

Alkyne Reaction Worksheet - Chapter 9

1. Predict the product(s) of the reaction of **4-methylpentyne** with reagents **(a)** through **(p)**, indicating proper regiochemistry. Assume reagents are used in excess, unless otherwise stated.

(a) HBr, Ether **(b)** Cl₂, CH₂Cl₂ **(c)** 1. O₃; 2. Zn, H₃O⁺ **(d)** H₃PO₄, KI

(e) H₂, Lindlar cat. **(f)** 1. BH₃, THF; 2. H₂O₂, NaOH **(g)** H₂SO₄, H₂O, HgSO₄

(h) Li, NH₃ **(i)** H₂, Pd/C **(j)** 1. NaNH₂; 2. Ethylbromide

(l) reagent **(a)** then 2KOH

(m) reagent **(b)** then 2NaNH₂, NH₃

(n) reagent **(e)** then HBr

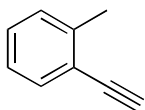
(o) reagent **(e)** then OsO₄, NMO

(p) reagent **(h)** then reagent **(c)**

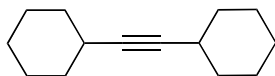
(q) reagent **(h)** then reagents **(f)**

Repeat the same reactions (reagents a-q) for the following compounds

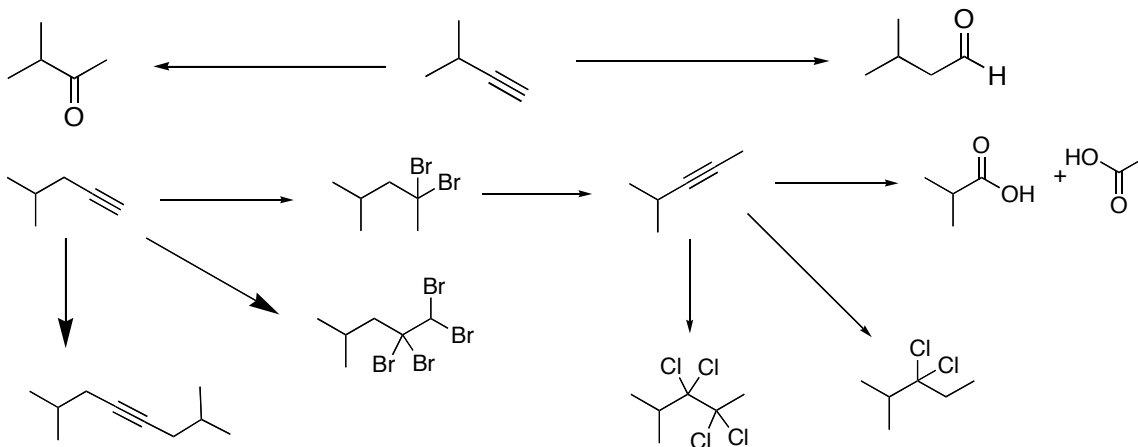
2.



3.



4. Fill in the missing reagents over the arrows



5. Draw the alkyne and reagents needed to synthesize the following compounds. There may be more than one possible answer.

