Which of the following substances can exist in an optically active form?

* 1. 1,3-dibromopropane
	2. ethyl cyclohexane
	3. 3-ethylpentane

Locate with an asterisk the chiral centers in the following structures.



Tell whether the following structures are identical or enantiomers.



Draw a structural formula for an optically active compound with a molecular formula:

* 1. C4H9Br
	2. C5H9Br

Draw the formula of an unsaturated chloride, C4H7Cl, that can show

* 1. no *cis-trans* isomerism but optical activity
	2. *cis-trans* isomerism but no optical activity
	3. neither *cis-trans* isomerism nor optical activity

Place the members of the following groups in order of decreasing priority according to the R-S convention.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a. | H | Cl | Br | CH3 |
| b. | OH | CH3 | CH2Cl | CH3CH2 |
| c. | CH3 | CH2CH3 | Cl | C6H5 |

Assume that the four groups in each part of problem 6 are attached to one carbon atom. Draw a three-dimensional formula for the R configuration of the molecule.

Tell whether the chiral centers marked with an asterisk in the following structures have the R or the S configuration:



Name the following compounds, using the E-Z notation.



How many stereoisomers are possible for each of the following structures? Draw them, and name each by the R-S and E-Z conventions.

* 1. 4-methyl-2,5-heptadiene
	2. 1,2,5-trichloro-3-hexene

What is the configuration, R or S, at each chiral center in



Draw the two possible diastereomeric products in this reaction, and assign R or S designations to all the chiral centers. (Use Fischer projections to show products.)

