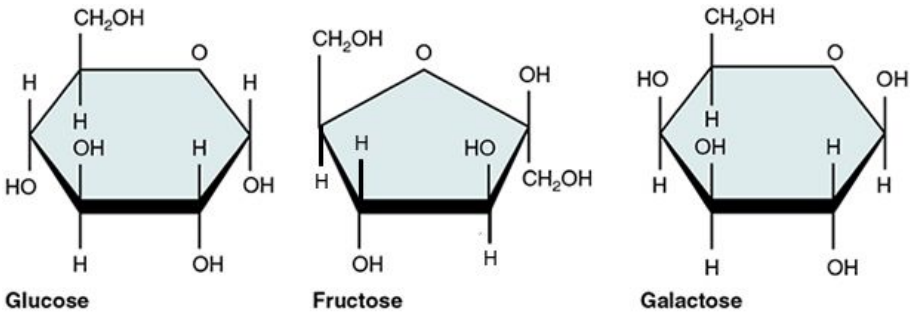
Name: _____

Biological Macromolecules (OpenStax Biology, Chapter 3) - Reinforcement

1. What are the four macromolecules important to life: _____
2. Monomers combine with each other to create _____
3. The creation of these large molecules releases water, the reaction is called: _____
4. What type of bond is created during this reaction? _____
5. Polymers can be broken down into individual _____
   This process is called _____
6. What can speed up these reactions? _____

3.2 Carbohydrates

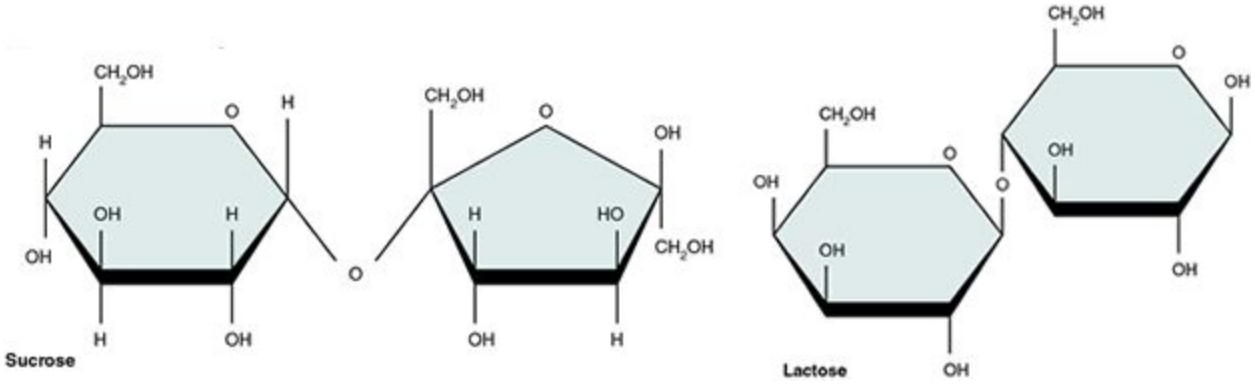
7. What is the ratio of carbon, hydrogen and oxygen in carbohydrates? _____
8. What is an example of a pentose monosaccharide? _____ Hexose? _____
9. What is the chemical formula for glucose? _____
10. In plants, excess glucose is stored as _____.
11. . Examine each of the monosaccharides below identified as **hexoses**.



a) What is the molecular formula for each of these monosaccharides?_____
b) Molecules with the same molecular formula but differ structurally are called _____
c) Why are these molecules called hexoses? _____

12. Two monosaccharides can combine to create _____
13. A covalent bond that forms between two monosaccharides is called a _____ bond.
14. The most common disaccharide is _____ (table sugar)

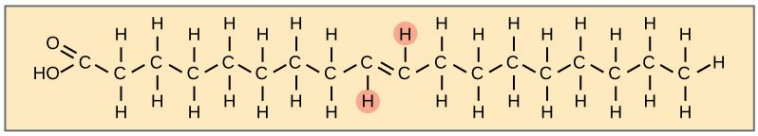
15. Identify the monosaccharide monomers in each molecule.

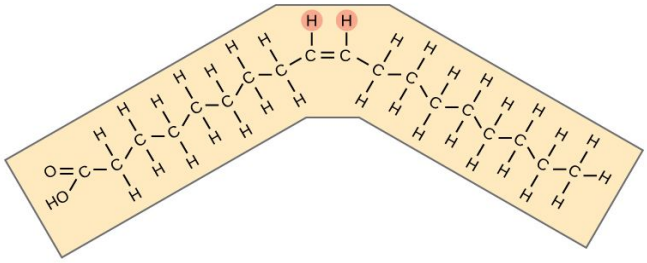


16. A long chain of monosaccharides is called a _____
17. Starch is made from a mixture of _____ and _____
18. What is the animal equivalent of starch? _____
19. Where is cellulose found? _____
20. How do grazing animals break down cellulose? _____
21. What carbohydrate is found in insect exoskeletons? _____

3.3 Lipids

22. What does nonpolar mean? _____
23. What are two functions of lipids? _____
24. What are the two main components of a fat molecule? _____
25. Saturated fats contain only [single / double] bonds.
26. Which type of fat is liquid at room temperature? _____
27. On the images below, identify the cis and the trans fat:

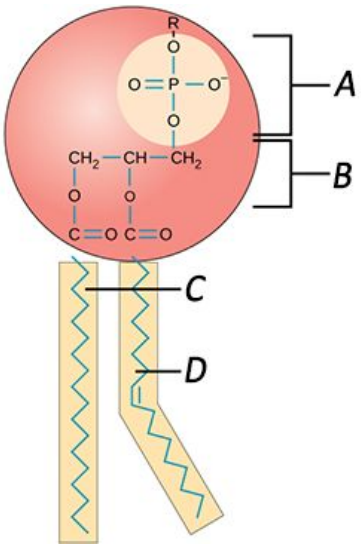




28. Why have many companies banned trans fats in their products? _____
29. Where would a person get Omega-3 fatty acids in their diet? _____
30. Why are leaf surfaces covered in wax? _____

31. Where are phospholipids found? _____
32. Why is it called an “amphipathic” molecule? _____

33. Label the phospholipid:



34. Why are steroids grouped with other lipids? _____

35. What makes them different? _____

36. What are two examples of steroids? _____

3.4 Proteins

37. Enzymes are _____ for biochemical reactions.
38. What does amylase do? _____

39. Identify the protein by its function:
    _____ transport substances in the blood
    _____ construction of the cytoskeleton
    _____ protects body from foreign pathogens
    _____ muscle contraction

40. What monomers make up proteins? _____
41. What bond connects amino acids? _____
42. How many amino acids are there? _____

42. What are the four levels of protein structure? _____

43. What is denaturation? _____
    What can cause it? _____

3.5 Nucleic Acids

44. DNA and RNA are made of what monomers? _____
45. What are the 3 components of a nucleotide? _____
46. What are the two purines found in DNA? _____
    Pyrimidines? _____

47. What is the shape of the DNA molecule? _____
48. What is the rule for base pairing? _____
49. What sugar is found in RNA? _____

50. Label the DNA molecule: