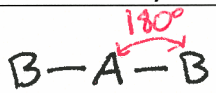
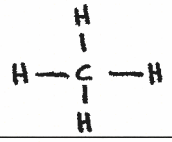
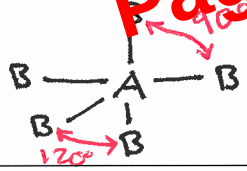
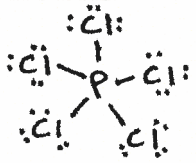
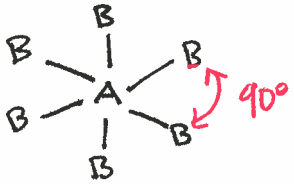
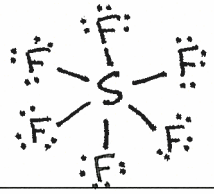
- Cis (Z) = same side
- Trans (E) = opposite side
  - Ie:

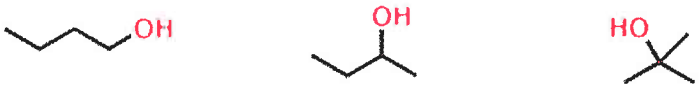
Cis (Z) Trans (E)

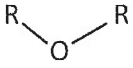
Molecular Geometry and Hybridization

Name	Molecular Geometry	Hybridization
Linear		sp 
Trigonal planar		sp^2 
Tetrahedral		sp^3 
Trigonal bipyramidal		sp^3d 
Octahedral		sp^3d^2 

Functional Groups

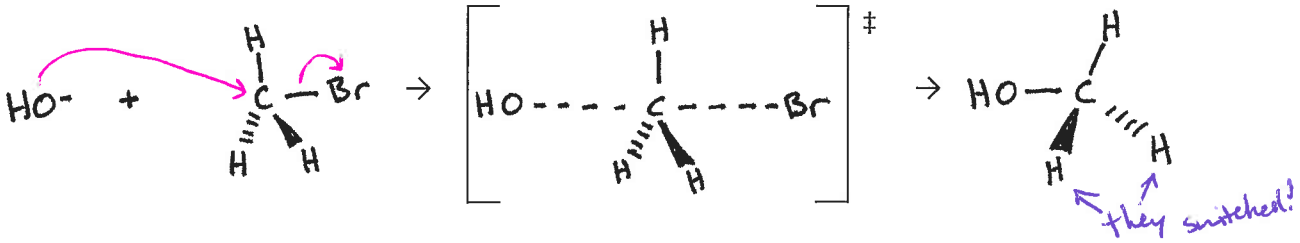
- Reactivity of a compound is determined by the number and type of functional group
- Alcohols 1° > 2° > 3°



- Ether 

Sn2 Reaction

- Substitution, favors cold, 2 things theoretically happening at once



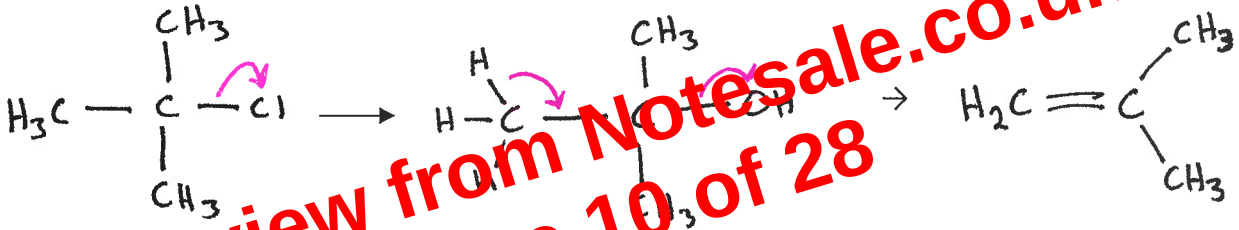
*HO^- (nucleophile) come in and Br leaves on its own

*transition state ‡

*configuration of C is inverted

E1 Reaction

- Elimination, favors heat



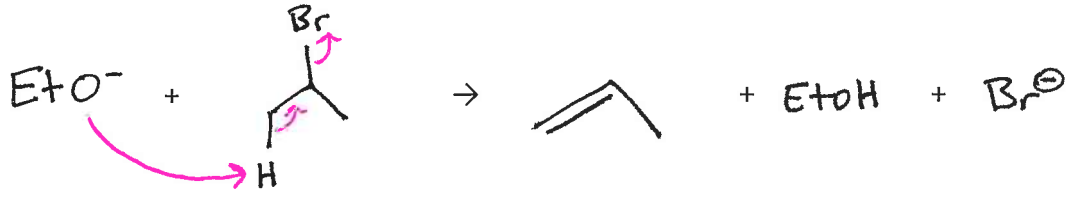
*Cl leaves on its own and water in excess comes in

*OH^- leaves, resonance occurs

*final product is the elimination of a halogen

E2 Reaction

- Elimination, favors heat



*Eto^- takes H, resonance occurs, Br

Stability of Carbocations

- More resonance opportunity = more stability

3° > 2° > 1° > methyl




IUPAC Naming

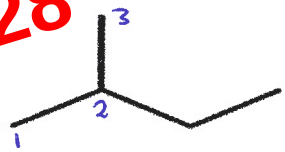
- Prefixes
  - Meth- 1 carbon
  - Eth- 2 carbons
  - Prop- 3 carbons
  - But- 4 carbons
  - Pent- 5 carbons
  - Hex- 6 carbons
  - Hept- 7 carbons
  - Oct- 8 carbons
  - Non- 9 carbons
  - Dec- 10 carbons

Rules

1. Parent name of hydrocarbon is the longest continuous chain of carbons.

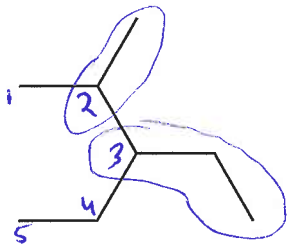
2-methylbutane

NOT:



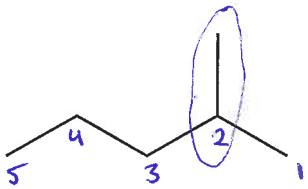
2-ethylpropane

2. A chain branching off the parent chain is an alkyl group.



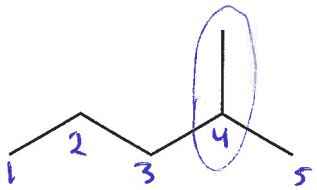
2-methyl-3-ethylpentane

3. The alkyl groups are organized by the smallest number first when naming.

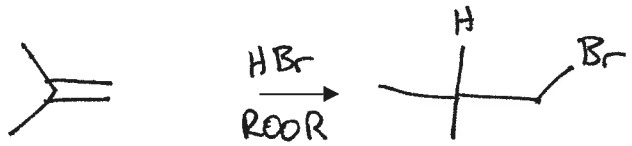


2-methylpentane

NOT:



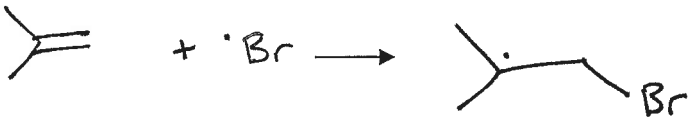
4-methylpentane



Halogenation of Higher Alkanes

1. Chain Initiation

2. Chain Propogation

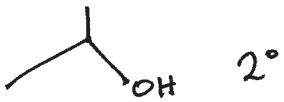


3. Chain Termination

Alcohol Structure and Nomenclature

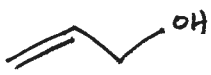
- Ethanol

- 2-propanol (isopropyl alcohol)



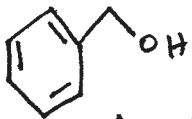
- 2-methyl-2-propanol (tert-butyl alcohol)

- 2-propenol (allyl alcohol)



- 2-propynol (propargyl alcohol)

- Benzyl alcohol



- Phenol