

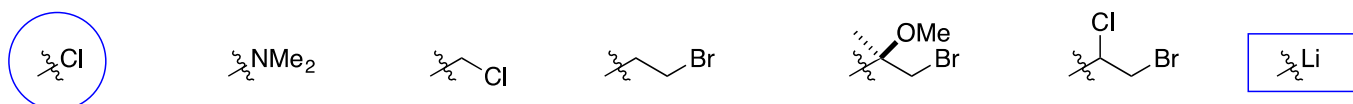
Applications of Priority Rules

from chapter(s) _____ in the recommended text

A. Introduction

B. Priority Rules

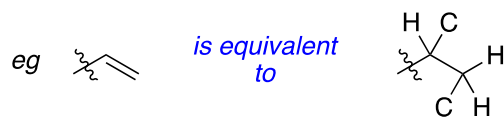
the atom with *higher* atomic mass takes priority.

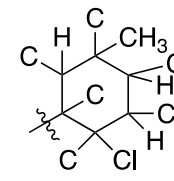
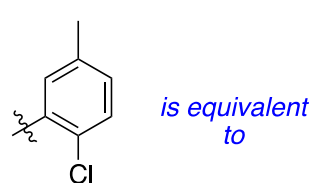
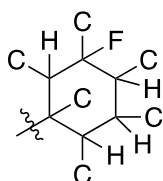
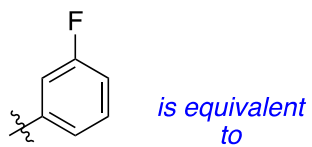
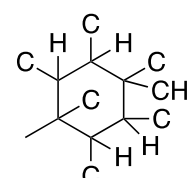
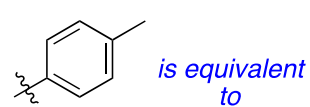
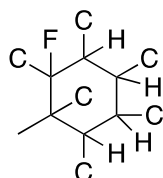
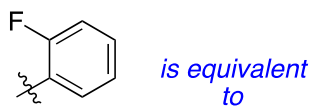
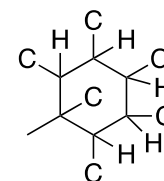
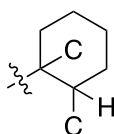
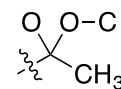
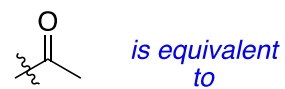
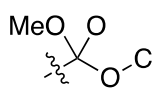
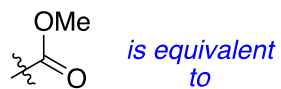
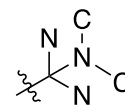
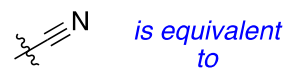
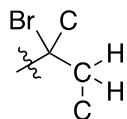
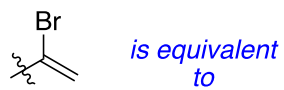


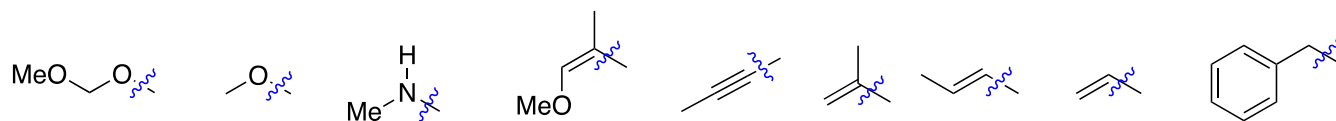
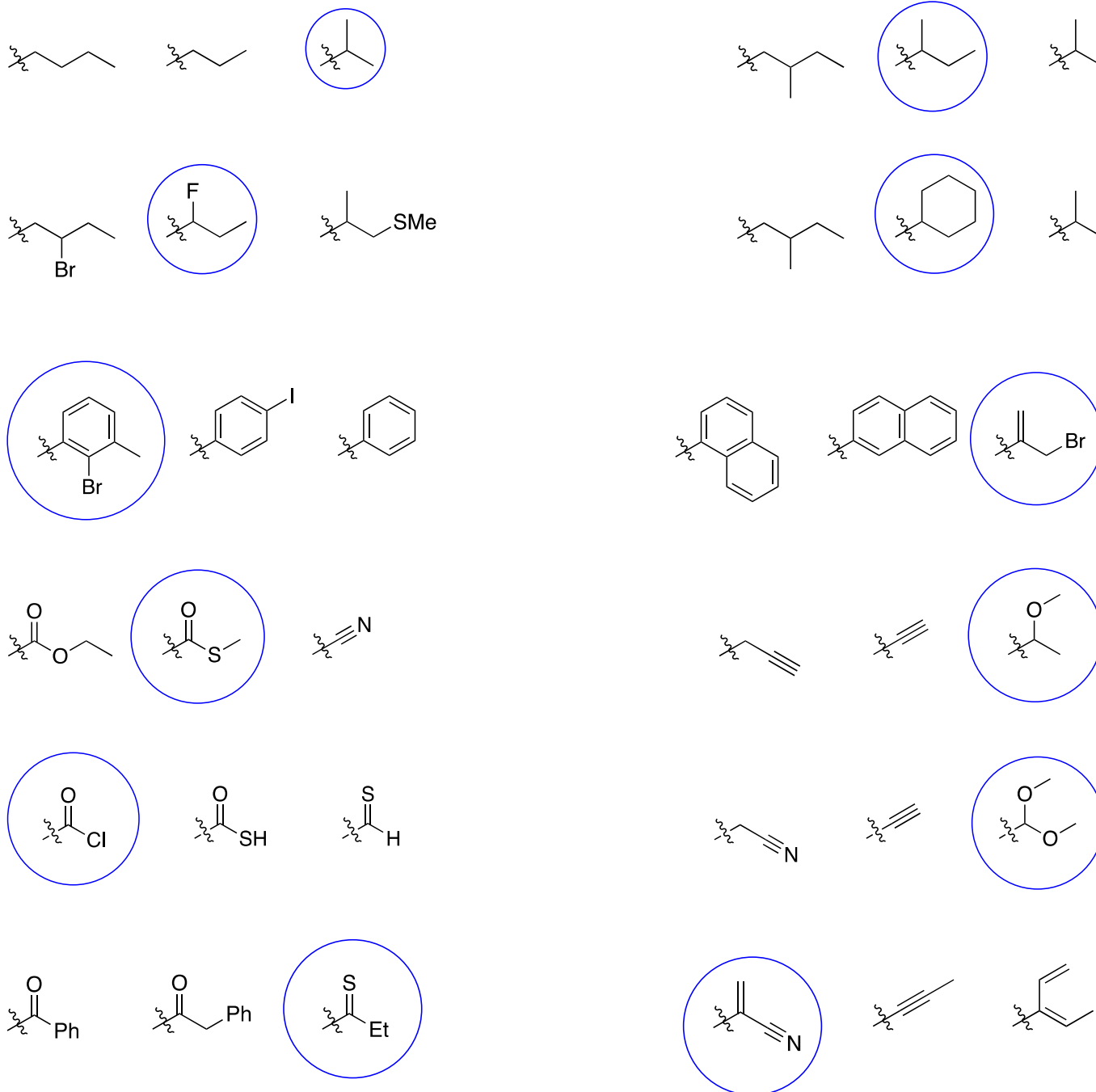
Substituents Connected Multiple Bonds



The problem is: *the first atom of the substituents is the same for every molecule.*

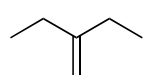




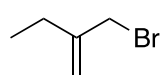
*highest priority**lowest*

C. Classifying Alkene Geometries

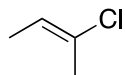
the terms *cis* / *trans* means the same as *E* / *Z*.



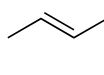
na



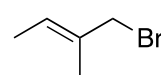
na



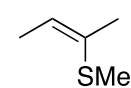
E-



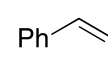
E-



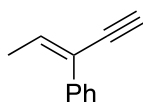
E-



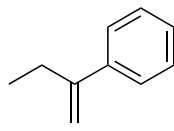
Z-



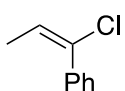
Z-



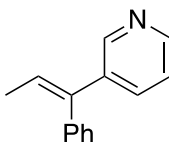
Z-



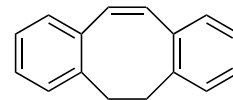
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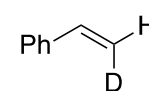
E-



E-

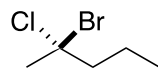
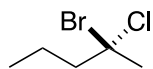


Z-

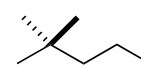
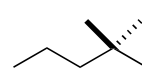


Z-

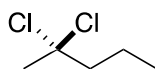
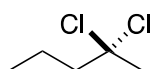
D. Chiral Centers



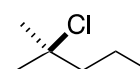
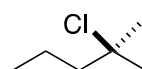
no



yes



yes

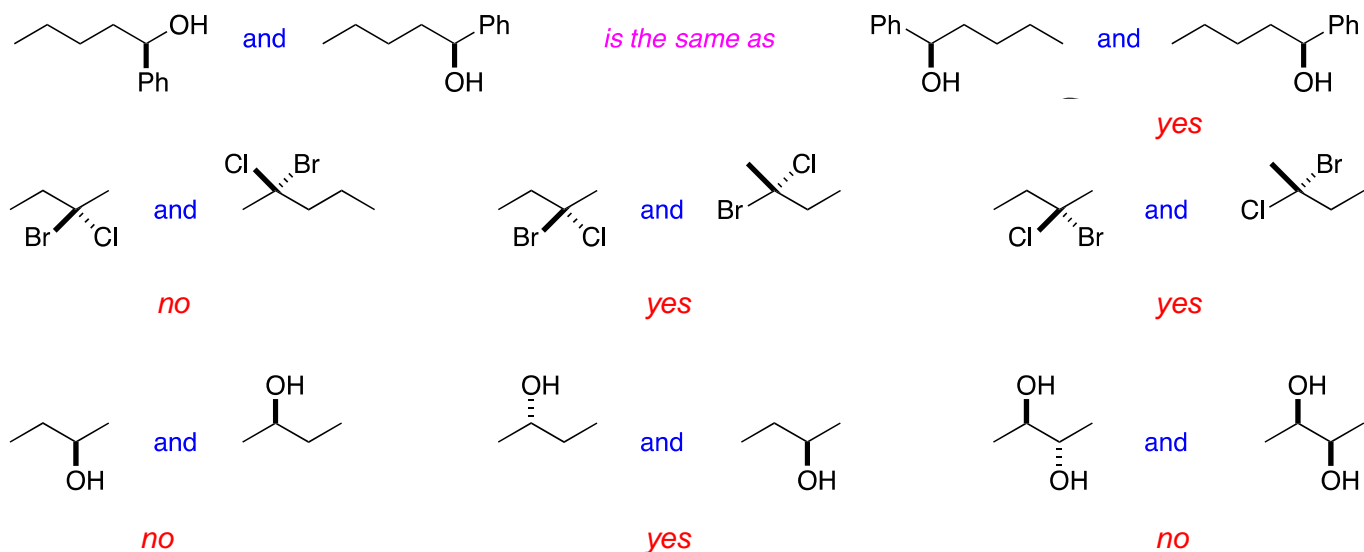


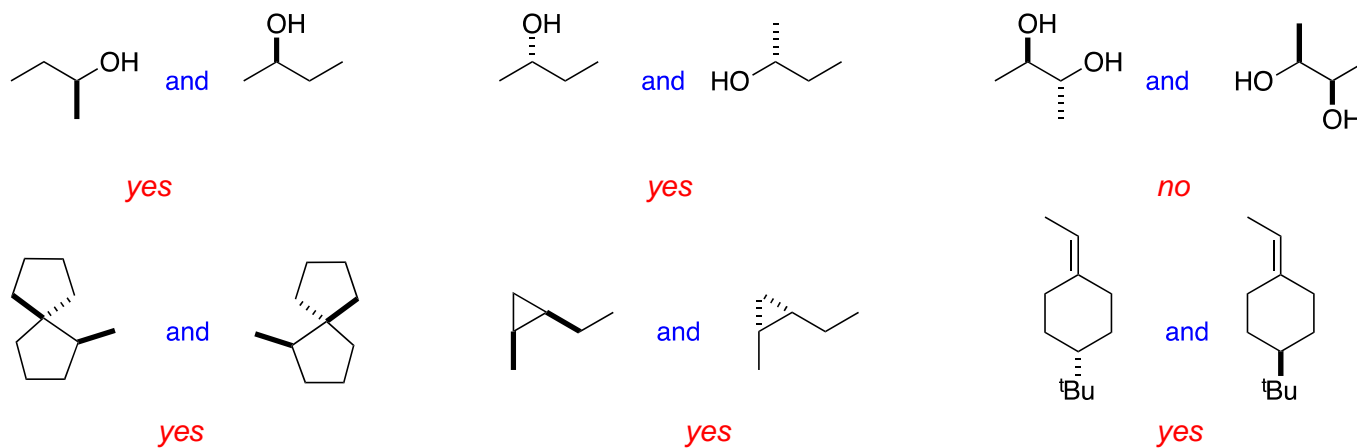
yes



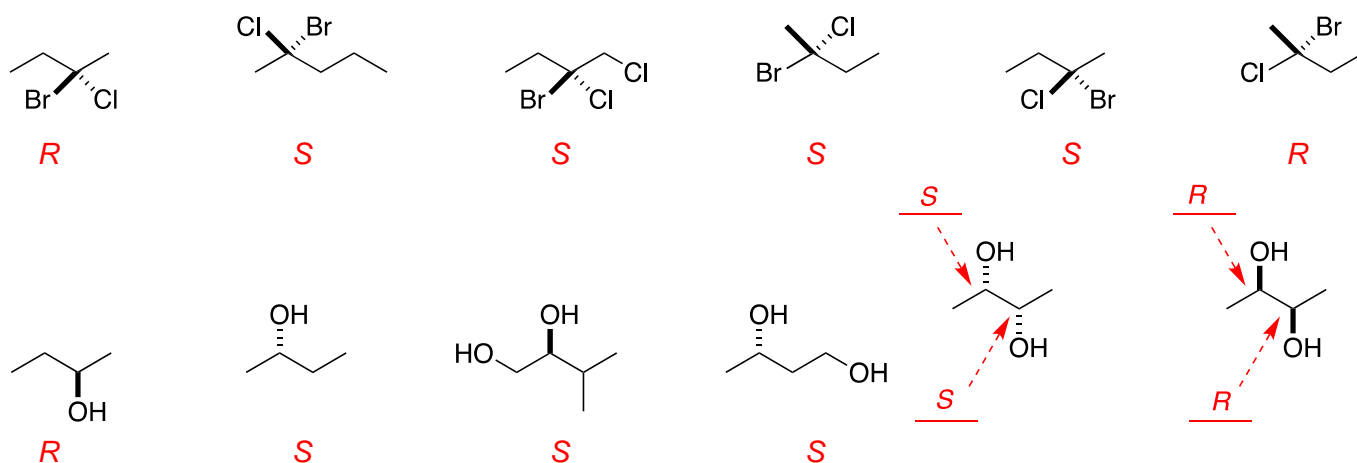
non-superimposable mirror images *do* require that there be four different groups on a carbon atom.

Mirror images of organic molecules are called *enantiomers- only if* they are non-superimposable.





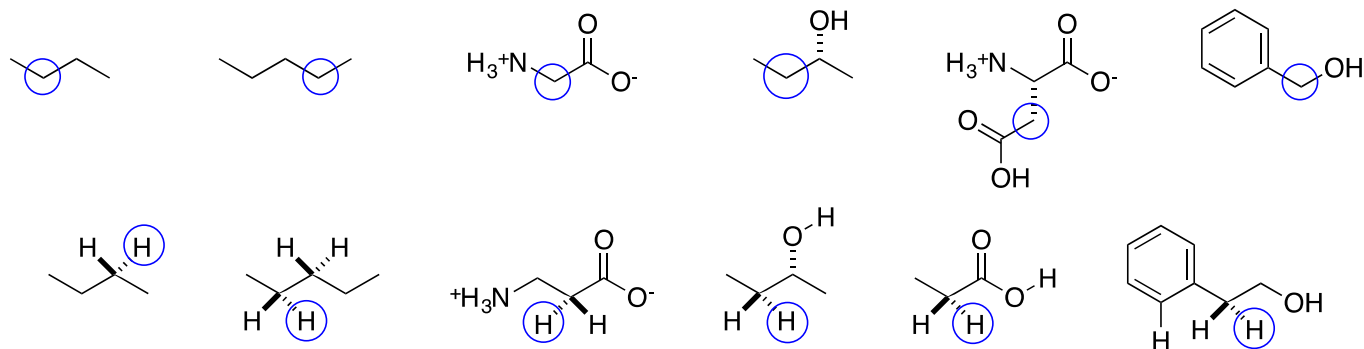
Assigning chirality like this *can* establish if molecules are mirror images.



If a compound has *R*-stereochemistry, its enantiomer is always *S*.

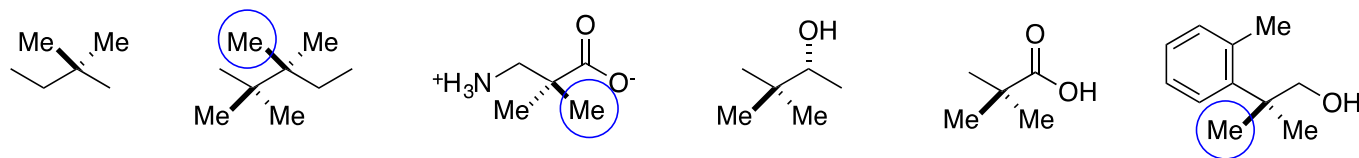
E. Prochirality

“Some prochiral compounds can be converted to chiral ones by *substituting* a group at the prochiral center” *true*

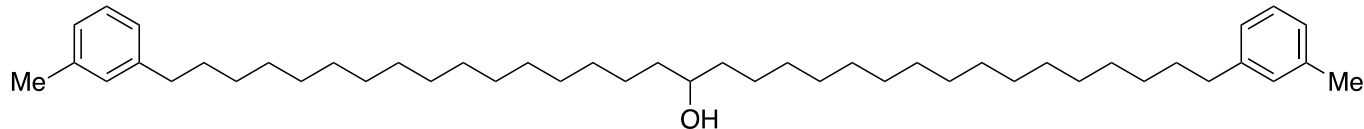


The hydrogen atoms circled in the diagram above are all *pro-R*.

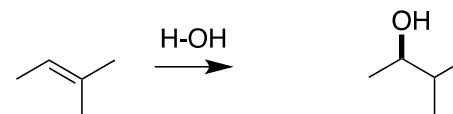
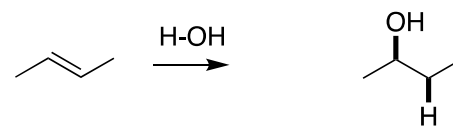
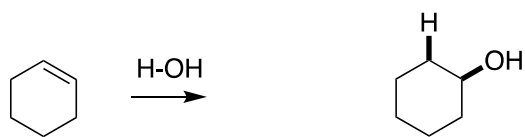
This is a *substitution* reaction.



Methyl groups circled in the diagram above are all *pro-S*.

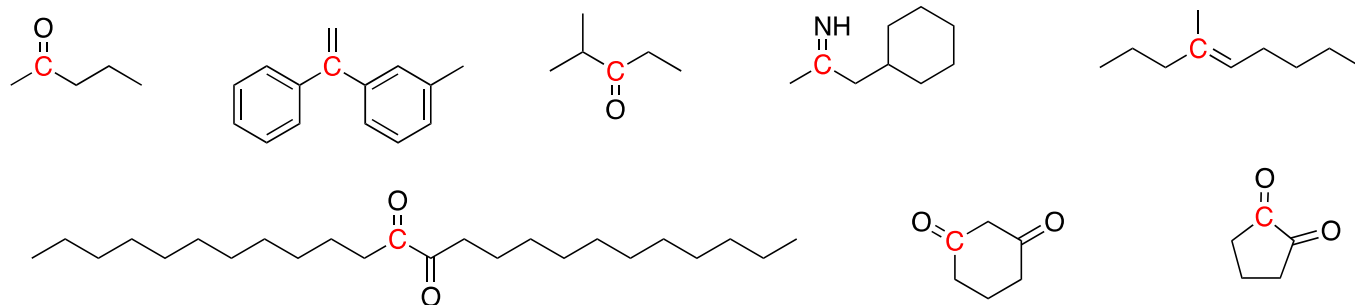


The two methyl groups in the molecule above *are* prochiral.

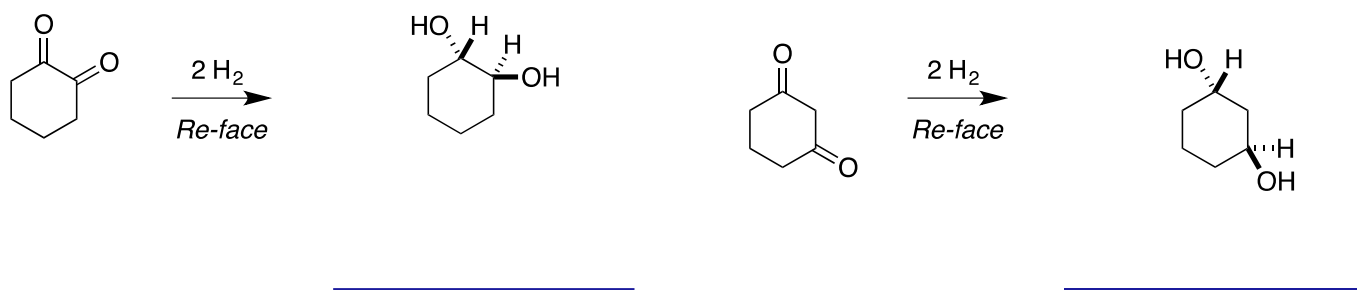
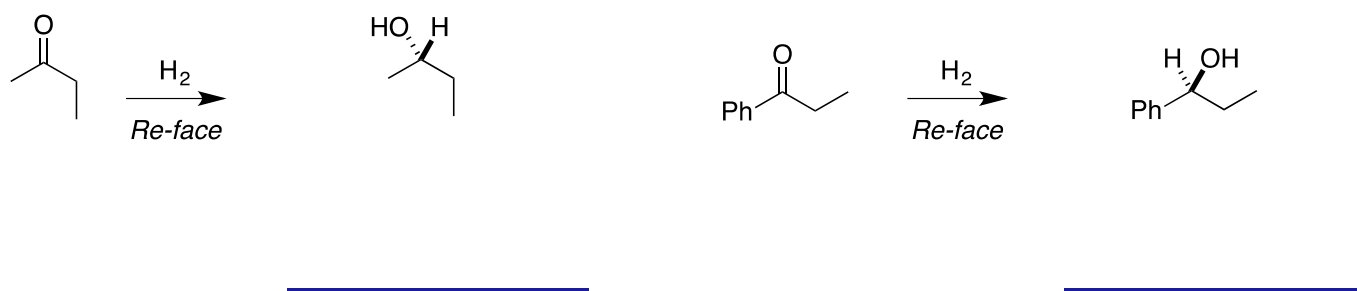
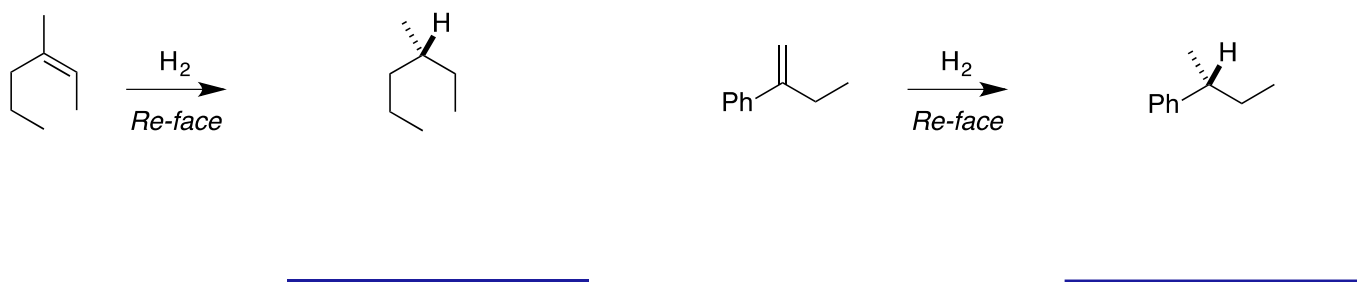
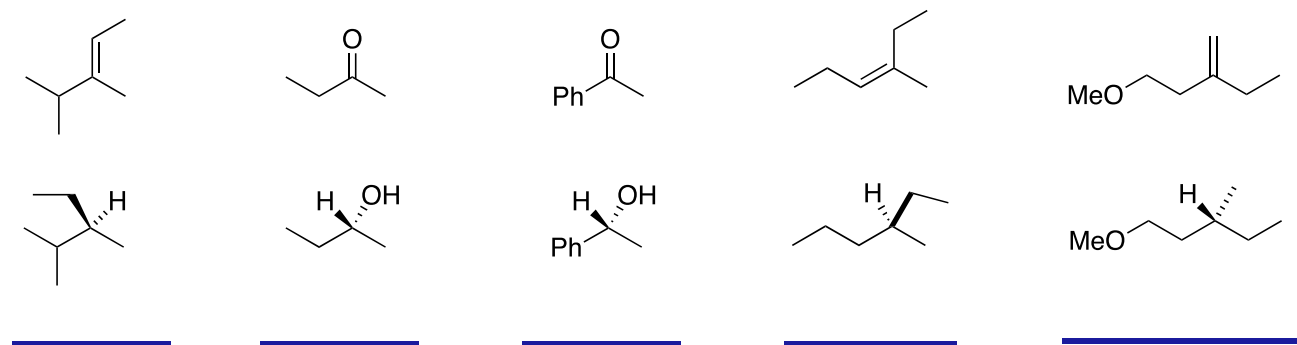


“Some prochiral compounds can be converted to chiral ones by *adding* a group to the prochiral center”.
true

(looking down on the paper), the priority of the groups attached to the highlighted carbon in the following compounds are *all Re-*.



(looking up from below the paper), the priority of the groups attached to the highlighted carbon in the following compounds are *all Si-*.



Reactions from the *Re*-face *sometimes* gives the *R*-chiral while reactions from the *Si*-face *sometimes* gives the *S*-chiral centers.