{youtube}DAkjoA479-k{/youtube}

This video discusses most of the reactions of alkynes that you need to prepare for your organic chemistry test. It shows you how to find the major product and how to identify the reagents you need to synthesize the product. It provides the reaction mechanisms for the synthesis practice problems.

Here is a list of reactions covered in this video:
Oxymercuration - HgSO4 H2SO4 H2O Alkyne to Ketone
Hydroboration - Sia2BH THF H2O2 OH- Alkyne to Aldehyde
Halogenation - HBr, HBr & H2O2 (peroxide), & HCl (markovnikov and anti markovnikov addition) - Alkyne to Alkyl Halide, Geminal Dihalide
Vicinal Dihalide:
Bromination - Br2 & Chlorination - Cl2 in CH2Cl2

Hydrogenation:
H2 Lindlar's Catalyst - Pd BaSO4 & Quinoline - Alkyne to Cis Alkene
Na or Li & NH3 - Alkyne to Trans Alkene
H2 & Pt Catalyst - Alkyne to Alkane

Direct Alkylation Using NaNH2 Followed By an Alkyl Halide (coupling)
Oxidative Cleavage - KMnO4 & H3O+ - Alkyne to Carboxylic Acid
Ozonolysis - O3 & H2O
Direct Acylation, Epoxide Ring Opening, Carboxylation, etc.

This video also discusses the relative bond length of an alkyne, alkene, and alkane in addition to the acidity and pKa of the acetylene molecule. The acidity of the alkyne was explained by hybridization - specifically the high s character of the sp hybrid orbitals.

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