Reactions of Alkenes: Summary

Intermediate:	Carbocation	Radical	3-Membered Ring	None or Cyclic (concerted)
Regiochemisty:	Markovnikov*	Anti-Markovnikov*	Markovnikov-like	N/A
Addition:	Syn & Anti	Syn & Anti	Anti	Syn
Rearrangements?	yes	no	no	no

*the reaction goes through the pathway of the most stable intermediate;
the more substituents on an electron deficient carbon (carbocation or radical), the greater its stability

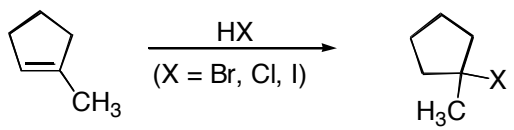
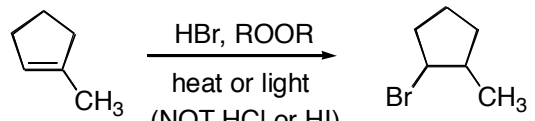
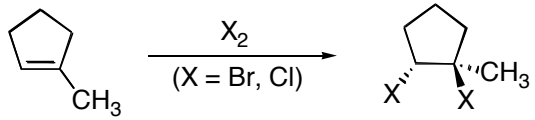
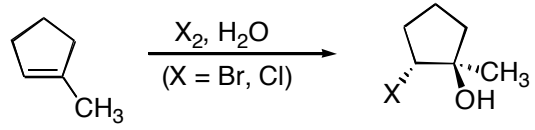
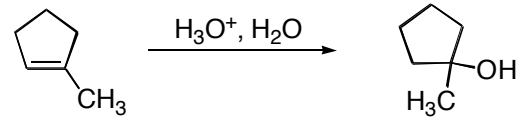
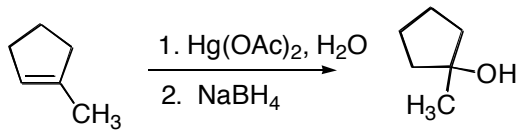
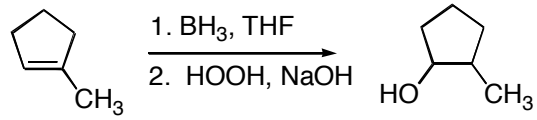
Stereochemistry:

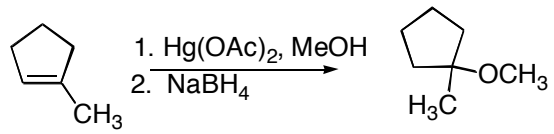
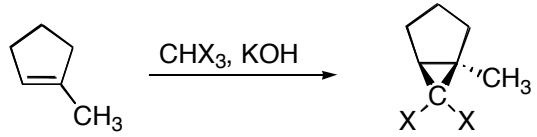
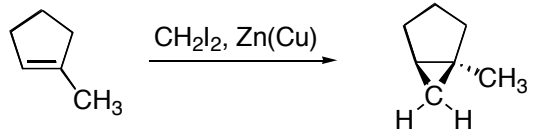
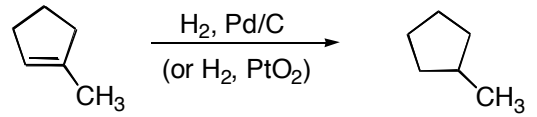
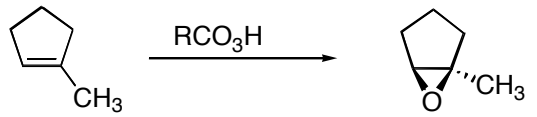
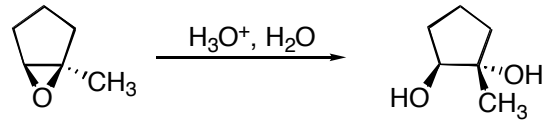
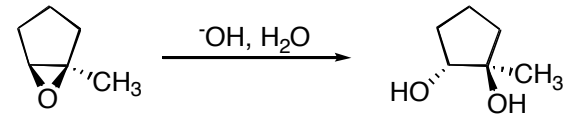
- If the reactants are optically inactive (achiral), the products will be optically inactive (achiral, racemic or meso)
- If the reactants are optically active (chiral), the products will be optically active (unequal mixture of enantiomers, unequal mixture of diastereomers, or 1 enantiomer)
- Use 2^n of the product to predict the maximum number of stereoisomers

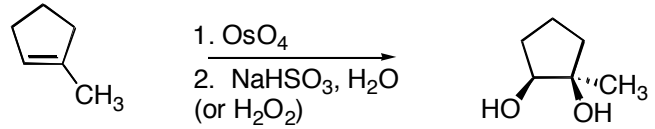
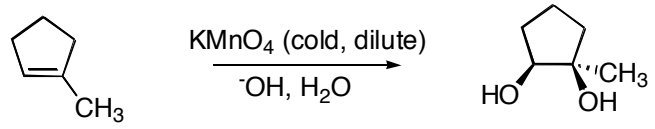
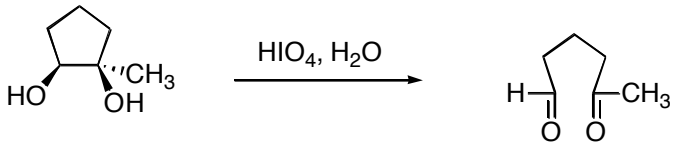
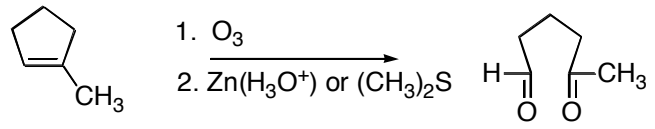
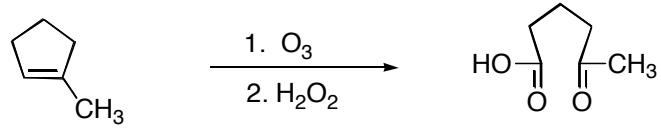
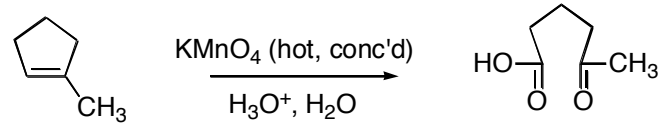
(if just anti or just syn addition, divide the maximum number of stereoisomers by 2)

Predicting the type of intermediate:

- Carbocation - H is the electrophile (no lone pair to share with the empty p orbital)
- Radical - an initiator with a weak bond (ex. ROOR) and an energy source (heat or light) is present
- 3-Membered Ring - the electrophile has a lone pair of electrons available to share with the empty p orbital
- None or Cyclic - the electrophile can both accept and donate electrons at the same time

	Alkyl halide	Carbocation	syn + anti	Markovnikov
	Alkyl halide	Radical	syn + anti	Anti-Markovnikov
	Vicinal dihalide	3-membered ring	anti	Markovnikov-like
	Halohydrin	3-membered ring	anti	Markovnikov-like
	Alcohol	Carbocation	syn + anti	Markovnikov
	Alcohol	3-membered ring	anti	Markovnikov-like
	Alcohol	None (concerted)	syn	Anti-Markovnikov

	Ether	3-membered ring	anti	Markovnikov-like
	Cyclopropane	None (concerted)	syn	N/A
	Cyclopropane	None (concerted)	syn	N/A
	Alkane	Heterogeneous	syn	N/A
	Epoxide	None (concerted)	syn	N/A
	*trans*-1,2-diol	3-membered ring	anti	N/A
	*trans*-1,2-diol	None (concerted)	anti	N/A

	*cis*-1,2-diol	Cyclic (concerted)	syn
	*cis*-1,2-diol	Cyclic (concerted)	syn
	Aldehydes and Ketones	Cyclic (concerted)	syn
	Aldehydes and Ketones	Cyclic (concerted)	syn
	Carboxylic acids and Ketones	Cyclic (concerted)	syn
	Carboxylic acids and Ketones	Cyclic (concerted)	syn