

This is exactly what you need to focus on for test 3.
Practice, review, and understand everything on this list.

Names

- Alkyne and alkyl halide nomenclature rules so that you can determine the names and structures of molecules (including complex substituents and E/Z)

Chapter 9 (Alkynes)

- Preparation of acetylide anions from terminal alkynes (acid-base)
- Alkyl coupling reactions of acetylide anions (S_N2)
- Multi-step synthesis that includes preparation and coupling of acetylide anions (can also include addition of Br_2 , Cl_2 , H_2 , HCl or HBr)
- Hydroboration (non-Markovnikov hydration) of alkynes (terminal and internal) and oxidation (with H_2O_2 and OH^-) of the organoboranes to aldehydes
- Oxymercuration (Markovnikov hydration) of terminal alkynes to methyl ketones

Chapter 10 (Alkyl Halides)

- Allyl free-radical resonance (apply double-headed arrows between resonance forms and curved arrows for e^- movement)
- Gilman reagents (understand how to prepare organolithium and diorganocopper-lithium compounds, and how the alkyl coupling reactions work)
- Grignard reagents (understand how to prepare organomagnesiumhalide compounds, and how they react with hydrogen ions)

Chapter 11 (Substitution and Elimination)

- What S_N2 stands for and why (bimolecular substitution)
How to optimize S_N2 ($1^\circ > 2^\circ$ halide, strong Nu, and polar aprotic solvent)
- What S_N1 stands for and why (unimolecular cation formation, then substitution)
How to optimize S_N1 ($3^\circ > 2^\circ$ halide, weakly-basic Nu, and neutral polar solvent)
- What $E1$ stands for and why (cation forms alkene)
How to optimize S_N1 ($3^\circ > 2^\circ$ halide, weak non-Nu base, and neutral polar solvent)
- What $E2$ stands for and why (bimolecular and forms alkene)
How to optimize S_N2 ($3^\circ > 2^\circ$ halide and strong base)

Practice Problems from 9e:

9.1, 9.2, 9.7, 9.10, 9.12b, 9.13d, 9.24

10.7, 10.11, 10.18a, 10.26fg, 10.28

11.25, 11.26, 11.27, 11.28, Worked Example 11-5b