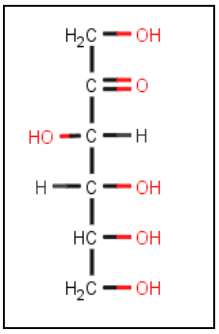
Use any resource at your disposal to answer these questions. Please bring your answers to class on March 10th.



1. The structure of fructose is shown below. Draw each of the following sugars (shown in bold) in the linear from the information given. Note that the top carbon is C1.
    a. **Psicose** is the C3 epimer of fructose.
    b. **Tagalose** is the C4 epimer of fructose.
    c. **Sorbose** looks like fructose, but has the –OH orientation of C3 and C4 positions changed.

2. Describe the difference between starch and cellulose. Why can humans not use cellulose as energy?

3. Which of the common disaccharides sugars contains fructose?

4. In as much detail as possible, discuss why eating 12 grams of cane sugar (sucrose) has a significantly different metabolic outcome than eating 12 grams of fructose.

5. Using the metabolic pathway maps that are in the lecture slides, determine the **number of electrons** that are produced from the breakdown of each of these compounds:
    a. Lactose (this is one of the common disaccharides that we talked about)
    b. Stearic Acid (18:0)

6. Potatoes contain a large amount of starch. Starting at the very beginning (i.e. when you first take a bite), describe how that starch is metabolized.

7. Based on the fluid mosaic model of biological membranes, why are unsaturated and polyunsaturated fatty acids necessary?

8. Think about fatty acids.
    a. Why are some fatty acids considered “essential”? In other words, what does it mean to be an essential fatty acid?
    b. List all essential fatty acids.
    c. What other three fatty acids did we talk about that should be included in your diet?
    d. For each of the fatty acids that you identified in parts b and c, determine if they are omega 3, omega 6, or neither.

9. Why is adipose tissue the preferred way to store energy? We discussed two reasons in class.