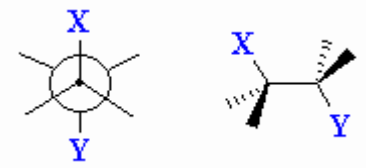
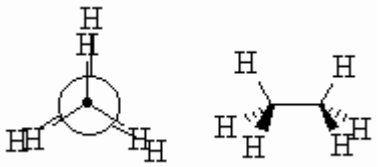
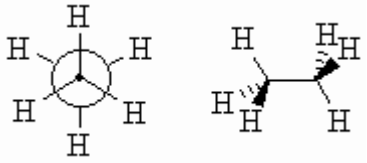
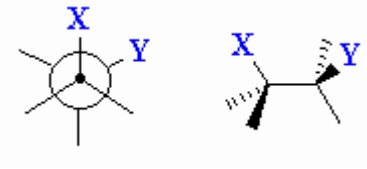
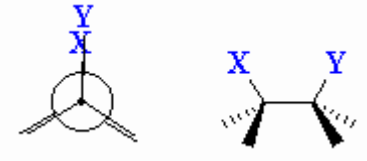
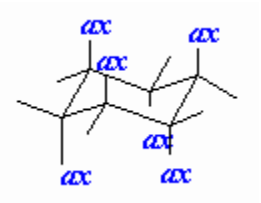
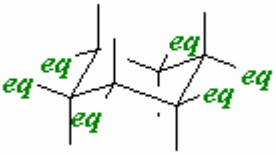
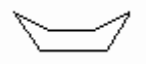
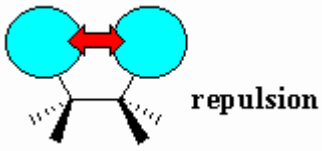
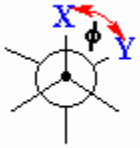
Conformational Language

An alphabetical list of key terms in the language of conformational analysis is provided below. For more detailed descriptions go to F. Carey's site.

Anti	Description given to two substitutents attached to adjacent atoms when their bonds are at 180° with respect to each other.	
Eclipsed	A high energy conformation where the bonds on adjacent atoms are aligned with each other.	
Staggered	A low energy conformation where the bonds on adjacent atoms bisect each other, maximising the separation.	
Gauche	Description given to two substitutents attached to adjacent atoms when their bonds are at 60° with respect to each other.	
Syn	Description given to two substitutents attached to adjacent atoms when their bonds are at 0° with respect to each other.	
Conformations	Different spatial arrangments that a molecule can adopt due to rotation about sigma bonds.	
Conformers	Contracted version of conformational isomers.	
Rotamers	Alternative expression for conformational isomers.	
Conformational isomers	Structures that can be interconverted by rotation about sigma bonds.	

Cycloalkane	An ring containing only C-C bonds.	
Heteroatom	A non-carbon atom such as O,N,S *etc*.	
Heterocycle	A cyclic molecule that includes a heteratom such as O,N,S *etc*. as part of the ring.	
Puckered	A non-planar geometry of a cyclic structure.	
Ring flipping	The process by which a ring changes it's conformation.	
Axial	A position on a chair cyclohexane in which the bond to the ring is perpendicular to the average plane of the ring (*i.e.* pointing towards the poles).	
Equatorial	A position on a chair cyclohexane in which the bond to the ring is approximately in the average plane of the ring (*i.e.* around the equator).	
Chair	The most stable conformation for cyclohexane.	
Boat	A high energy conformation of cyclohexane that occurs during ring flipping.	
Strain	Energy associated with a system due to it's geometry.	
Angle strain	Destabilisation due to distortion of a bond angle from it's optimum value caused by the electrostatic repulsion of the electrons in the bonds.	
Steric strain	Destabilisation due to the repulsion between the electron clouds of atoms or groups. Also known as Van der Waals strain or repulsion. This occurs when atoms or groups are too close to each other due to the electrostatic repulsion of the electrons.	

Torsional strain	Destabilisation due to the repulsion between pairs of bonds caused by the electrostatic repulsion of the electrons in the bonds.	 **repulsion**
Torsional angle	Angle between C-X and C-Y bonds in a X-C-C-Y system. Also known as a dihedral angle.	
Ring strain	The destabilisation of a cyclic structure compared to a related non-cyclic structure, mainly due to angle and torsional strain. This extra energy is released when the ring is broken.	