

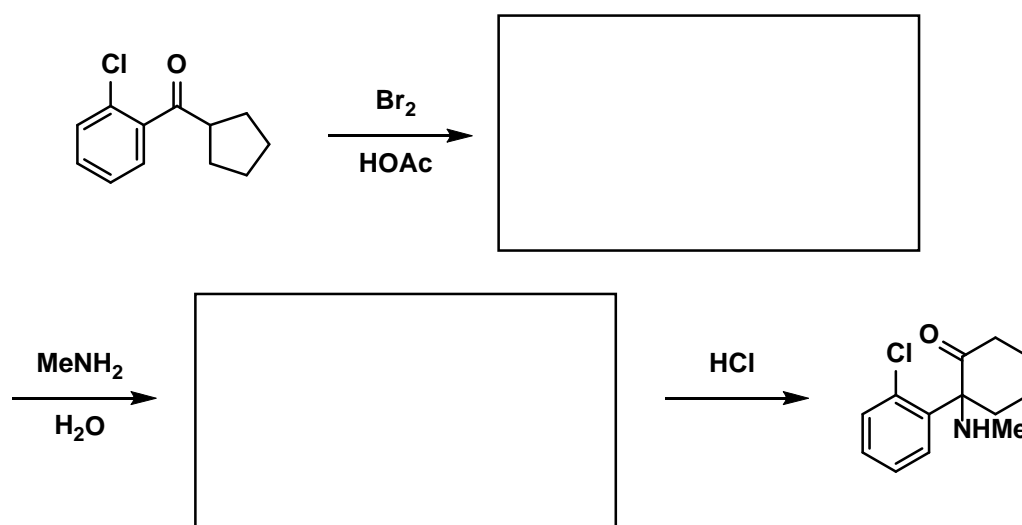


## CHEM 8410\_6410\_4410 – Organic Synthesis

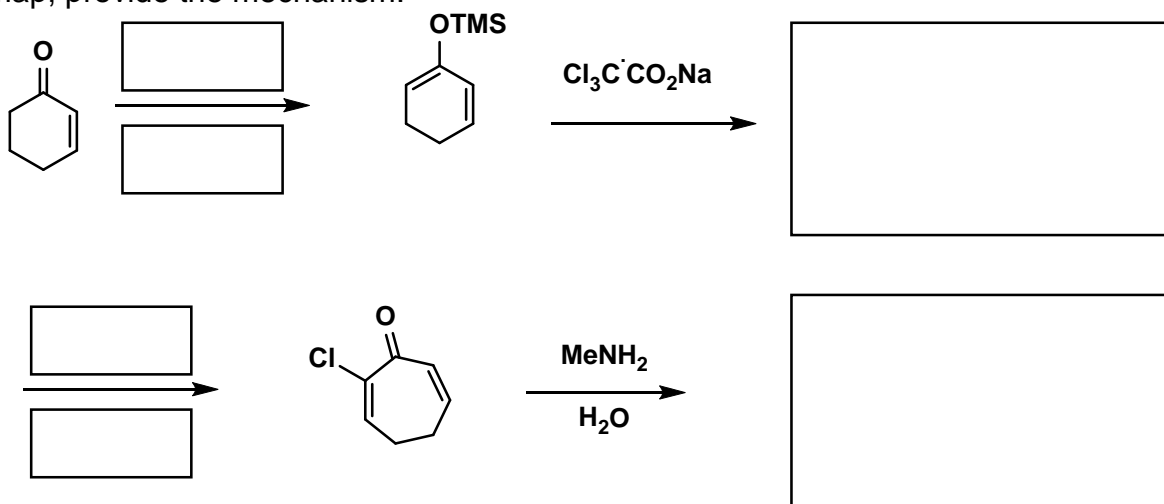
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**Problem Set 4:** This problem set is now available at ([www.blackboard.utoledo.edu](http://www.blackboard.utoledo.edu)). It will be due in class 21 days (04/12/16) from today (03/22/16). Grades will be administered as follows: 10 (exceptional effort), 8 (complete), 5 (incomplete or inadequate effort), 2 (poor effort), 0 (nonexistent). **No late problem sets will be accepted.**

1. **Problem:** Please fill in the blanks for the following transformation. For each step of the roadmap provide the mechanism.



2. **Problem:** Please fill in the blanks for the following transformation. For each step of the roadmap provide the mechanism.





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3. **Problem:** A very recent JACS paper (2010, 132, 13533.) appeared in which synthetic strategies were employed to obtain Vindorosine, Vindoline, and Key Vinblastine analogues. Below is a scheme representing a number of synthetic transformations for which you will need to provide the mechanism. Please show all structures ie. Teoc.

