Isomer Flowchart (simplified)

Compounds
with different molecule structures

Do the molecules have the same molecular formula? — **YES** →

NO ↓

Isomers
same atoms & molecular formula

Do the molecules have the same connectivity (bonds)? — **YES** →

NO ↓

Stereoisomers
same constitution different arrangement of atoms in space or shape

Can the molecules be interconverted by rotation around a single bond? — **YES** →

NO ↓

Conformational Isomers
different shape by rotation
conformer = conformation energy minima

Not Isomers
different compounds

Constitutional Isomers
or structural isomers
different bonds or line diagram

Configurational Isomers
same constitution/connectivity different configuration at one or stereogenic elements

Are the molecules non-superposable mirror images? — **YES** →

NO ←

Diastereomers
stereocentres ≥ 2; different configuration at 1+ stereocentres (but not all); *different absolute* & *relative* stereochemistry

Enantiomers *(optical isomers)*
different absolute configuration at *all* stereocentres; *same relative* stereochemistry