

# Summary

1. Molecules have three-dimensional shapes. We need conventions to represent their three-dimensional structures on paper.
2. A heavy or bold bond indicates that the substituent is pointing toward you, out of the plane of the paper. A hashed bond indicates that a substituent is pointing away from you, behind the plane of the paper. Sometimes a dashed line is used for the same purpose as a hashed line, but most chemists use a dashed line to represent a partial bond (e.g., for transition states).
3. A squiggly or wavy line indicates that there is a mixture of both stereochemistries at that stereocenter (i.e., that the substituent is pointing toward you in some fraction of the sample, and away from you in the other fraction).
4. A plain line is used when the stereochemistry at a configuration is irrelevant. If a compound has only one stereocenter, and the compound is racemic, it's better not to indicate stereochemistry.
5. If a compound has two stereocenters, and only a single diastereomer is to be represented, the configuration at both stereocenters must be defined (but either enantiomer can be drawn if this compound is a racemic mixture).