Chapter 12: Synthesis

12.1 One-Step Syntheses

12.1 Identify the reagents necessary to accomplish each of the transformations shown below. (Chapter 9)

12.2 Identify the reagents necessary to accomplish each of the transformations shown below. (Chapter 10)
12.2 Functional Group Transformations – a chemical reaction in which one functional group is changed to another.

*Functional Group (FG):* a group of atoms, which are part of a larger molecule, that have characteristic chemical behavior. FG’s have similar reactivity in every molecule they are part of.

12.3 Reactions That Change the Carbon Skeleton

C–C bond forming reactions are central to organic chemistry

–CN adds one carbon

acetylide ion

Shortening of a carbon change: cleaving a C–C bond

ozonolysis
12.4 How to Approach a Synthesis Problem

1. Is there a change in the carbon skeleton?
   match the carbon skeleton of the substrate to the product

2. Is there a change in the identity and/or location of the functional groups?
   what are the precursors to the new functional groups

12.5 Retrosynthetic Analysis— working a synthesis problem backward from the desired product to the starting substrate.

12.6 Practical Tips for Increasing Proficiency
Organizing a synthetic “toolbox” of reactions