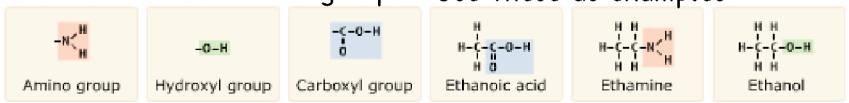
Table 2 Functional Groups

Suffix	Type of Compound	Functional Group	Examples
-ol	alcohol	-OH Hydroxyl Group	Ethanol
-oic	carboxylic acid	Carboxyl Group	Ethanoic Acid
-amine	amine	Amino group	Ethamine

Use these as functional groups Use these as examples



Place the number of the word in front of its correct definition

1	Amino acid	1	a member of a class of organic compounds that are the basic building blocks of proteins
2	Nucleic acid	3	the total mass of all living matter
3	Biomass	6	a large organic molecule found in living organisms, which includes lipids, proteins, carbohydrates, and nucleic acids
4	Organic compound	8	an organic compound used by cells to store and release energy
5	Hydrocarbons	7	a group of atoms that replaces a hydrogen atom in organic compounds
6	Biomolecule	5	molecules that contain only carbon and hydrogen atoms
7	Functional group	9	a biological compound, including fats and oils, which is not soluble in water and it contains carbon, hydrogen, and oxygen
8	Carbohydrate	10	a molecule that shares electrons equally and does not have oppositely charged ends
9	Lipid	2	a biomolecule, such as RNA and DNA that stores cellular information in cells in all plants and animals
10	Nonpolar molecule	4	a large number of compounds that contain the element carbon

Draw a line to match the term with its correct definition:

Saturated Hydrocarbon → Each carbon atom in the molecule shares a single bond with each of 4 other atoms. Also called alkanes

Unsaturated Hydrocarbon → Contains at least 2 carbon atoms that share a double or triple bond. Also called alkenes or alkynes

Aromatic Hydrocarbon → Based on benzene and often have strong odors

Pg 8

15 pts total: 1 each

104 total pts

Chp16 Chemical Compounds

Science number

Organic Chemistry (Use your Holt Book & the on-line reading)

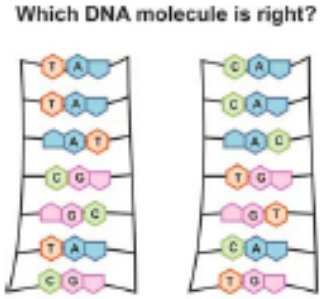


Figure 11.13: *Only one of the DNA molecules shown is correct. Which one is it (question 8)?*

One of the DNA sequences in Figure 11.13 is impossible. Which one is wrong and why is it wrong?

The molecule on the left is correct. The molecule on the right has G bonded with T and A bonded with C.

This is incorrect: A-T C-G

2pts

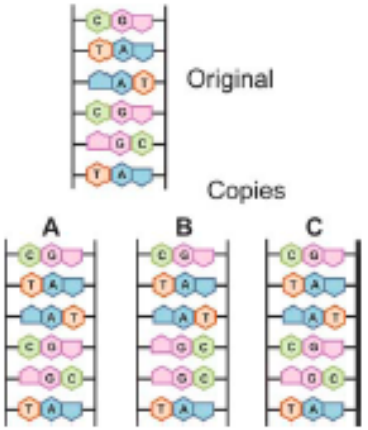


Figure 11.14: *A DNA molecule and three copies of the same molecule.*

Which of the DNA sequences in Figure 11.14 contains a mutation?

B has the mutation. The 4th rung is different than the original.

2pts

Name: _____ ***pd***__

Parent Signature of completion: _____ **5pts**

9 pts

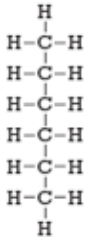
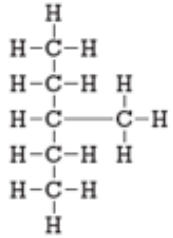
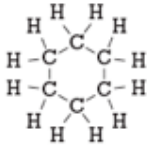
1 e a

Section 3: Organic Compounds Pg 407-413 (& pg 2/3 in additional reading)

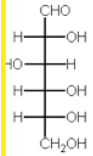
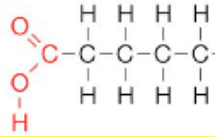
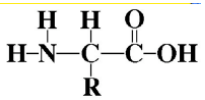
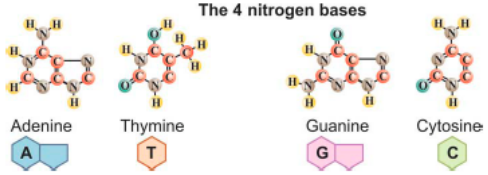
How many bonds does the carbon atom form? _____

Why is this important?_____

Copy the 3 different types of carbon chains from Figure 18

 **Straight**	 **Branched**	 **Ringed**

Use pgs 408-411 & pg3 in the additional reading to complete the table below

Draw the functional group	Definition	Additional info	examples
Carbohydrates 	carbon, hydrogen, and oxygen in a ratio of about 1:2:1. Carbohydrates exist as small molecules, like glucose (monomer), and long-chain molecules, like starches.		Sugar, starch
Lipids (Fats) 	Insoluable long chain hydrocarbon with a COOH at the end. medium-to-large nonpolar molecules that do not dissolve in water. Structurally, fats are long chains of carbon and hydrogen with different elements added every so often. Cholesterol is a fat that makes up part of the outer membrane of cells. Cholesterol is naturally essential to cells, but unnaturally high cholesterol may lead to heartdisease.		Oils, butter
Proteins 	lg molecules composed of carbon, hydrogen, oxygen,nitrogen. Skin and muscle tissue are composed primarily of protein. A single protein may contain several thousand atoms in a complex structure. NH2 & COOH at ends. Amino acid monomer		Fish, meat
Nucleic Acids 		DNA store the genetic code that allows organisms to reproduce. DNA is a huge molecule with millions of individual atoms. All the information that makes you a human is stored as a coded sequence of component molecules within DNA. A-T C-G	

12 pts total

2 e a

Teach a parent: This unit's concepts :

Teach your parents about Carbon and the special bonds producing Lipids, Carbohydrates and Proteins. Review your Carbon Book with them. Be sure they write what they have learned from your teaching

Parent Response

1. _____ I'm not sure my child really understands, therefore, I don't either. Please work with him/her and let's try again.
2. _____ The concept was explained thoroughly with effective examples he/she created. "By golly, I think they've got it!"
3. _____ WOW! My child did an exceptional job!

Parent Signature:_____ Date: _____

2pt

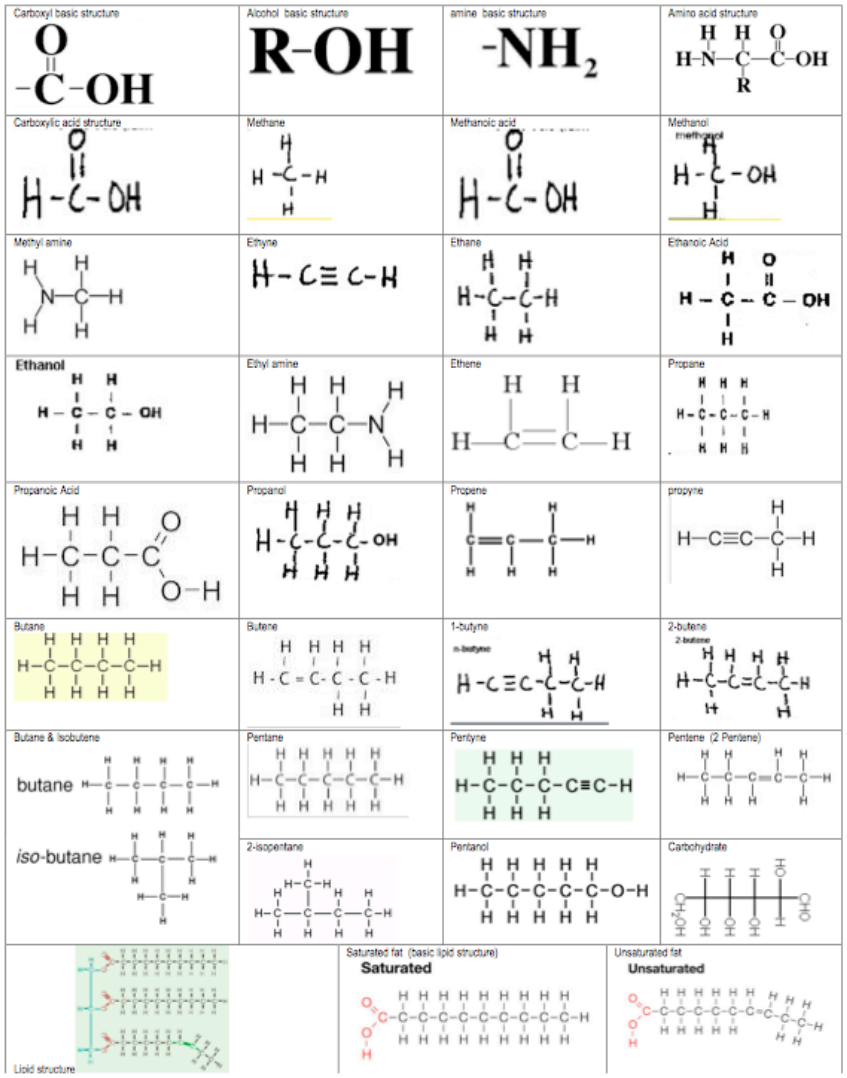
Mom or Dad Comments: Please explain how your student taught you this concept and * <u>what you learned in 3-5 sentences!</u> * This is critical for them to receive full points

5pts

Additional Chapter Notes:_____

7pts total

Draw the Structure!



Pg6

1pt ea
34 total

Questions to know! Use Lecture notes/reading and Some research

Define hydrocarbon: ____**Molecules of hydrogen & carbon**_____

What replaces hydrogen in:1: amines: ___**NH2**_____ 2. Alcohol _**OH**_____

3. Carboxylic acids__**COOH**____ 4. Amines _**NH2**____5. Amino acids_**COOH & NH2**__

What is the backbone in organic chem.? _**CH4**_____

What elements do all organic compounds contain: _**Carbon**___

How many covalent bonds does carbon have:_**4** What does covalent mean? **Sharing electron bonds**

What does isomer mean?__**Same formula / different structure**_____

Organic compounds are formed through what kind of bonds? __**Covalen**t_____

Biochemicals that store information and help build proteins are called: __**Amino**___acids

What is a monomer? _**The simplest structure of that hydrocarbon**_____

What's the difference between saturated & unsaturated? **Saturated: Single bonds Unsaturated: double bond**

What is a carbohydrate monomer? _**glucose C6H12O6**____ (hint: plants make it!)

Name a carbohydrates polymer: ___**starch** _____

These have one or more simple sugars bonded together that are used as a source of energy:_**Carbohydrates**_

Bread is considered this type of organic compound: **Carbohydrates**

Butter, bacon and ice cream is this type of organic compound: **Lipids (fats & oils)**

Meat & fish (and even some beans) are considered this type of organic compound: **Proteins**

These organic compounds do NOT dissolve in water: _ **Lipids (fats & oils)**

The simplest alkane is: **Methane**_ The simplest alcohol is:_**Methanol**

The simplest carboxylic acid is: **Methanoic acid** Simplest amino acid? **Methylamine**

Ethane has what kind of bond between carbons? _**single**_

Ethyne has what kind of bond?__**triple**_

Ethene's bond?_**double**_

Which provides MORE energy fats or carbohydrates? _**fats**

½ pt ea
15 total

On Line Reading Questions: use pdf on my web page

Vocabulary Work:
Select the correct term to complete the sentences.

a. nucleic acid	**b. fat**	**c. carbohydrates**
d. photosynthesis	**e. unsaturated**	**f. proteins**
g. cellular respiration	**h. organic chemistry**	**i. partially hydrogenated**
j. catalyst	**k. protein synthesis**	**L. nitrogen bases**
m. amino acids	**n. mutations**	**o. enzymes**

Section 11.1

1. The branch of chemistry that specializes in carbon and carbon compounds is called ___
h. organic chemistry
2. The chemical energy that supports the food chain on Earth comes from a reaction called
d. photosynthesis
3. The reaction that breaks down glucose and releases its stored energy is called
g. cellular respiration
4. Sugars and starches are classified as __ **c. carbohydrates**
5. DNA is an example of a(n) __ **a. nucleic acid**

Section 11.2

6. High-energy ___ **b. fat** __molecules are used to store energy in reserve.

7. __ **f. proteins** _ are made up of amino acids.

8. When a fat molecule has two hydrogen atoms bonded to each carbon atom, it is called a **i. partially hydrogenated** _fat.

9. When a fat molecule has some carbon atoms double bonded to each other, along with hydrogen atoms, it is called a(n) _ **e. unsaturated** _fat.

10. **m. amino acids** _ are organic molecules that are the building blocks of proteins.

11. **o. enzymes** allow your body to initiate chemical reactions and control the reaction rates.

12. Changes in DNA are called_ **n. mutations**

13. Enzymes are a type of__ **j. catalyst** _for chemical reactions.

14. The process the cells in your body use to build proteins from amino acids is called **k. protein synthesis**

15. The molecular components within DNA that contain the code for building proteins from amino acids are _ **L. nitrogen bases**

½ pt each.
Total 12 pts

Section 11.1 & 11.2 Questions to Answer:

1. Classify these carbohydrates as containing mostly **(A)** sugar, **(B)** starch, or **(C)** cellulose:
a. a stack of firewood **(C)** b. rice **(B)** c. jelly beans **(A)** d. a cotton shirt **(C)** e. an apple **(A)**

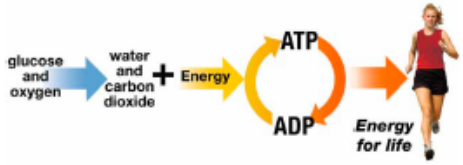
2. The human body is made mostly of:
a. carbon, oxygen, nitrogen, and hydrogen.
b. oxygen, calcium, carbon, and hydrogen.
c. hydrogen, iron, nitrogen, and oxygen.

3. Which of the following compounds are organic?
a. nucleic acid **b. CH_4** c. H_2O d. hydrochloric acid e. table salt **f. sugar**

4. Identify each of the following as a **carbohydrate, fat, protein, or nucleic acid**.
a. glucose (Carb) b. DNA (NA) c. cholesterol (fat) d. cellulose (carb) e. olive oil (fat)

5. About how many different amino acids are found in animal proteins?
a. 2 b. 4 **c. 20**

6. What process does the diagram illustrate? __ **cellular respiration** _____



7. Which of the following is NOT part of the process for the body to get the essential proteins it needs?
a. protein synthesis
b. digestion of food protein into amino acids
c. the manufacturing of amino acids from fats

8. Of the four nitrogen base pairs, adenine always pairs with:
a. adenine b. guanine **c. thymine** d. cytosine

9. The diagram shows an enzyme and three different molecules.
Which of the three molecules would this enzyme target for a reaction? **A**