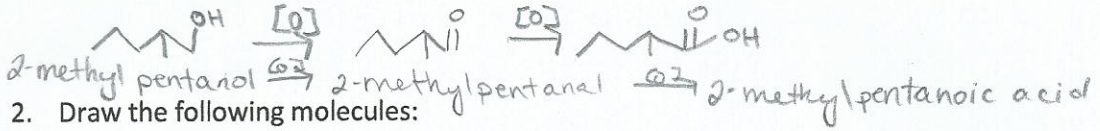
Key

Worksheet 13 — 21 February 2013

1. What are the reactants that form 2-methylpentanoic acid? Draw this oxidation reaction.

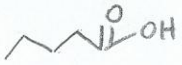


2-methyl pentanol $\xrightarrow{[O]}$ 2-methylpentanal $\xrightarrow{[O]}$ 2-methylpentanoic acid

2. Draw the following molecules:

   a. 3-ethylheptanoic acid 

   b. Benzoic acid 

   c. α,γ- dihydroxypentanoic acid 

3. Describe the overall solubility as well as the solubility trends of carboxylic acids.
   they are very soluble; solubility decreases as the alkyl chain increases (gets longer past 4 carbon chain)

4. Number the following molecules in terms of highest (1) to lowest (5) in terms of boiling point.

1-pentanol	pentanal	pentane	benzoic acid	pentanoic acid
3	4	5	1	2

5. For number 4, tell which ones are water soluble and which ones are less water soluble.
   -not soluble: pentane — water soluble- none
   -slightly: pentanoic acid, benzoic acid, pentanal, pentanol

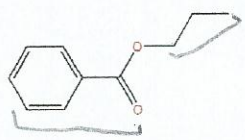
6. Show the reaction that forms the carboxylic acid salt **sodium pentanoate.**

Carb. acid + base → carb. acid salt + water

7. Write the R formula and molecular formula for an ester. $R\text{-}\overset{O}{\overset{\|}{C}}OR$, $C_nH_{2n}O_2$

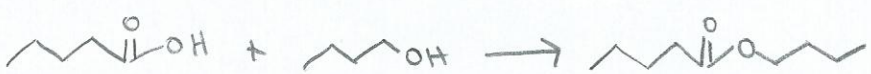
8. Name the following esters:

   a. $CH_3CH_2CH_2(CO)OCH_3$ — methyl butanoate

   b.  — propyl benzoate

9. Complete the following phrase. Then complete the reaction that will create butyl pentanoate.

carboxylic acid + alcohol → Ester + H_2O



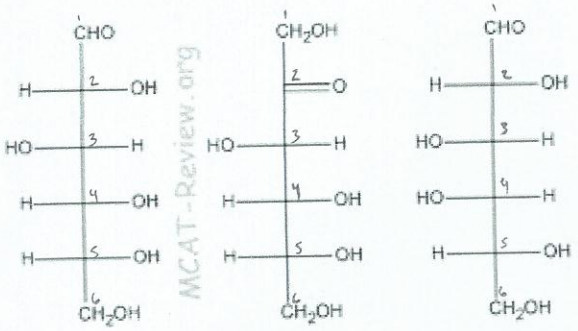
pentanoic acid + butanol → butylpentanoate + water

b.p. carbox. acid > alcohol > ald./ket. > ether, alkane

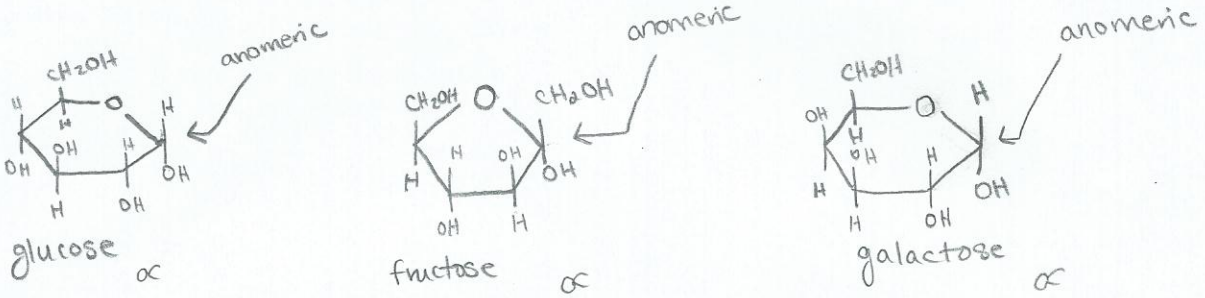
Worksheet 13

22 February 2013

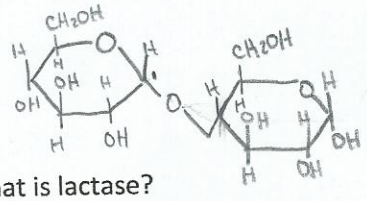
Review of Carbohydrates- MWF only



1. Put glucose, fructose, and galactose into individual rings. Identify the anomeric carbons, and tell whether it is alpha or beta.



2. Link two glucose molecules together to form a disaccharide. Make it have an α-1,4 linkage.



3. What is lactase?

an enzyme that breaks the β-1,4 linkage in lactose. If it is not present to break lactose, lactose is fermented in the large intestine, causing bloating, cramps etc.

4. Are lactose free products sweeter or less sweet than those with lactose?

sweeter because they have galactose + glucose present in them.