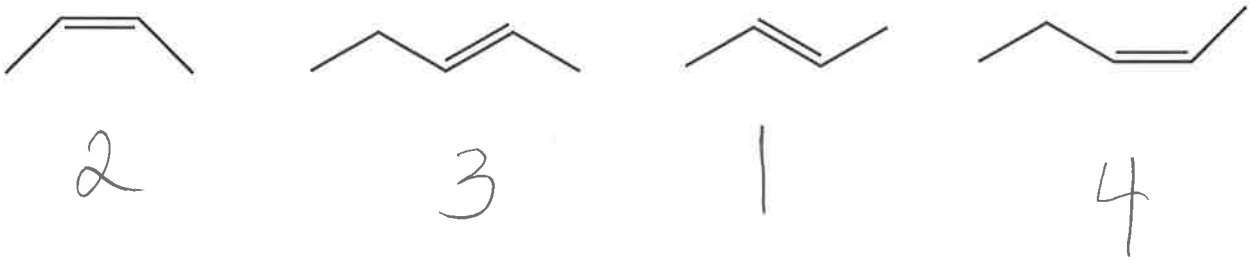
Alkenes #1: Physical Properties & An Introduction to Double Bond Stuff

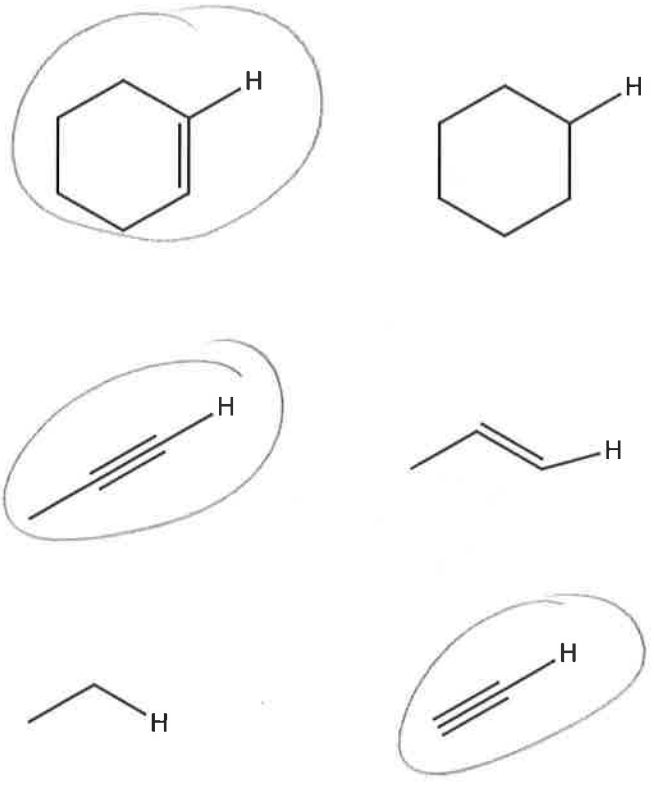
Well look at that: We've gotten all the way to Alkenes ☺. Here's where everything comes together: This part of O Chem 1 is going to slowly involve ***everything*** we've discussed thus far. But don't be nervous—it's 100% doable as long as you've been paying attention to the videos and doing the worksheets (which I know you all have, cause you're all freaking all stars). Follow me, and we'll thrive all the way through alkenes.

1.) Let's start off with physical properties:

a.) Given the molecules below, rank them 1, 2, 3, or 4, assigning 4 to the molecule with the **highest** boiling point.



b.) Given the pairs of molecules, select the molecule explicitly drawn proton is the MOST acidic (I know there are some alkynes in here, but I want to revisit this topic now and focus on something else during alkynes ☺).

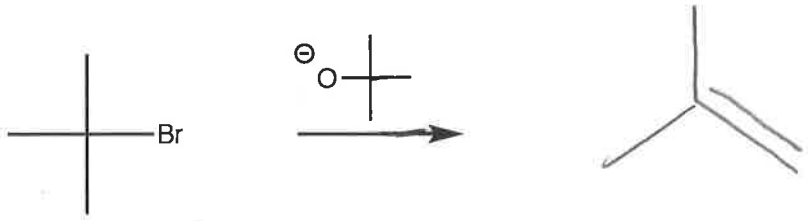


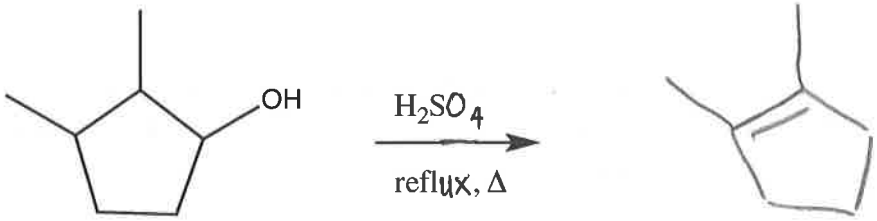
Awesome. Now since we are dealing with Alkenes, I want to quickly rehash some topics we discussed in the past that involves producing alkenes: E2 and Dehydration of Alcohols (or said in reagent terms: H_2SO_4, reflux, Δ)

2.) Here are some quick E2 and Dehydration of Alcohols Complete the Reaction Problems. Remember what we're dealing when we do these problems:

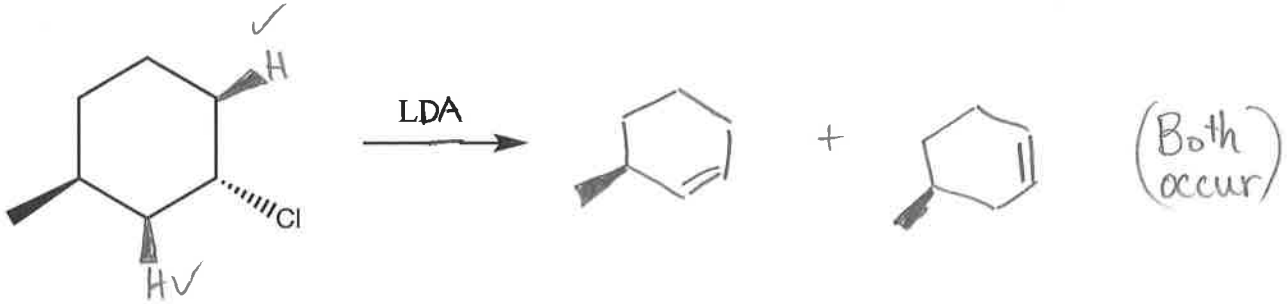
E2: good leaving group, **strong** base, sterically hindered substrate, and anti-peri planar hydrogen to abstract

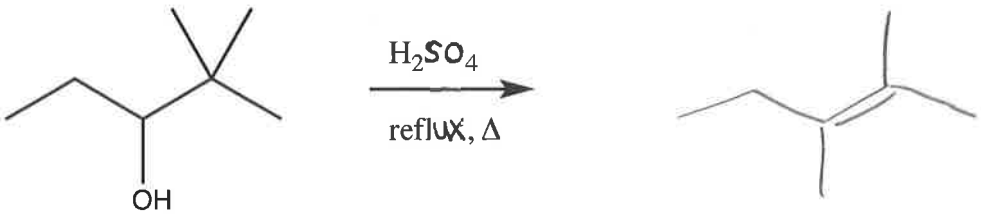
Dehydration of Alcohols: Be aware of carbocation shifts, right (hydride/methyl)? Also, just for fun, remember this is an E1 mechanism, right?





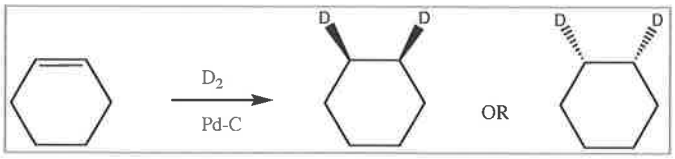
Both anti peri planar





3.) Okay, so in the last video, we introduced catalytic hydrogenation, inserting two H's across a double bond (aided by a catalyst, hence the name). It truly is an easy reaction that you'll see pop up as a Complete the Reaction question, so let's practice it for a hot sec and then call it a worksheet.**

The only thing you have to remember is that this is a **Syn Addition, meaning when you add the H's across the double bond, if stereochemistry is present (throwback: remember you have to be attached to 4 different things), you have to put the H's on the same side (said another way, either both wedges or both dashes).
ALSO, if you ever see D_2 or T_2, that's just an isotope of H, either deuterium and tritium, respectively.**

** 

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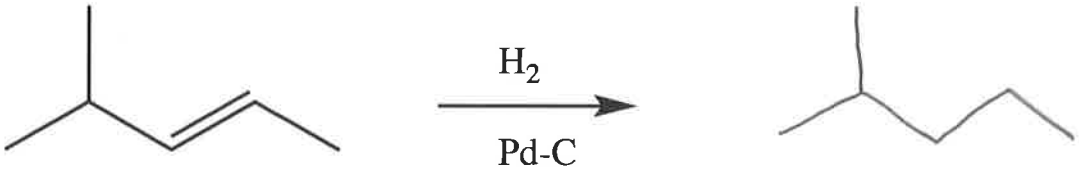
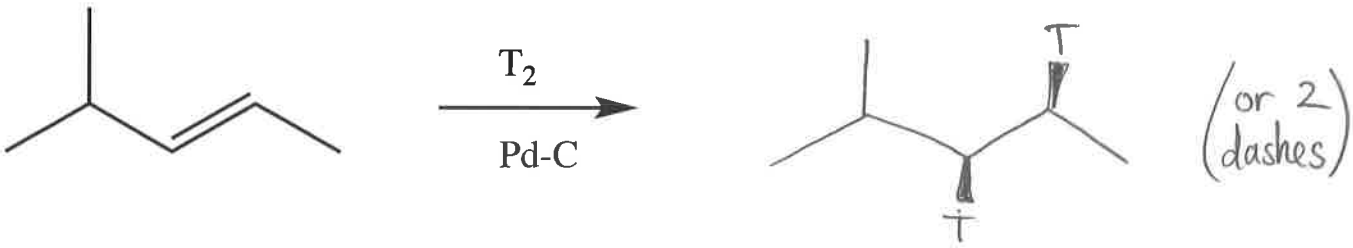
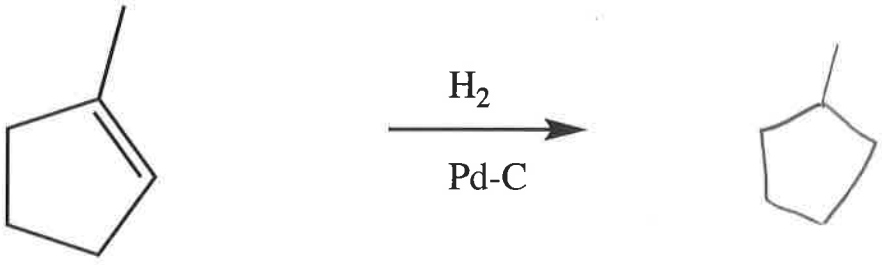
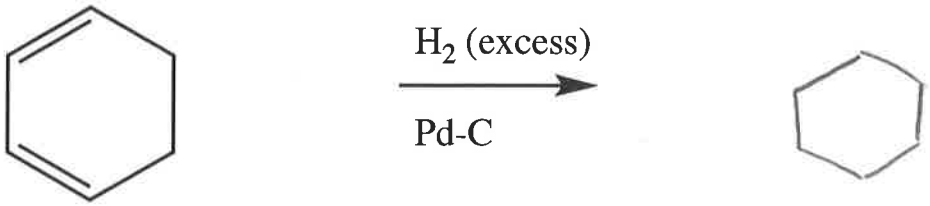




(or 2 dashes)





• Excess will hydrogenate all double bonds