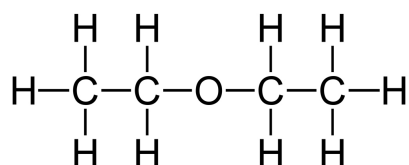
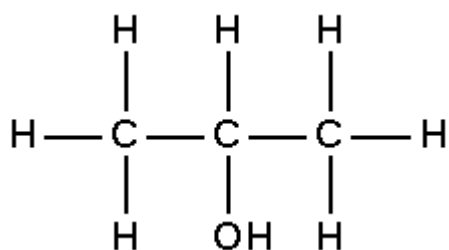
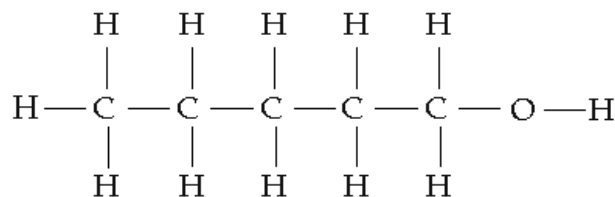


Organic Review and Pretesting ANSWERS

1. What element is present in all organic molecules? CARBON
2. An organic compound with one or more -OH functional groups as the only functional group is classified as what kind of molecule? ALCOHOL
3. Label each ? C_7H_{16} alkane C_9H_{16} alkyne CH_4 alkane C_5H_{10} alkene
4. Is this molecule saturated? C_7H_{14} Only alkanes are saturated, they hold the most hydrogen atoms per a set number of carbons. Seven carbons could hold 16 hydrogens in heptanes. This molecule is one of the heptanes (we don't know where the double bond is, but it must be there)
5. What is the formula of a saturated hydrocarbon with seven carbon atoms present? C_7H_{16}
6. Draw diethyl ether & 2-propanol. Are they isomers?
No, they do not have the same chemical formula ($C_4H_{10}O$ and C_3H_8O), and have different structures.



7. Draw ethyl propyl ether and an isomer for it.
Ethers and alcohols are isomers for each other.
Ethyl propyl has 2 + 3 carbons,
so any 5 carbon alcohol will be good.
 $CH_3CH_2-O-CH_2CH_2CH_3$ is the ether,
1-pentanol is $CH_2OH(CH_2)_3CH_3$



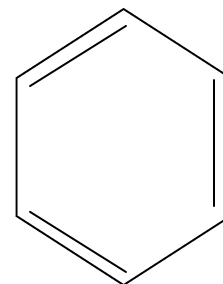
8. In ethyne, how many electrons are being shared by the 2 carbon atoms? A triple bond means they share a total of six electrons.
9. Can propane undergo an addition reaction? Why or why not? No, only unsaturated hydrocarbons can be added to. Propane can be in a substitution or combustion reaction.
10. What is the molar mass of methanol? CH_3OH adds up to 32 g/mole
11. Enzymes from yeast and sugars from plants undergo a chemical reaction. What is it called, and what are the two products? Fermentation makes CO_2 gas and ethanol.
12. To make soap, what chemical reaction occurs? SAPONIFICATION (misspell soap as sapo)
13. Skip this one
14. The reaction $CH_2=CH_2 + H_2 \longrightarrow CH_3CH_3$ is what chemical process? ADDITION
15. When $CH_4 + Br_2 \longrightarrow CH_3Br + HBr$ this is called SUBSTITUTION

16. What is the difference in bonding of carbon atoms in saturated vs. unsaturated hydrocarbons? Saturated hydrocarbons have only single bonds between them, unsaturated have one or more double or triple bonds carbon to carbon in the molecule.
17. When a molecule of alcohol and one of an acid react together, what is the product? When methanol and hexanoic acid react, a water molecule is one product, what is the other? ALCOHOL + ACID makes ESTER. This makes methyl hexanoate.
18. When $C_5H_{12} + 8O_2 \longrightarrow 5CO_2 + 6H_2O + \text{energy}$, this is called COMBUSTION
19. When ethane and bromine undergo substitution reaction, what are the products? $HBr + CH_3CH_2Br$ (Bromoethane)
20. Can you draw a 1-methyl pentane? Why not? You cannot add a hydrocarbon group to a number one carbon, that just extends the chain size. Draw this molecule and see that it really is hexane.
21. The formula for cyclopropane is C_3H_6 . The formula for propane is C_3H_8 . Propane has a straight line shape and has room for hydrogen atoms on the ends. Cyclopropane must bond carbon to carbon on the ends, using up bonding room, leaving less room for the hydrogen atoms.

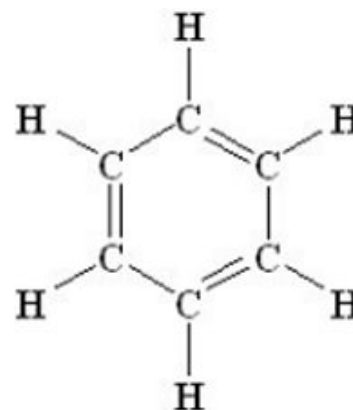
22. $CH_3CH_2CH_2CH_2COOCH_2CH_3$ is ETHYL PENTAONATE?

23. $CH_3(CH_2)_5CH_3$ has 1 + 5 + 1 carbon atoms, so it's HEPTANE

24. The hexagon shape at right represents a benzene ring hydrocarbon. Its formula is C_6H_6

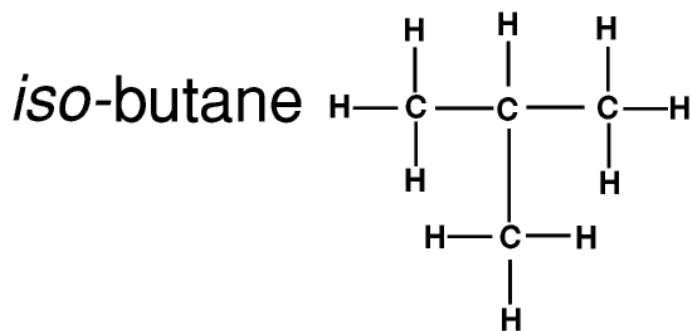
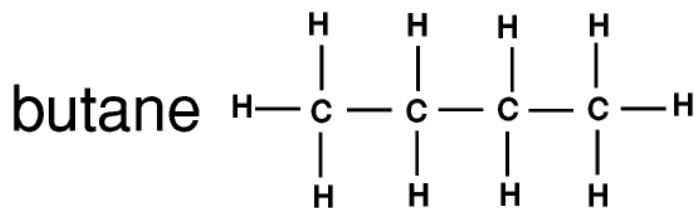


25. Draw that ring molecule with all of the carbon and hydrogen atoms where they belong.



26. Draw methyl propane and draw butane. What are their chemical formulas? They have the same chemical formula but different structures, which makes them what?

Butane and methyl propane are isomers. Another name for methyl propane is iso-butane. We won't have to learn those funny names, but you might see them on a can of shaving cream!



27. $\text{CH}_3\text{CH}_2\text{CHFCH}_2\text{CH}_3$ has an F atom on the 3rd C, all single bonded: 3 fluoro pentane
28. If thousands of chloroethene molecules react together and form into poly vinyl chloride (PVC), which organic chemical reaction happened?
This is called POLYMERIZATION
29. When a triple ester (a triglyceride) and a base react and form glycerol and soap, which chemical reaction has happened? SAPONIFICATION (soap making)
30. $\text{CH}_3\text{CH}_2\text{COCH}_3$ can only be butanal
31. The molecule of propene is said to be a saturated or an unsaturated hydrocarbon?
If it has a double bond (it does) or triple bond carbon to carbon it's unsaturated.
32. The ester heptyl octanoate has how many total carbon atoms? $7 + 8 = 15$
 $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{OOCH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$
33. Which of these molecules in aqueous solution has the lowest pH?
 CH_3COOH is ethanoic acid, the only acid, so the molecule with the lowest pH value.
34. What are the two products of the reaction between $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$ and diatomic oxygen gas?
Octane and oxygen combust to carbon dioxide and water and energy