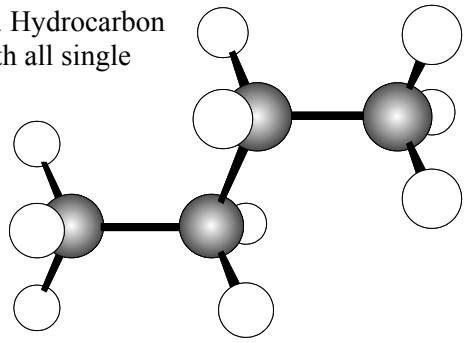
Emphatically Aliphatic (the phattest molecules!)



Aliphatic hydrocarbons are hydrocarbon chains (as opposed to hydrocarbon rings). Hydrocarbon chains can have single, double, or triple bonds between carbons. Hydrocarbons with all single bonds have no bonds that can be broken to expose extra bonding sites where additional hydrogen atoms can be added. As a result they are called **saturated**. The family of saturated hydrocarbons is called **Alkanes**. Alkanes have the general formula C_nH_{2n+2} and are named with suffix **"ANE"**. Octane (C_8H_{18}), the hydrocarbon found in gasoline, is an example. Unsaturated hydrocarbons have double or triple bonds. These bonds can be broken to add more hydrogens. The family of unsaturated hydrocarbons with one double bond is called **Alkenes**. Alkenes have the general formula C_nH_{2n} and are named with suffix "**ENE**". Octene (C_8H_{16}) is an example. **Alkynes** are the family of unsaturated hydrocarbons with one triple bond. They have the general formula C_nH_{2n-2} and are named with suffix "**YNE** as in octyne (C_8H_{14}).

For each of the formulas below, draw a diagram, indicate whether it is saturated or unsaturated, and state whether it is an ALKANE, ALKENE or ALKYNE. (Remember, no rings; emphatically aliphatic!)

1. C_5H_{10} _____

2. $C_{12}H_{22}$ _____

3. CH_4 _____

4. C_9H_{20} _____

5. C_6H_{10} _____

6. C_3H_6 _____

7. C_2H_6 _____

8. C_7H_{12} _____