Work these problems on a blank copy of your Personal Workshop Form.

1. Propose structures of compounds A-G in the following roadmap.

2. Frontalin, an insect pheromone, is the ketal derivative of a ketone.
   a. Determine the structure of the ketone formed by hydrolysis of frontalin.
   b. Propose a mechanism for this reaction.

3. Propose structures of compounds H-N of the following reaction sequence. Compound N is multistriatin, an insect pheromone, which has a bicyclic structure and molecular formula of C$_{10}$H$_{18}$O$_{2}$.

4. β-Bisabolene is derived from different types of plants. Split your group into two teams. Team A will give a synthesis of β-bisabolene using any methodology from CHE 321 & 322, except the Wittig reaction (and any variation of it). Team B will give a synthesis of β-bisabolene using any methodology from CHE 321 & 322, but the Wittig reaction (or any variation of it) must be used at least once. Each synthesis should be composed from compounds of no more than 5 carbons. Compare your syntheses. Which looks better?