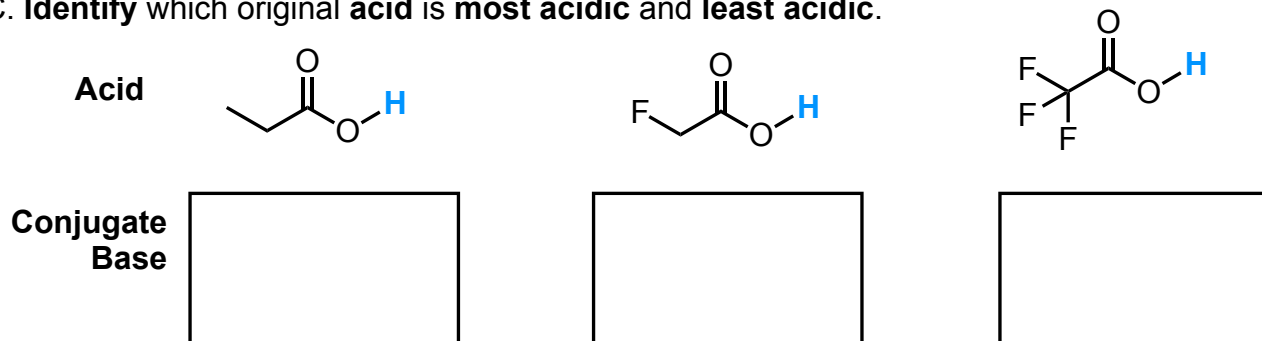


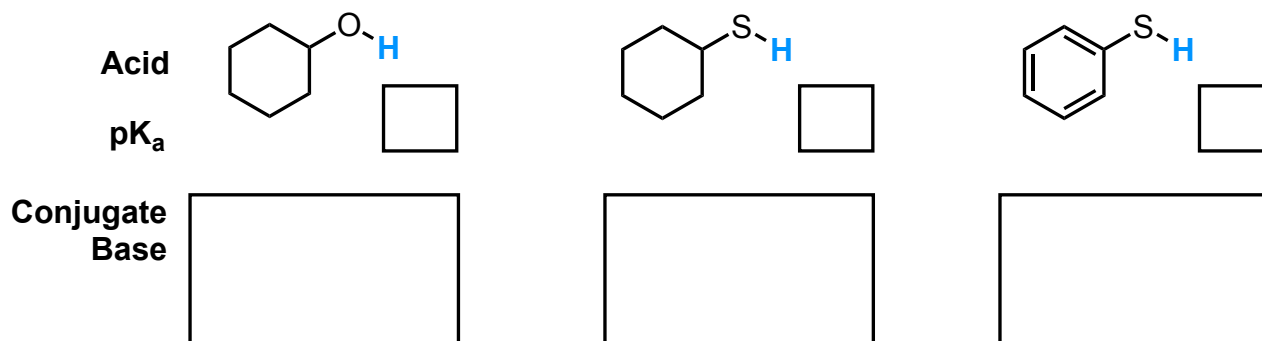
Stability

This page will explore how electronics can influence acidity, and how sterics can influence the preferred conformation of a molecule.

- A. **Draw the conjugate base** that results after deprotonation for each acid shown.
B. **Select which conjugate base is most stable and least stable.** Why?
C. **Identify which original acid is most acidic and least acidic.**



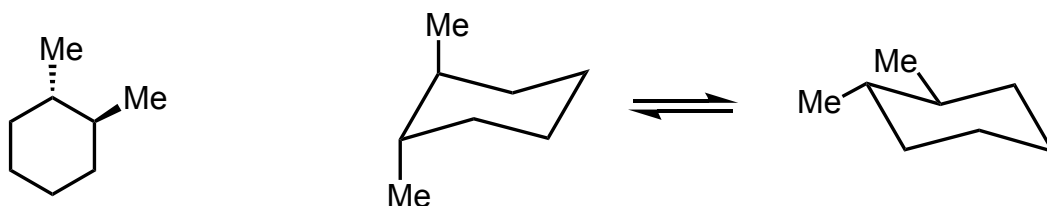
- A. **Draw the conjugate base** that results after deprotonation for each acid shown.
B. **Select which conjugate base is most stable and least stable.** Why?
C. Given that stronger acids have smaller pK_a values, match the following pK_a values to the original acids shown: 8, 11, and 17.



- A. **Draw the structure** of 2,2,5,5-tetramethylhexane

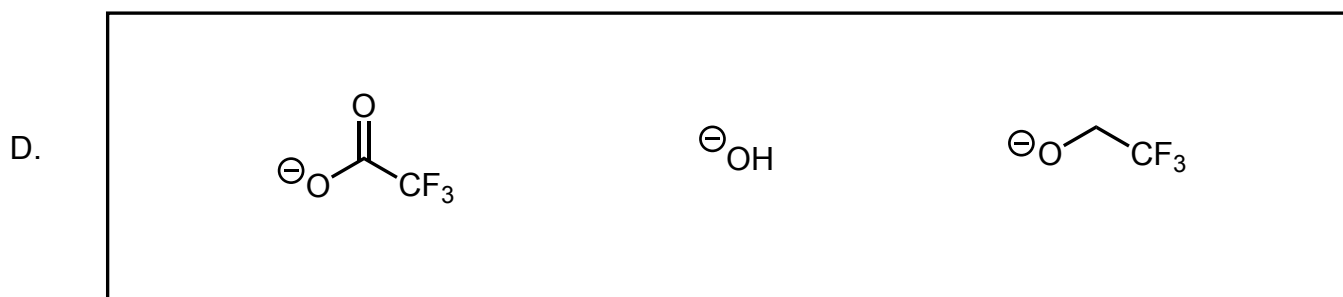
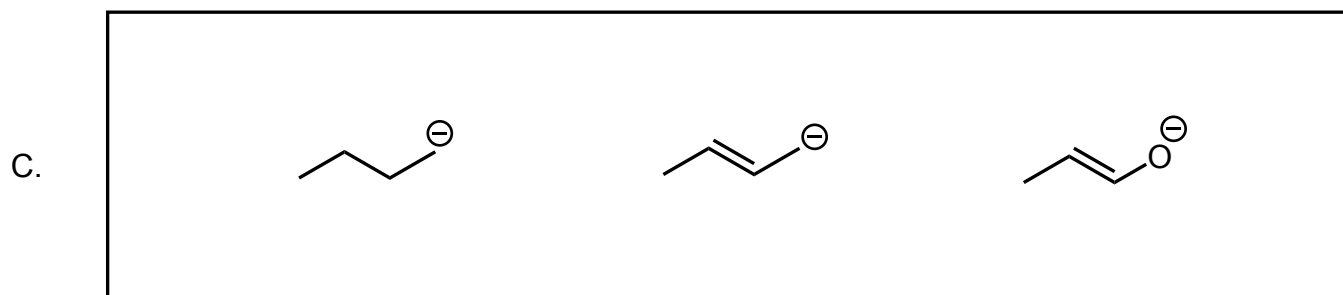
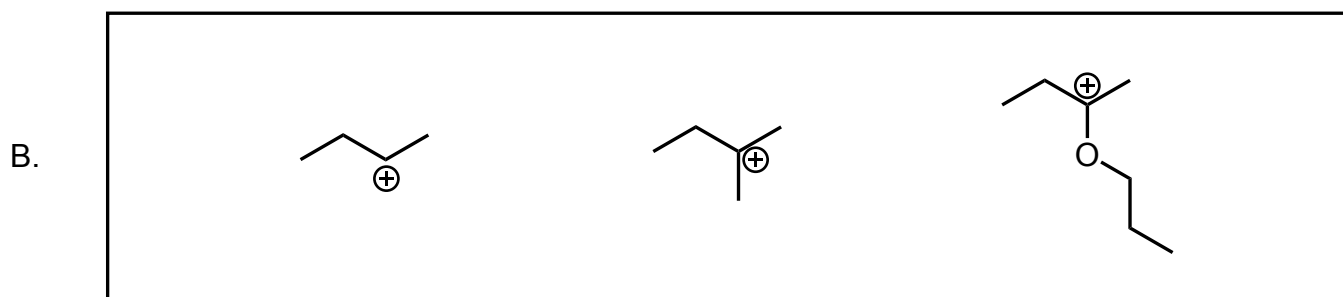
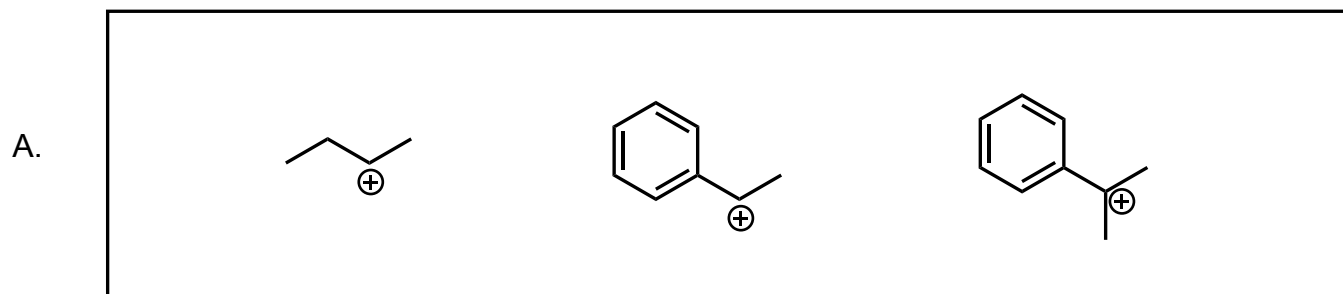
- B. **Draw a Newman projection** of the **lowest energy conformation** of this molecule, **looking down the carbon #3 – carbon #4 single bond**. Label the relationship of the largest constituents (eclipsed, gauche, or anti).

4. Given the two possible chair conformations of the following molecule, choose which is lowest in energy and describe why.

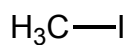
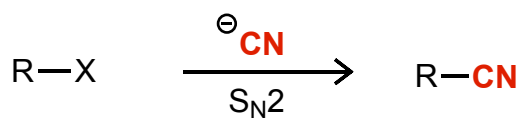


5. Considering electronics, identify the most stable (least reactive) and most reactive (least stable) species in each group shown. Justify your choices.

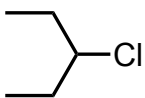
Note: lone pairs are implied based on the formal charge shown



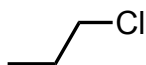
6. Consider both the "sterics" of the electrophile and the "electronics" of the leaving group to rank the following electrophiles from least reactive to most reactive



A



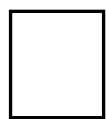
B



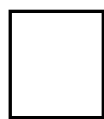
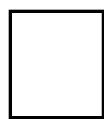
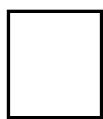
C



D

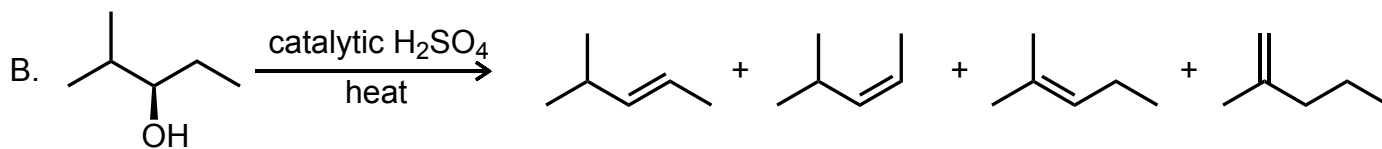
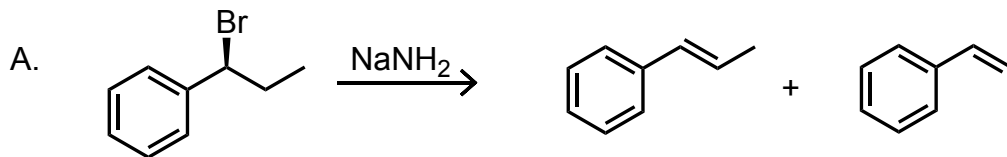


least
reactive
for S_N2



most
reactive
for S_N2

7. All of the products shown are formed in the elimination reactions below. Identify the major product in each reaction. Justify your answer.



8. Considering stereoelectronics of both the reactants and products, **hypothesize why we observe the shown product distributions in the elimination reactions below.**

