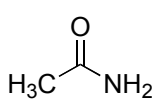
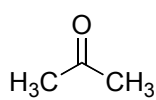
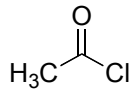
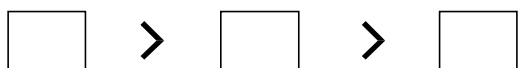


Worksheet 1

1. Rank the following:

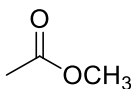
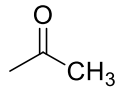
a. Fastest to slowest reaction with LiAlH_4 :**A****B****C**

b. Strongest to weakest reducing agent:

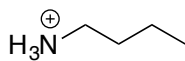
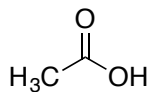
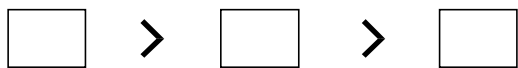
**A****B**

Draw the structure of each reducing agent.

c. Fastest to slowest reaction with a Grignard reagent:

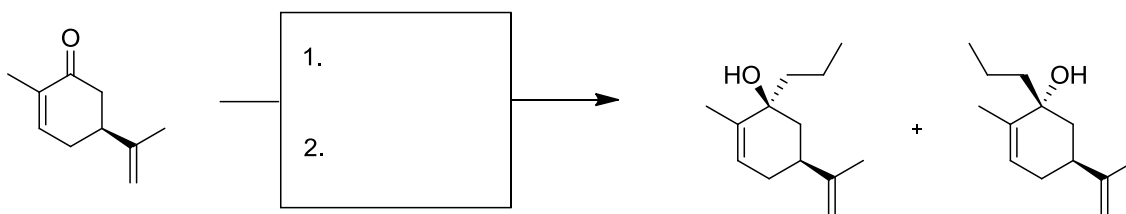
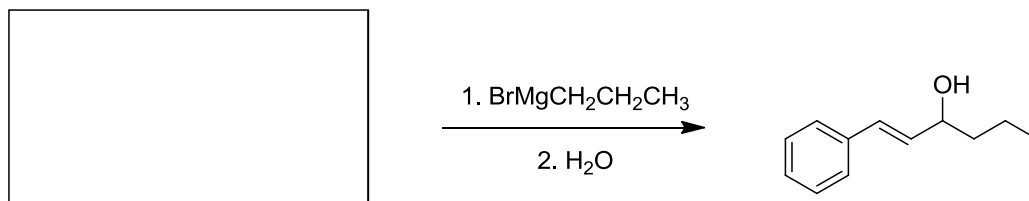
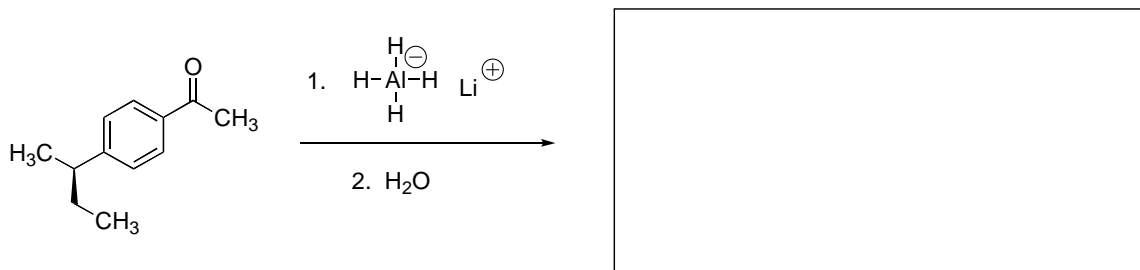
**A****B****C****D**

d. Strongest to weakest acid

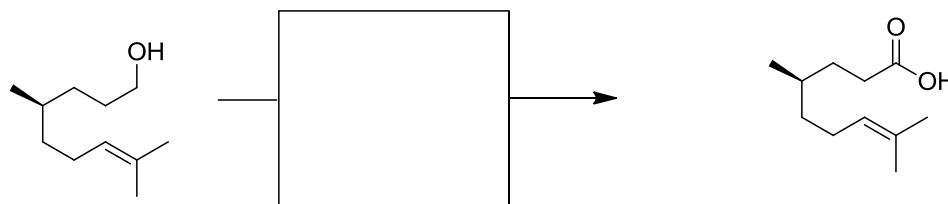
**A****B****C**

List the pKa's for each acid.

2. Fill in the boxes with the appropriate starting material, reagent or major product.
Show stereochemistry where appropriate.

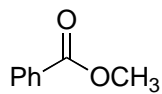


What is the relationship between the two products?

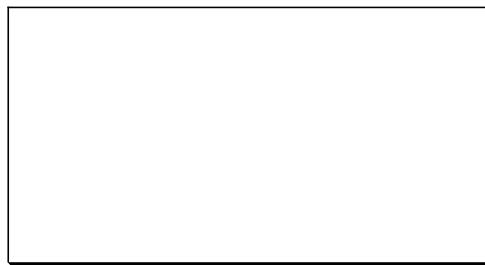
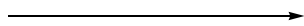


3. Predict the product and provide an arrow-pushing mechanism.

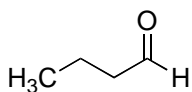
a



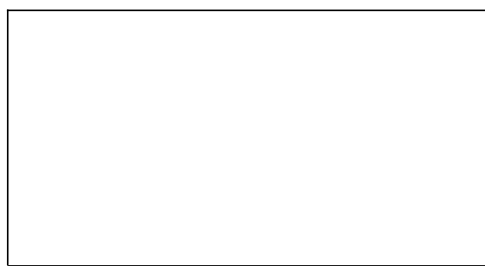
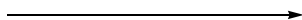
LAH = LiAlH₄



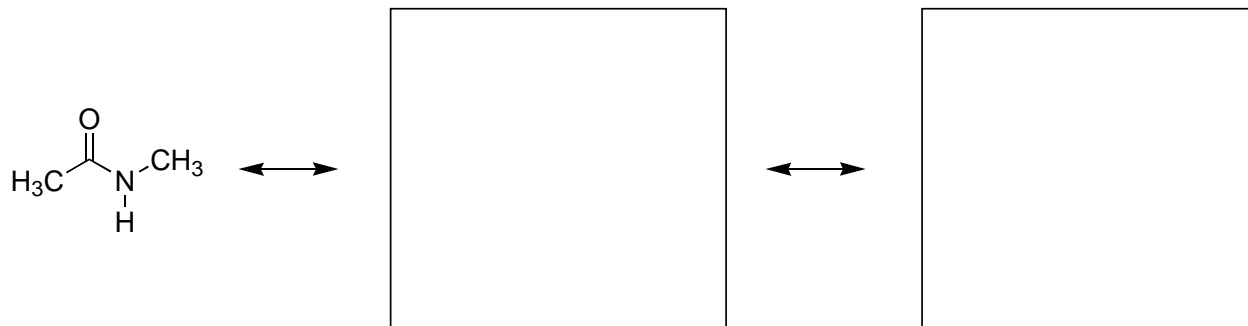
b.



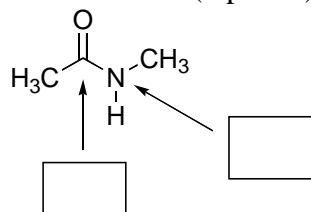
NaBH₄



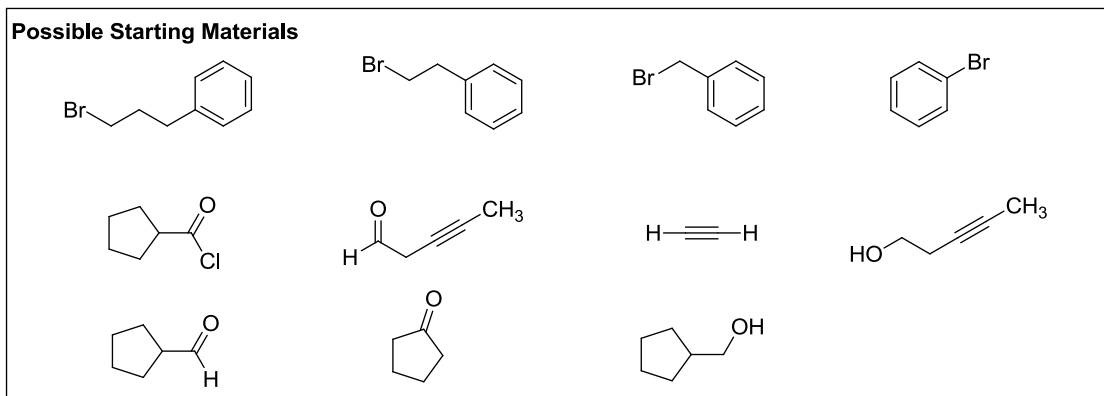
4a.. Draw two additional resonance structures for the compound below. Of the three resonance structures, **CIRCLE the most stable resonance structure** and **put a triangle around the least stable resonance structure**.



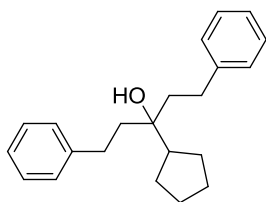
b. Label the hybridization of the indicated atoms (4 points):



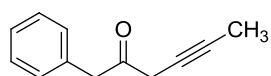
5. Propose syntheses of the targets shown below. You can use any of the possible starting materials and any reagent you wish.



Target A.



Target B.



Target C.

