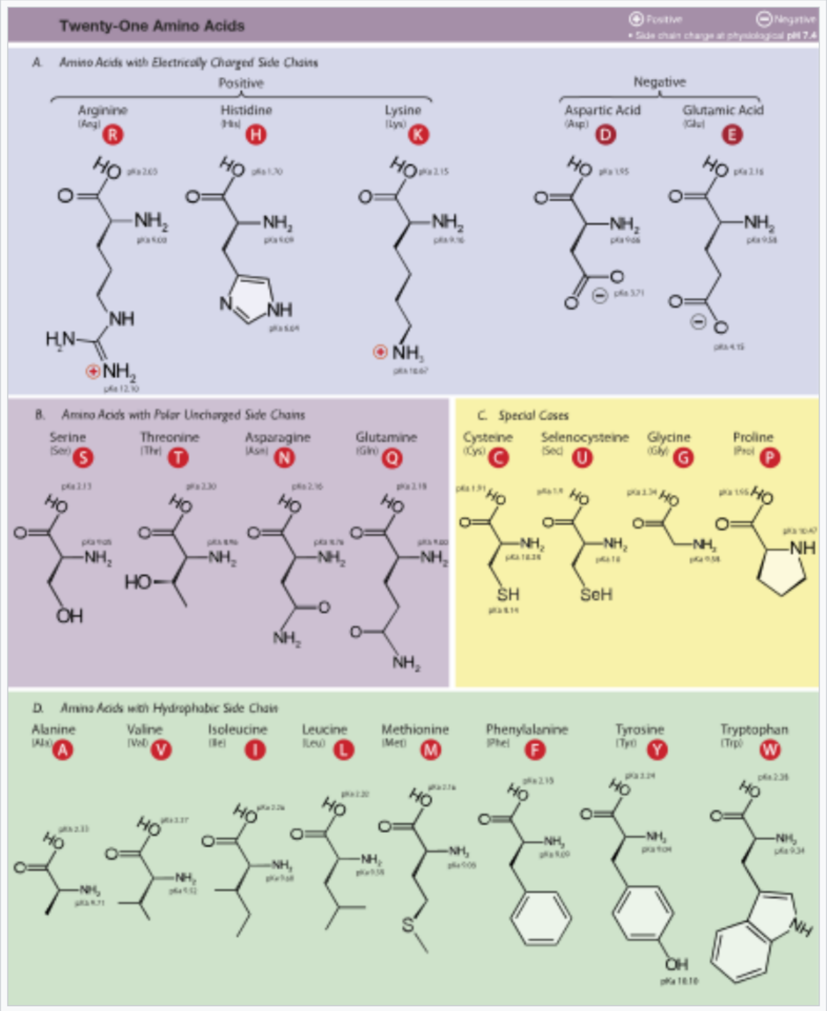
From Wikipedia “Amino Acids” 9-28-2018

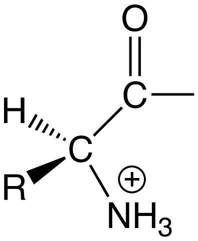
General structure [edit]

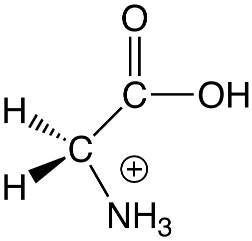
In the structure shown at the top of the page, **R** represents a side chain specific to each amino acid. The carbon atom next to the carboxyl group (which is therefore numbered 2 in the carbon chain starting from that functional group) is called the α–carbon. Amino acids containing an amino group bonded directly to the alpha carbon are referred to as *alpha amino acids*.[34] These include amino acids such as proline which contain secondary amines, which used to be often referred to as "imino acids".[35][36][37]

Isomerism [edit]

The alpha amino acids are the most common form found in nature, but only when occurring in the L-isomer. The alpha carbon is a chiral carbon atom, with the exception of glycine which has two indistinguishable hydrogen atoms on the alpha carbon.[38] Therefore, all alpha amino acids but glycine can exist in either of two enantiomers, called L or D amino acids, which are mirror images of each other (*see also Chirality*). While L-amino acids represent all of the amino acids found in proteins during translation in the ribosome, D-amino acids are found in some proteins produced by enzyme posttranslational modifications after translation and translocation to the endoplasmic reticulum, as in exotic sea-dwelling organisms such as cone snails.[39] They are also abundant components of the peptidoglycan cell walls of bacteria,[40] and D-serine may act as a neurotransmitter in the brain.[41] D-amino acids are used in racemic crystallography to create centrosymmetric crystals, which (depending on the protein) may allow for easier and more robust protein structure determination.[42]

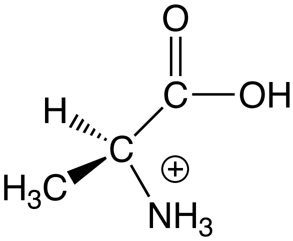






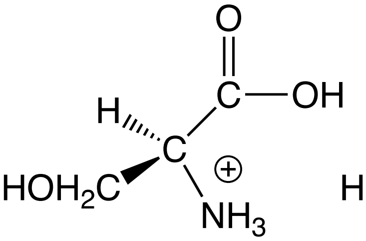
Glycine

☐



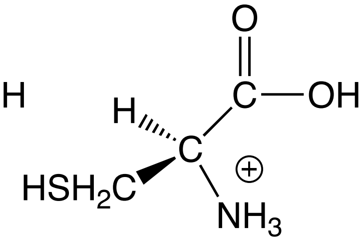
Alanine

☐



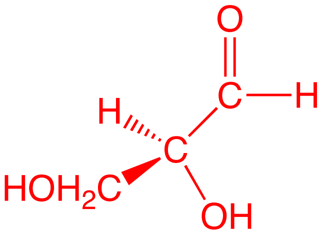
Serine

☐

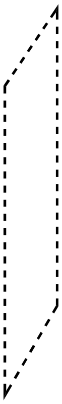


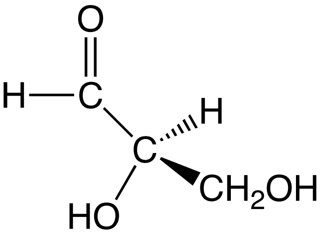
Cysteine

☐

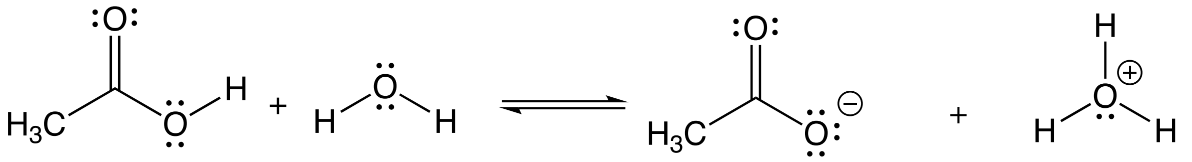


(L)-(-)-Glyceraldehyde





(D)-(+)-Glyceraldehyde



Acid (H-A) Base (B:) Conjugate Base ($A^{\ominus}$) Conjugate Acid ($B\text{-}H^{\oplus}$)

At equilibrium: $$K_{\text{equilibrium}} = \frac{[\text{Products}]}{[\text{Reactants}]} = \frac{[CH_3CO_2^{\ominus}]\,[H_3O^{\oplus}]}{[CH_3CO_2H]\,[H_2O]}$$

Assume: $[H_2O] = 55$ M and does not change

$$K_a = K_{\text{equilibrium}}\,[H_2O] = K_{\text{equilibrium}}\,[55\text{ M}]$$

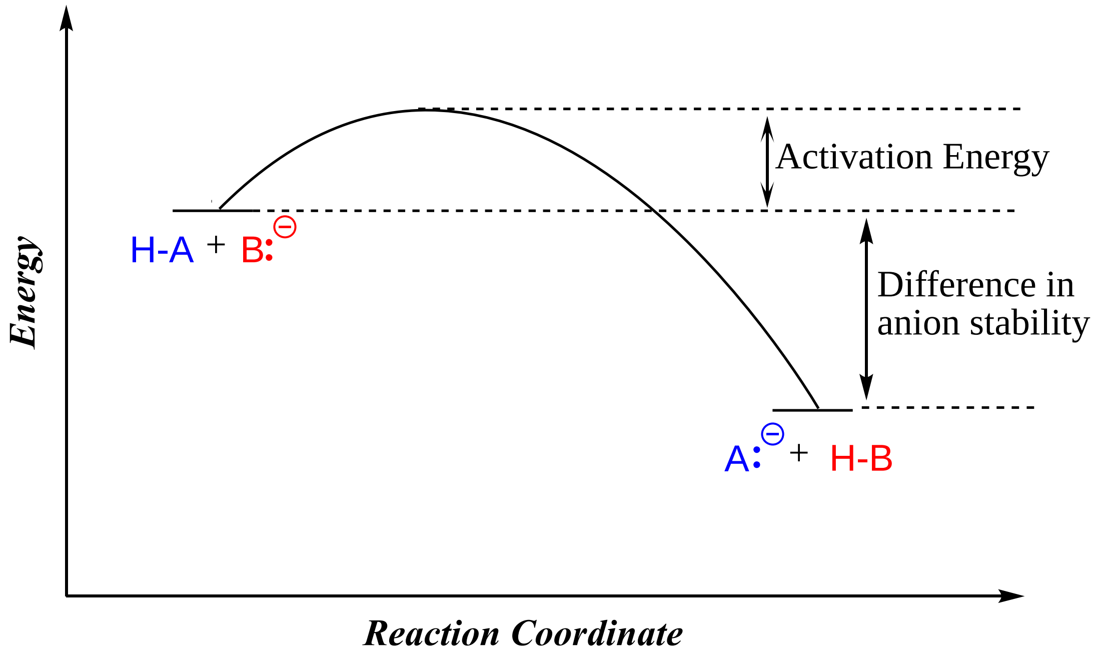
$$K_a = \frac{[CH_3CO_2^{\ominus}]\,[H_3O^{\oplus}]}{[CH_3CO_2H]} \qquad pK_a = -\log K_a$$

A stronger acid has a ___________________ value of pK_a

A weaker acid has a ___________________ value of pK_a

$$\text{H-A} + \text{B}:^{\ominus} \rightleftharpoons \text{A}:^{\ominus} + \text{H-B}$$

Assume $\text{A}:^{\ominus}$ is more stable than $\text{B}:^{\ominus}$



$$\boxed{K_{eq} = 10^{(\text{p}K_a\ \text{H-B}\ -\ \text{p}K_a\ \text{H-A})}}$$

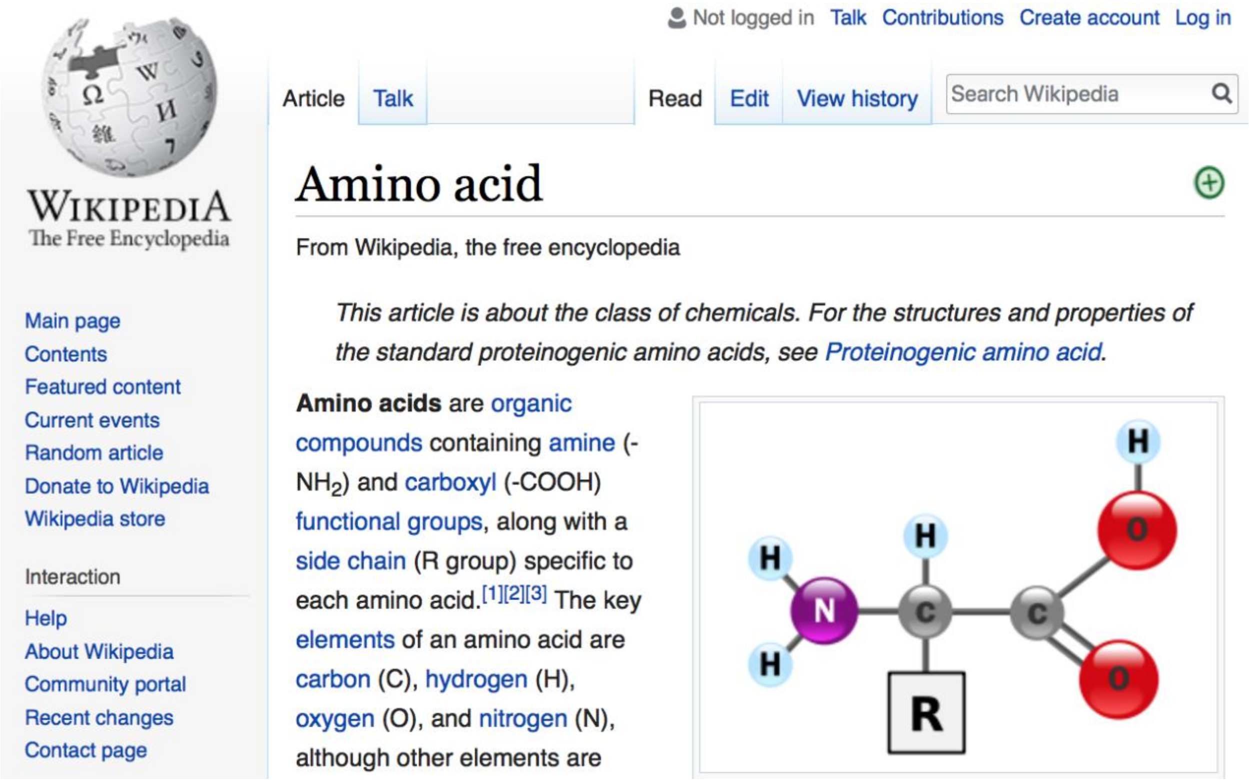
Example

$$CH_3S\text{-}H + HO^{\ominus} \rightleftharpoons CH_3S^{\ominus} + H_2O$$

$\text{p}K_a = 7$

$\text{p}K_a = 15.7$

$$K_{eq} = 10^{(\qquad - \qquad)} = 10^{(\qquad)}$$

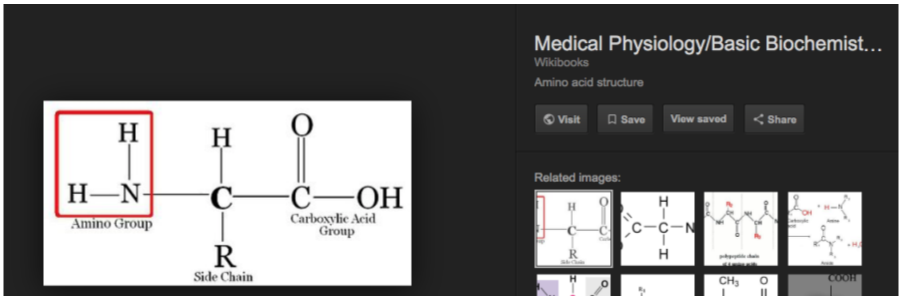


Amino acid

From Wikipedia, the free encyclopedia

This article is about the class of chemicals. For the structures and properties of the standard proteinogenic amino acids, see Proteinogenic amino acid.

Amino acids are organic compounds containing amine (-NH_2) and carboxyl (-COOH) functional groups, along with a side chain (R group) specific to each amino acid.[1][2][3] The key elements of an amino acid are carbon (C), hydrogen (H), oxygen (O), and nitrogen (N), although other elements are

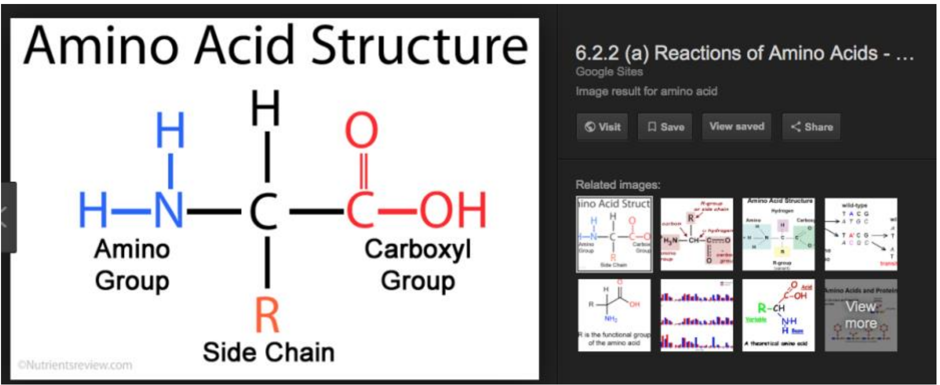


Medical Physiology/Basic Biochemist…

Wikibooks

Amino acid structure

Related images:



6.2.2 (a) Reactions of Amino Acids - …

Google Sites

Image result for amino acid

Related images:

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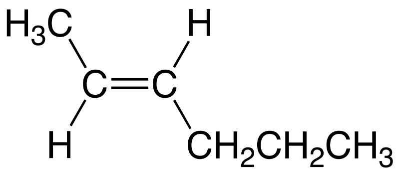
Naming Alkenes

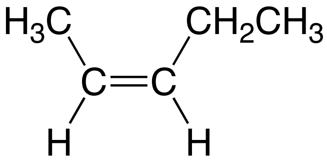
General Directions:

1. Locate longest continuous chain.
2. Number the chain so the double bond gets the lowest possible number.
3. For the parent chain name, use "-ene" not "-ane" as suffix and place a number to indicate the location of the double bond before the main chain name.
4. Make the suffix "-adiene" , "-atriene", etc. if multiple double bonds are present.

***cis/trans* nomenclature** – older chemical nomenclature, but still used commonly in biochemistry – most useful when each *sp*^{2} atom of the double bond has an H atom.

1. Track the longest chain through the double bond
   a. ***cis*** if whole main chain is on the same side of the double bond.
   b. ***trans*** if chain emerges on opposite sides of the double bond.





______________________________ ______________________________

Naming Alkenes

General Directions:

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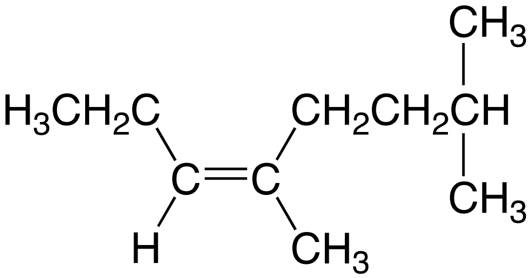
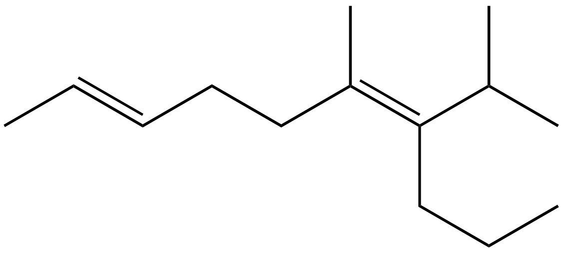
***E,Z* nomenclature** - A general IUPAC nomenclature to names alkenes.

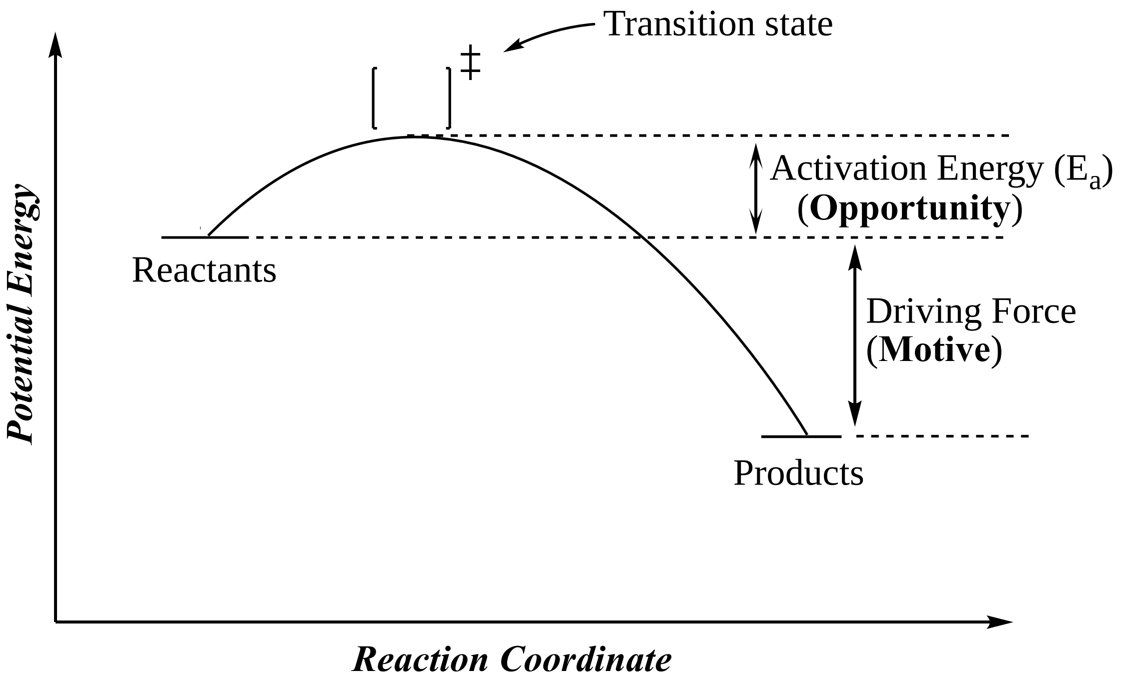
Z (zusammen) = *z*ame *z*ide, *z*ame *z*ide, *z*ame *z*ide

E (entgegen) = opposite side

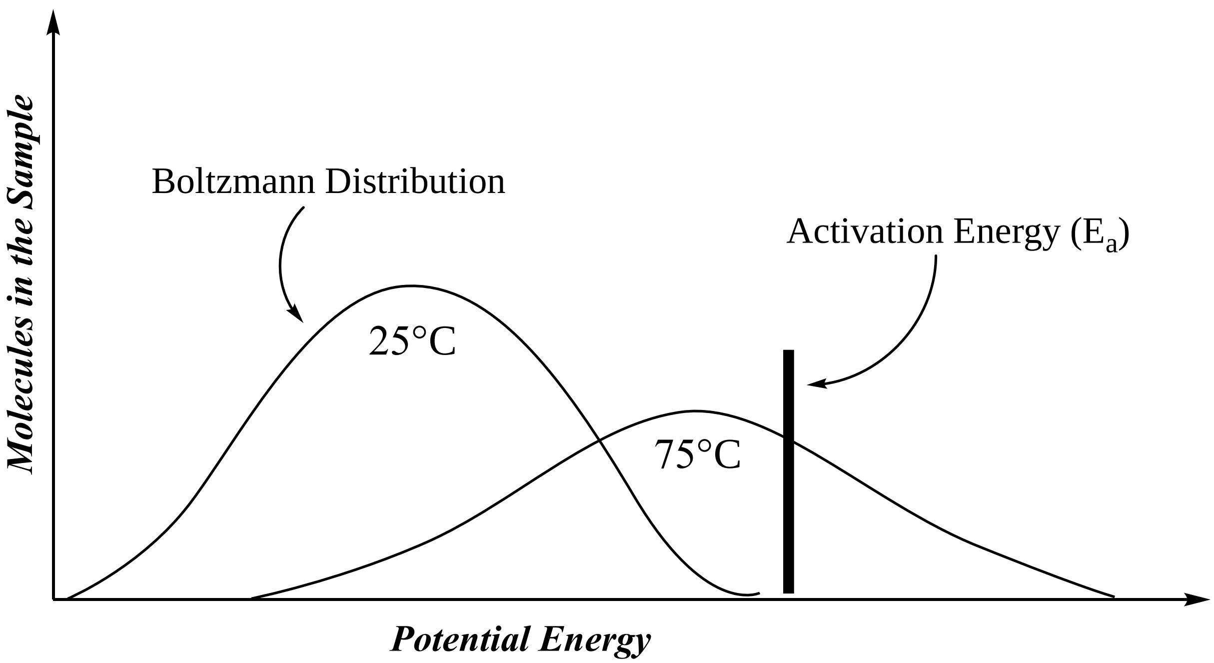
5. On each carbon of the double bond rank the two groups according to the Cahn, Ingold, Prelog priority rules (*R* vs. S rules).
6. If both of the highest-ranking groups are on the zame zide of the double bond it is ***Z***.
7. If both of the highest-ranking groups are on opposite sides of the double bond it is ***E***.



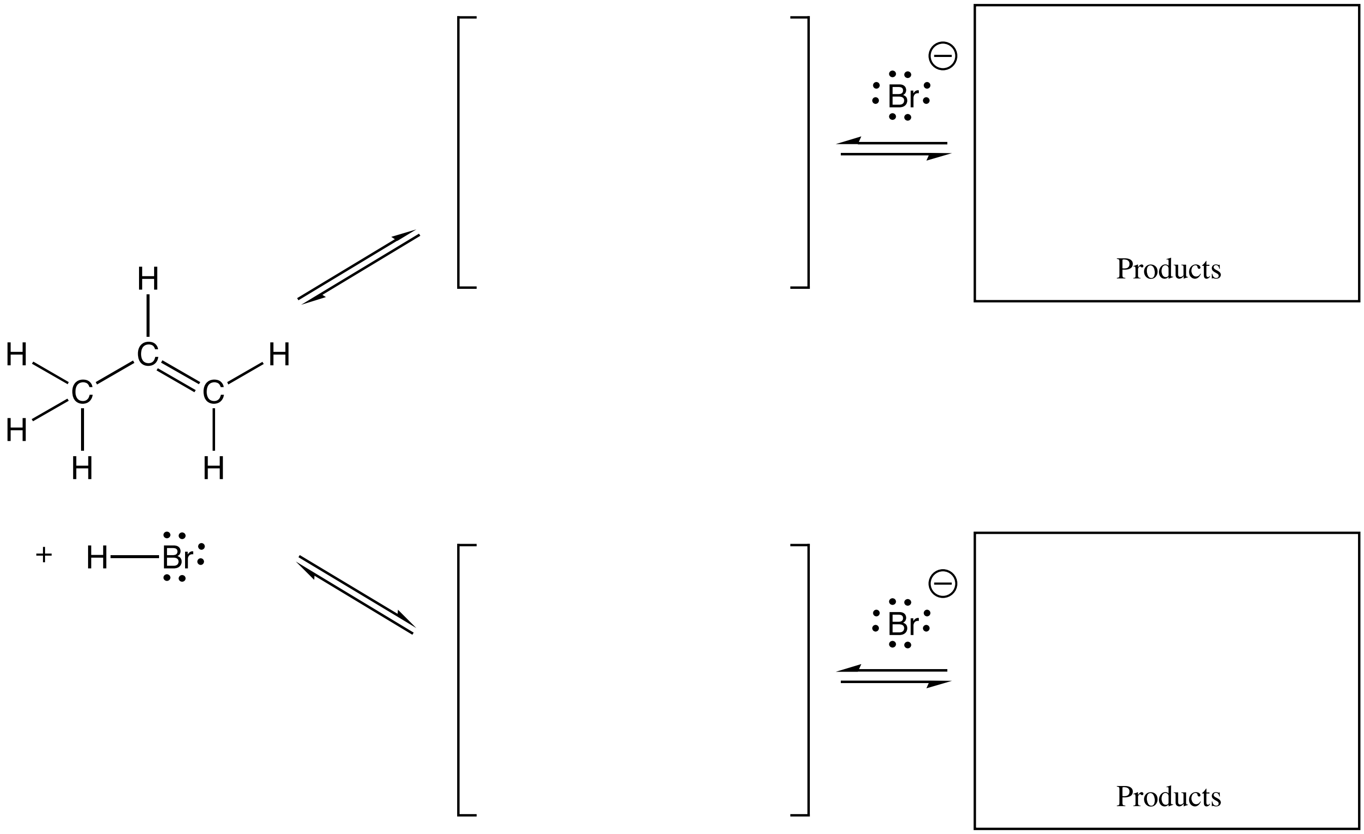




$$k = \text{reaction rate} = Ae^{-E_a/RT}$$



Addition of H-X to an Alkene



Summary:

Regiochemistry:

Stereochemistry:

Example: