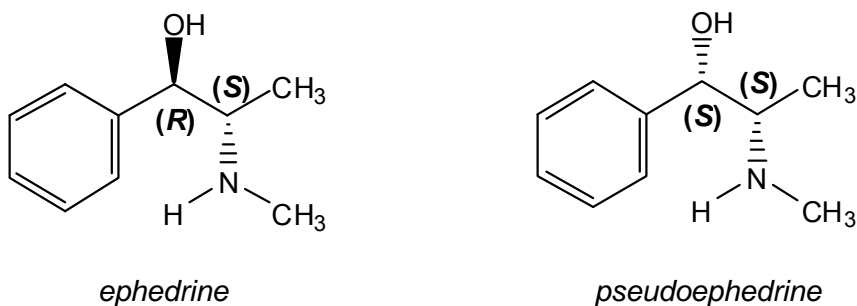


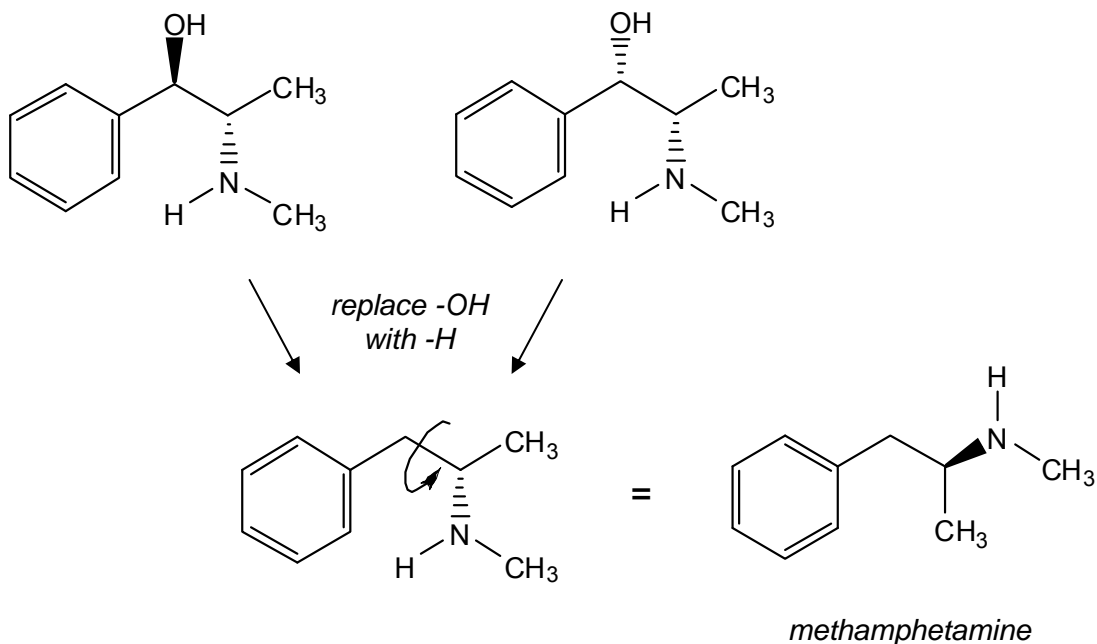
Workshop 11 Solutions
Enantiomers, Diastereomers, and Meth

a)



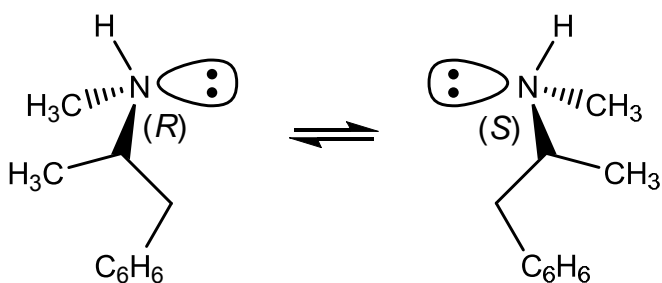
These molecules are diastereomers. They are stereoisomers, both chiral, and not meso.

b) I think the easiest way to do this problem was to change the -OH groups to -H's, redraw the molecules, and see what you got.



c) Levomethamphetamine and methamphetamine are enantiomers.

One question I field a lot during this Workshop: Isn't the nitrogen atom on all of these molecules also a chiral center? It is true that each nitrogen has four different groups--an H, a CH₃, a larger group, and a lone pair. And the lone pair does count as its own group, so each nitrogen is indeed a definable chiral center. But the lone pair does something that no atom can do: every millisecond or so, the lone pair jumps to the opposite side of the molecule, and inverts the nitrogen stereocenter.



Of course, this doesn't happen for tetrahedral chiral centers without lone pairs. But it is common for nitrogen and phosphorus--the only atoms that can be tetrahedral, neutral, and have a single lone pair.