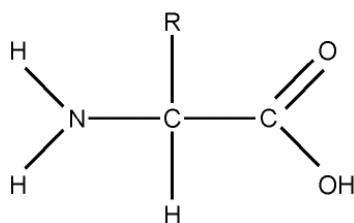


## Biomolecule Worksheet

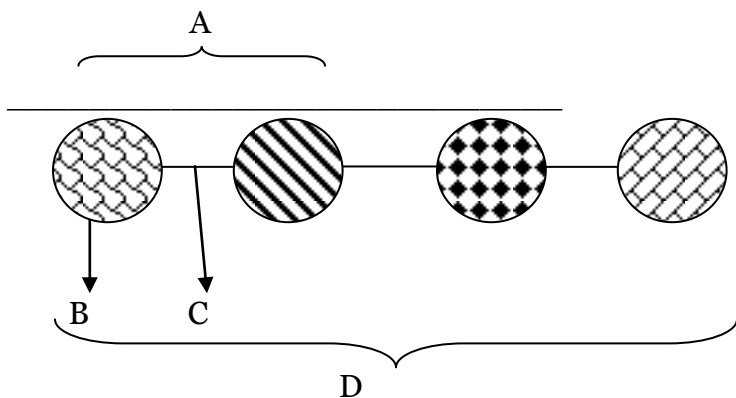
1. Where in a molecule is energy stored?
2. Living organisms release energy gradually. Why?
3. The four most important groups of organic compounds in living organisms are
  - a.
  - b.
  - c.
  - d.
4. In the following situations, tell which of the four organic compounds you would most likely need more of. (may be more than one).
  - a. Your hair is dry and brittle.  
\_\_\_\_\_.
  - b. You are really tired all the time.  
\_\_\_\_\_.
  - c. Your fingernails break and are soft  
\_\_\_\_\_.
  - d. You get cold very easily.  
\_\_\_\_\_.
  - e. Your body is growing very rapidly.  
\_\_\_\_\_.
5. Describe the building blocks (monomers) of the following.
  - a. Protein  
\_\_\_\_\_
  - b. Fats  
\_\_\_\_\_
  - c. Carbohydrates  
\_\_\_\_\_
  - d. Nucleic acids  
\_\_\_\_\_

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6. List the elements that are found in each of the following molecules. Circle the two that have the most elements in common.
- Carbohydrates –
  - Proteins –
  - Lipids –
  - Nucleic Acids –
7. There are \_\_\_\_\_ different amino acids.
8. The molecule below is a(n) \_\_\_\_\_.



- Label the carboxyl group.
  - Label the amino group.
  - Circle the part of the molecule that is the same for all amino acids.
9. In the drawing below of a protein, identify the following:



- A. \_\_\_\_\_
- B. \_\_\_\_\_
- C. \_\_\_\_\_
- D. \_\_\_\_\_

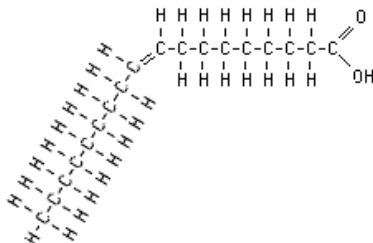
10. Two monosaccharides join to form a \_\_\_\_\_
11. Cellulose is a \_\_\_\_\_ and is found in \_\_\_\_\_.
12. \_\_\_\_\_ lack the enzyme to digest cellulose.

## Biomolecule Worksheet

13. Draw a glycerol molecule. Show it attached to 3 fatty acids.

14. Identify the following fatty acid as either saturated or unsaturated.

- a. saturated
- b. unsaturated



15. Is Crisco oil saturated or unsaturated?

- a. saturated
- b. unsaturated

16. How do you know? \_\_\_\_\_

17. Where in a cell would you look for DNA? \_\_\_\_\_

18. Name two examples of nucleic acids. \_\_\_\_\_

19. A sugar, a phosphate, and a base make up a \_\_\_\_\_.

20. What are nucleic acids used for in the body?  
\_\_\_\_\_

21. Illustrate a chemical reaction in which two monosaccharides join together to form a disaccharide:

22. Is the above reaction an example of dehydration synthesis or hydrolysis?

23. List some inorganic molecules found in living organisms:

## Biomolecule Worksheet

24. What does pH mean?

25. Most living organisms produce buffers. Define buffer.

26. Below pH 7 is considered \_\_\_\_\_. Above pH 7 is considered \_\_\_\_\_.

27. A protein catalyst is also called a(n) \_\_\_\_\_.

28. Place the following statements in the proper order regarding how enzymes do their work. Substance AB will split into A and B only in the presence of "Abase" (an enzyme).

- a. A and B break away from Abase.
- b. AB moves toward Abase
- c. Abase changes the shape of AB causing it to split.

29. Write "true" or "false" next to each statement:

- a. Enzymes are substrate specific.
- b. Heating the enzyme catalase speeds up the reaction rate.
- c. Enzymes must constantly be made by the body since they are not functional after a reaction.
- d. The more enzyme present in a reaction, the faster the reaction.
- e. Enzymes are unaffected by changes in temperature.
- f. Enzymes are carbohydrates.
- g. Enzymes are made up of amino acids.
- h. Boiling the enzyme catalase will inhibit (stop) its activity.
- i. Catalase breaks down water into hydrogen and oxygen