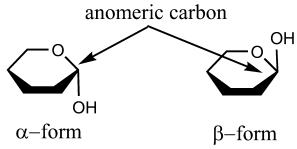
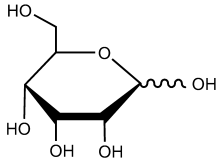
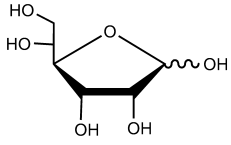
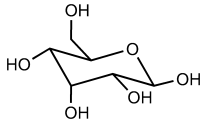
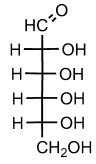
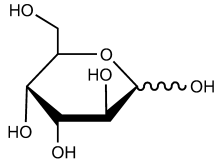
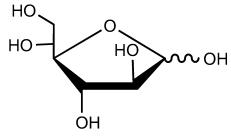
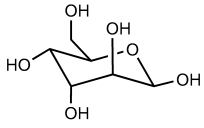
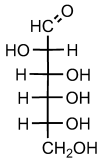
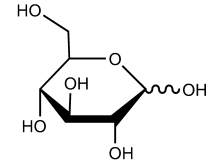
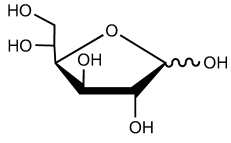
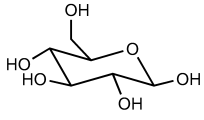
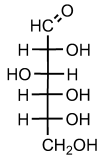
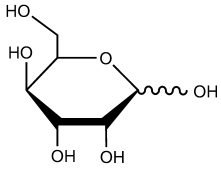
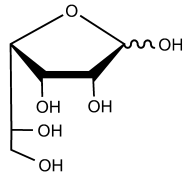
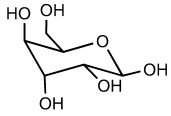
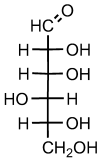
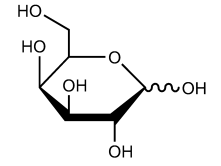
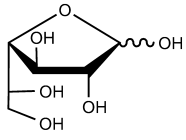
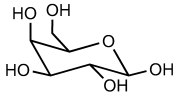
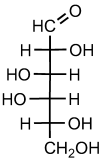
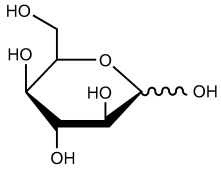
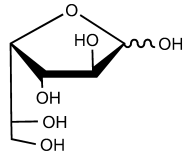
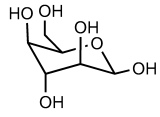
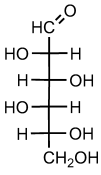
Selected Hexoses and Pentoses

Carbohydrates comprise one of the most abundant groups of naturally occurring organic compounds in living systems as well as being of great industrial importance. Presented below are various structural depictions of the common 5- and 6- carbon monosaccharides. Generally accepted carbohydrate nomenclature conventions include:

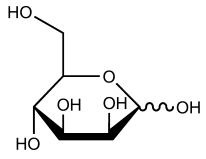
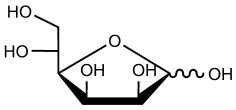
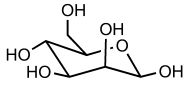
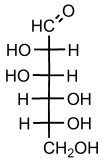
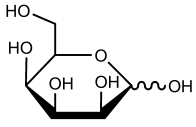
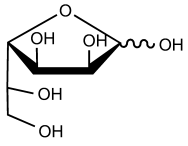
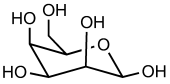
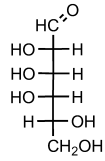
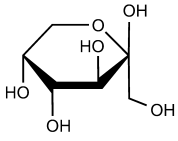
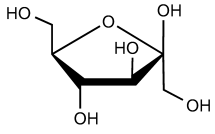
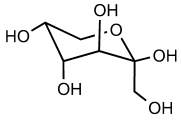
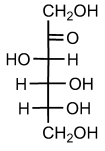
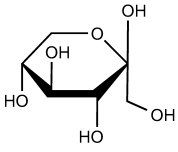
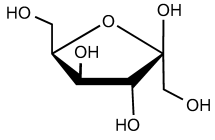
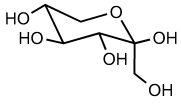
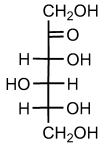
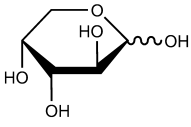
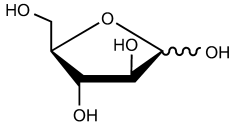
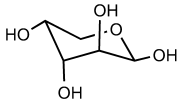
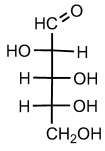
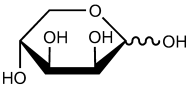
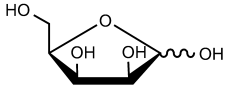
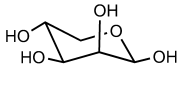
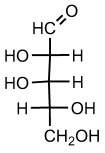
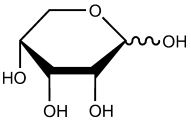
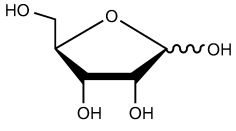
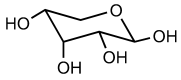
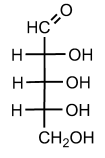
The use of D- and L-. The optical activity of the sugars is related to the reference compound glyceraldehyde which has only one D-form and one L-form. Since many of the aldoses have two or more chiral centers, the prefixes D- and L- refer to the configuration of the chiral carbon most distant from the carbonyl carbon. When the OH-group is drawn to the right in a Fischer projection, a D-sugar is designated.

Definition of the anomeric carbon. The new stereogenic center formed upon conversion from the Fischer projection to the cyclic hemiacetal is the anomeric carbon; the stereochemistry at this center is either α- or β-.



Sugar	Haworth Ring Pyranose	Haworth Ring Furanose	Chair Perspective β-form	Fischer Projection
Hexoses				**Aldohexoses**
D-Allose				
D-Altrose				
D-Glucose				
D-Gulose				
D-Galactose				
D-Idose				

Selected Hexoses and Pentoses (Continued)

Sugar	Haworth Ring Pyranose	Haworth Ring Furanose	Chair Perspective β-form	Fischer Projection
D-Mannose				
D-Talose				
Ketoses				
D-Fructose β–form				
D-Sorbose β-form				
Pentoses				**Aldohexoses**
D-Arabinose				
D-Lyxose				
D-Ribose				
D-Xylose