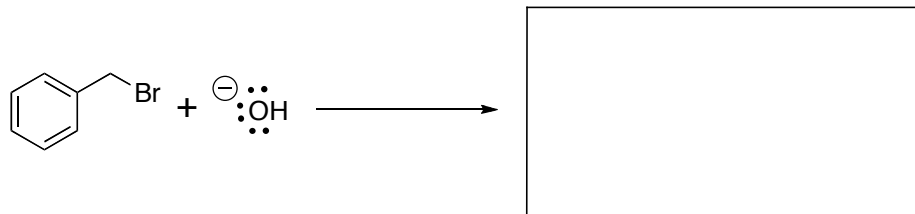
2. Name the following "simple" alkyl halides using common nomenclature.



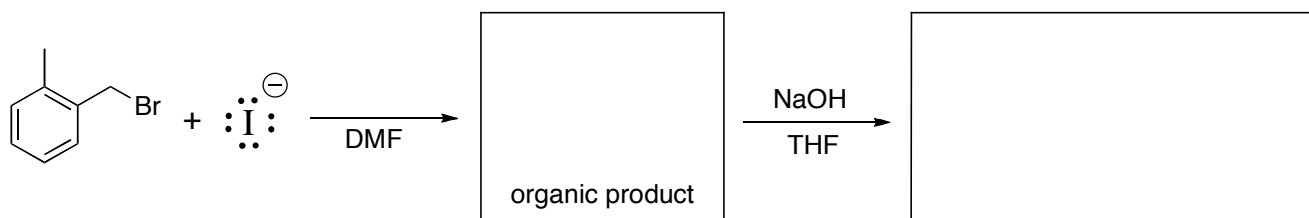
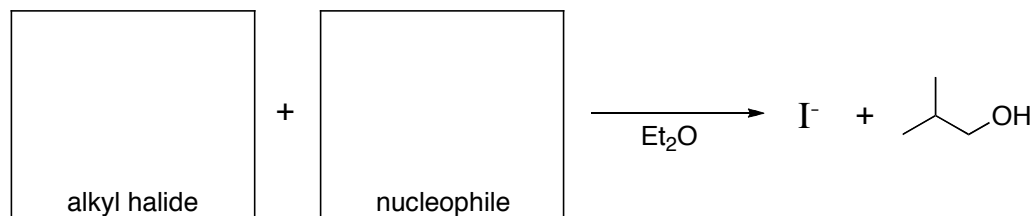
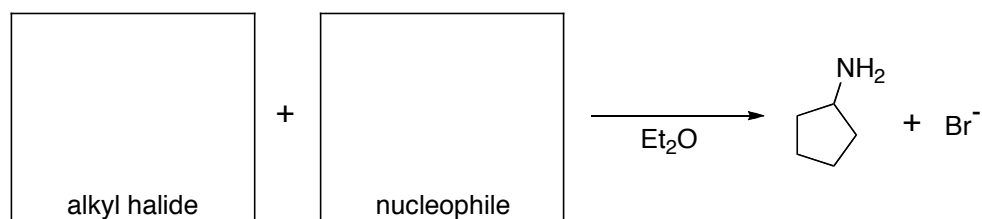
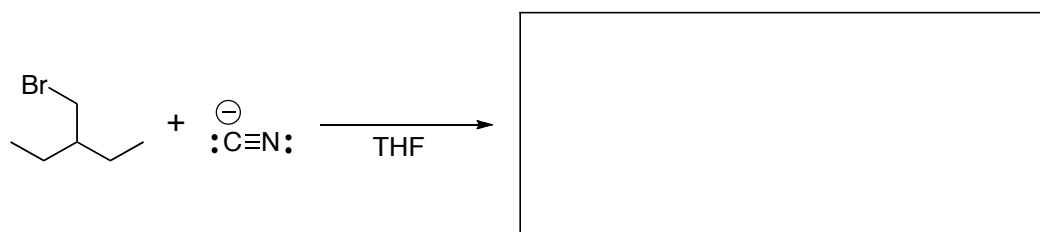
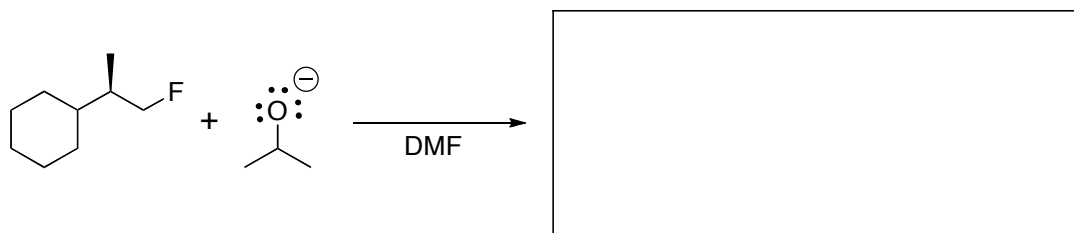
3. Classify each halo compound shown below as an alkyl, vinyl or aryl halide. Also:
- If the compound is an alkyl halide, indicate whether it is 1°, 2° or 3°; and also if it is allylic or benzylic.
  - Circle any organic halide below that can undergo a S<sub>N</sub>1 or S<sub>N</sub>2 type substitution reaction.



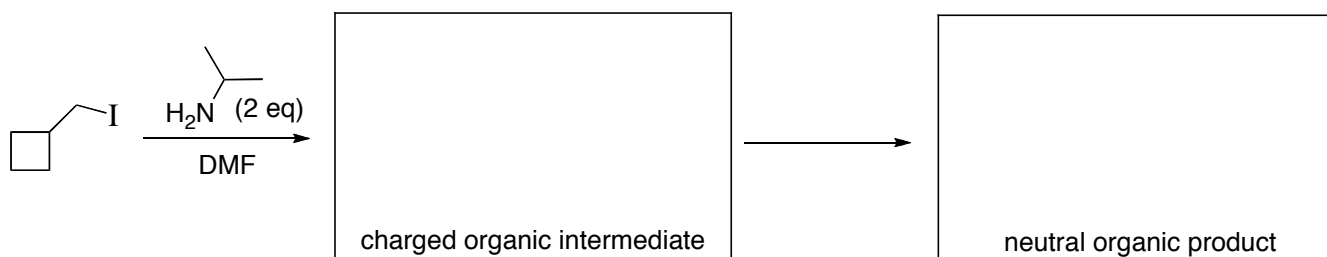
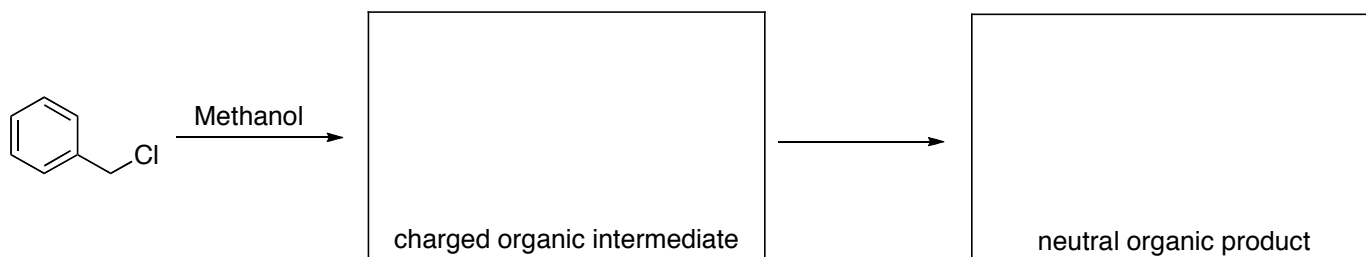
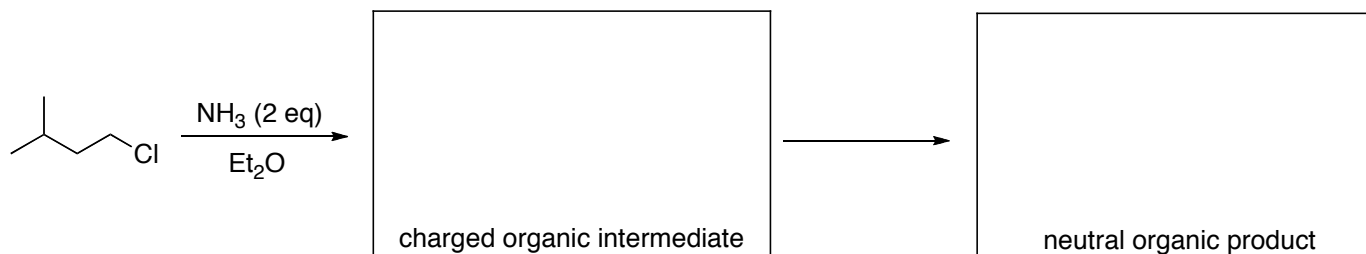
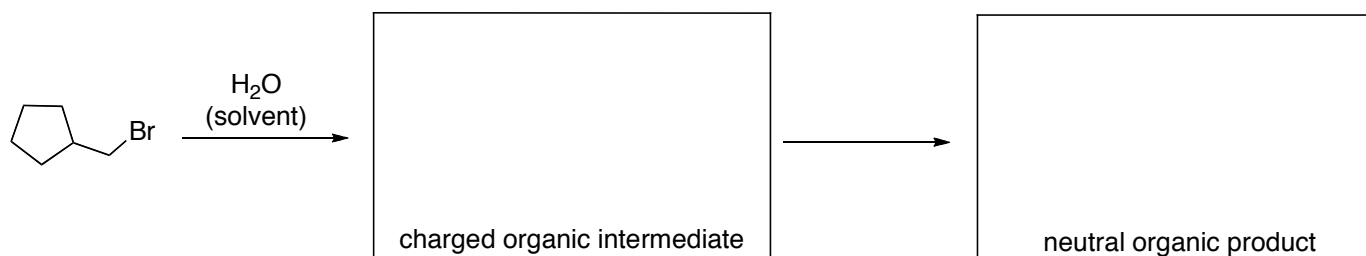
4. Draw the products of the following substitution reactions. If the organic halide shown is not reactive under the conditions shown, simply write N.R. (no reaction).



5. Complete the following S<sub>N</sub>2 reactions below by (a) drawing either the products or reactants and (b) drawing in the mechanism arrows to depict the making and breaking of bonds.

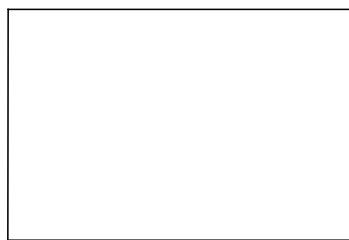
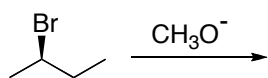


6. Complete the following reactions by drawing the intermediate charged substitution product and the neutral final organic product. Be sure to draw out the mechanisms for both steps.

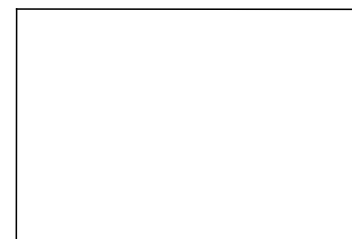
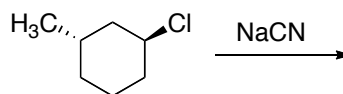


7. Draw the products of the following S<sub>N</sub>2 reactions:

(a)



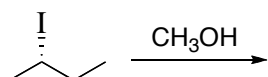
(b)



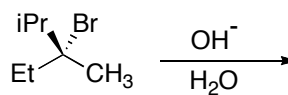
(c) In the space below draw a stepwise, detailed mechanism for the reaction in part (a).

8. Draw the neutral organic products of the following S<sub>N</sub>1 reactions:

(a)



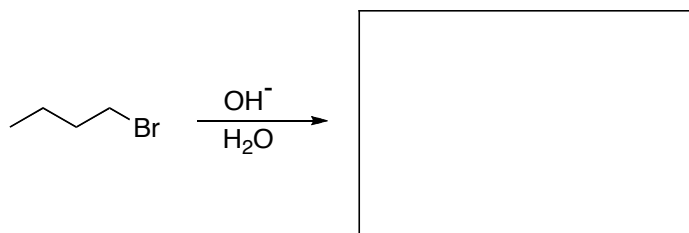
(b)



(c) In the space below draw a stepwise, detailed mechanism for the reaction in part (a).

9. For the following reactions, determine the mechanism of nucleophilic substitution ( $S_N1$  or  $S_N2$ ) and draw the products. Be sure to depict proper stereochemistry, if appropriate!

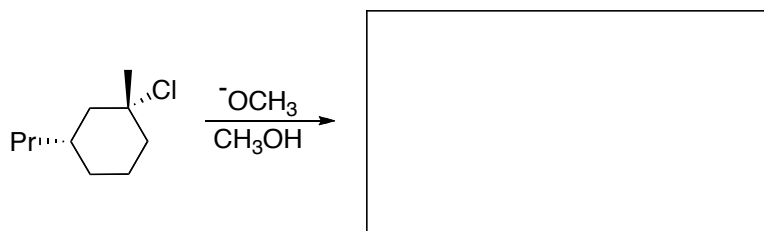
(a)



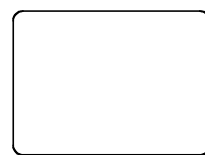
Mechanism?



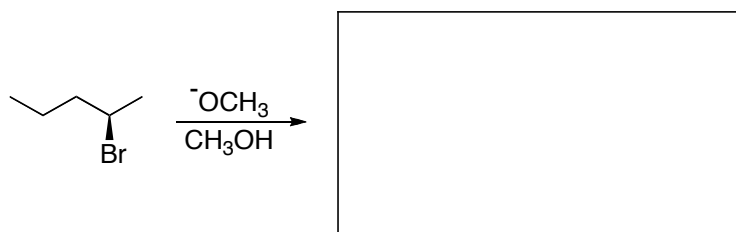
(b)



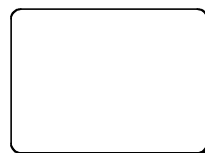
Mechanism?



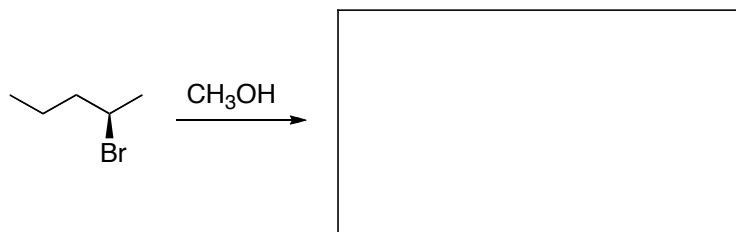
(c)



Mechanism?



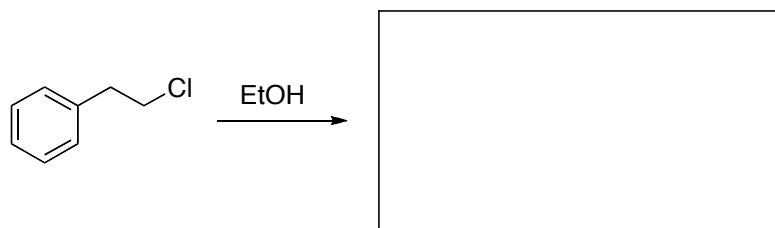
(d)



Mechanism?



(e)



Mechanism?

