1.

Workshop 15 Solutions Asymmetric Induction via Chiral Enamines



Only the *trans*-enamine would be formed. The *cis*enamine (with a *cis* double bond) would be less stable, because of steric interactions between the ethyl group and both the nitrogen atom and the phenyl groups from the amine. The distinction is important—if you got the enamine switched, all predicted stereochemistry in your products would be reversed.



2.



3. So,



4. To make the other enantiomer, just use the chiral auxiliary amine with opposite stereochemistry.







more stable.

Ph

Ph

So, of these two iminium ions, only the one on the right will be formed. This iminium will be deprotonated to form a *trans*-enamine:





equals



the opposite enantiomer.