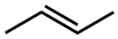
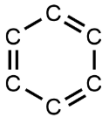
CONCEPT: INTRO TO HYDROCARBONS

- **Recall**: hydrocarbons are the simplest organic compounds composed solely of _____and _____.

Hydrocarbons

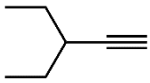
Class	Bond Type	Example	Hybridization	Generic Formula*
Alkanes	C—C		sp^3	_____
Alkenes	C=C		_____	C_nH_{2n}
Alkynes	C≡C		sp	_____
Cycloalkanes	C—C		_____	_____
Aromatics			_____	C_nH_n

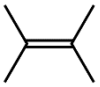
* n = # of C atoms

EXAMPLE: Classify each of the following hydrocarbons as an alkane, alkene, or alkyne.

a) 

b) 

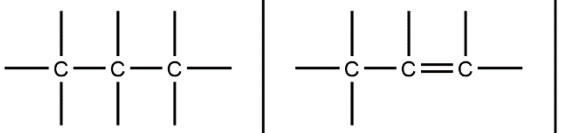
c) 

d) 

Saturated and Unsaturated Hydrocarbons

- **Saturated**: All _____ bonds; each C has max possible H atoms.
- **Unsaturated**: At least on _____ or _____ bond; does not have max H atoms.

Saturated vs Unsaturated

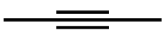


EXAMPLE: Classify the following hydrocarbons as saturated or unsaturated:

a) 

b) 

c) 

d) 

CONCEPT: INTRO TO HYDROCARBONS

PRACTICE: Write the molecular formula for an alkane with 5 C atoms.

PRACTICE: Write the molecular formula for an alkyne with 4 C atoms.

PRACTICE: Which of the following molecular formulas might indicate an alkene?

a) C_7H_{16}

b) C_6H_{12}

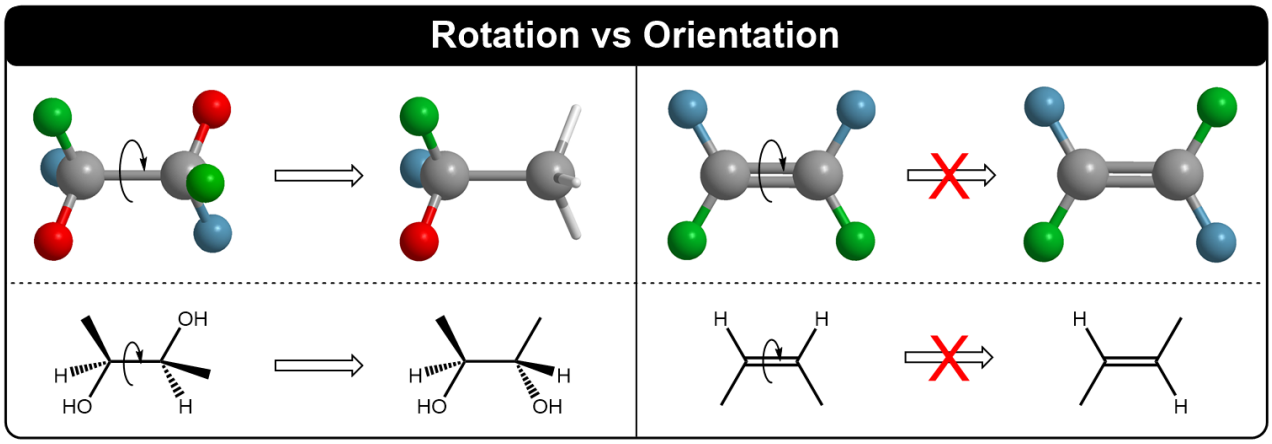
c) C_5H_8

d) C_4H_{10}

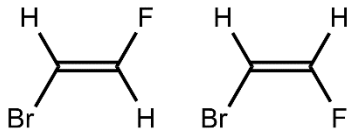
CONCEPT: INTRO TO HYDROCARBONS

Bond Rotation and Spatial Orientation

- The C–C bonds in alkanes can _____ freely.
- The C____C bond in alkenes cannot rotate.
  - This leads to two different spatial orientations and two _____ compounds.



EXAMPLE: Determine if the two structures below are the same or different compounds.



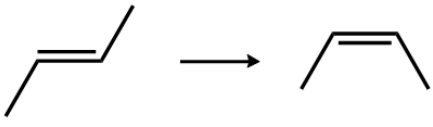
a) Same compound

b) Different compounds

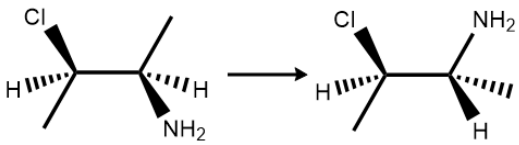
PRACTICE: Which of the following is not a valid bond rotation?

a)

b)



c)



d)