

PAP Biology

Synthesis of Lipids, Proteins, and Carbohydrates

Name _____
Period _____ Date _____

Purpose: To model the synthesis of lipid, protein, and carbohydrate macromolecules

Procedure:

A. Lipids

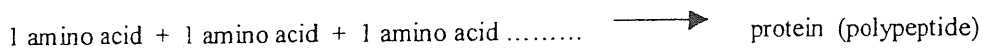


1. On the attached pages find the building blocks necessary to make a fat.
2. Cut out each rectangle containing one of these building blocks.
3. Cut out the building blocks along the zig-zag lines. This removes the O-H's and H's. DO NOT DISCARD THEM.
4. Label the top of a blank piece of paper "LIPIDS". Use the building blocks you have cut out in the following manner:
 - Arrange each fatty acid so that the "C" of the fatty acid bonds with an "O" of the glycerol.
 - If you do it correctly, the zig-zag lines will match.
 - Glue this arrangement on the paper labeled, "LIPIDS".
 - Assemble the H's & OH's into water molecules. Paste them on the paper with the lipid molecule

The reverse of this reaction occurs when organisms digest lipids that they have eaten:



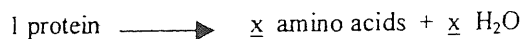
B. Proteins

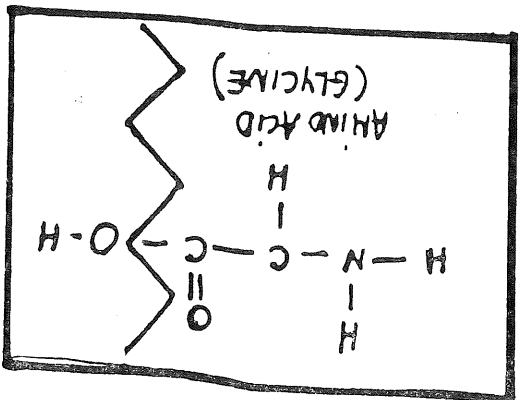
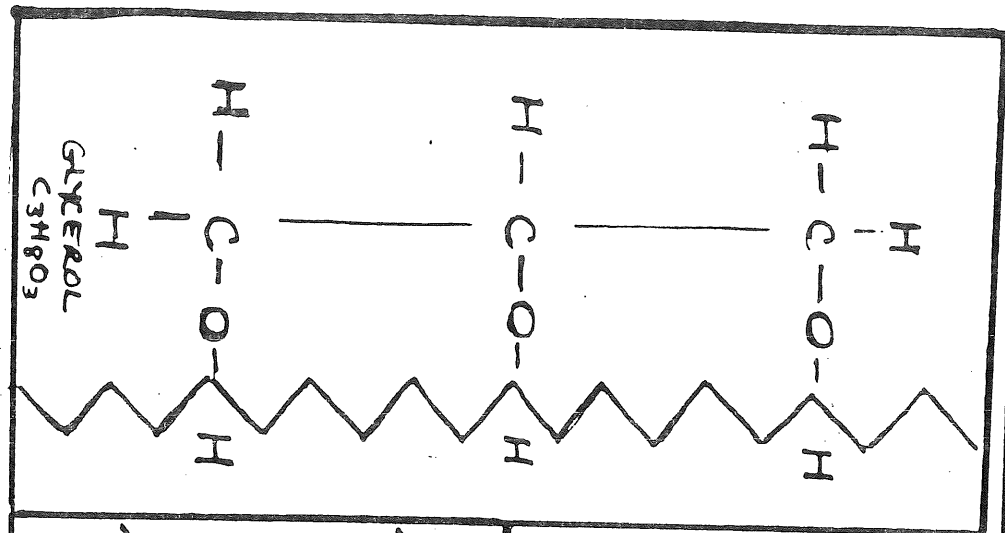
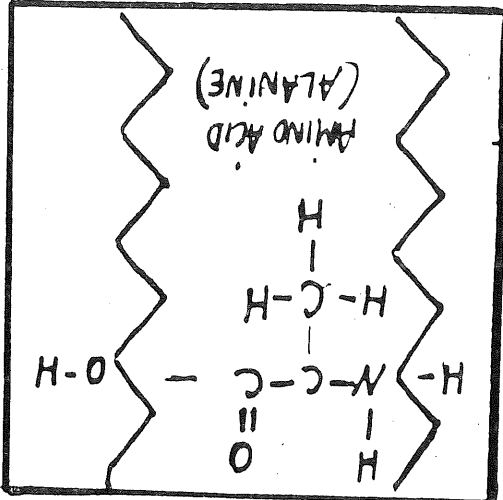
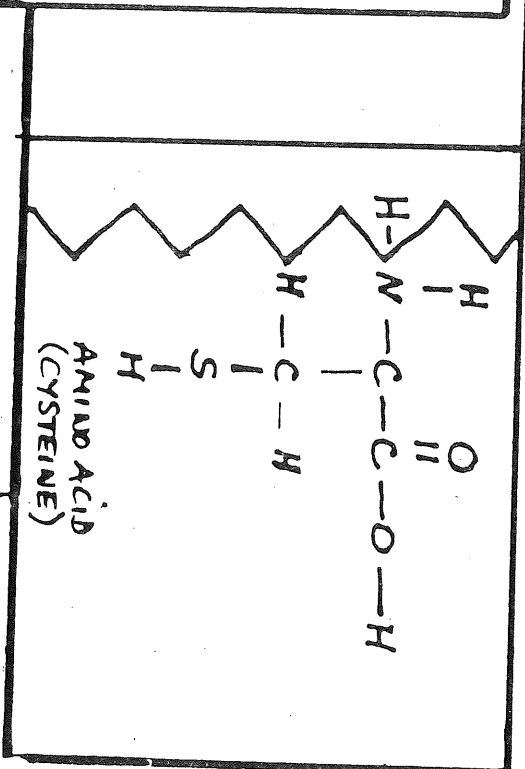
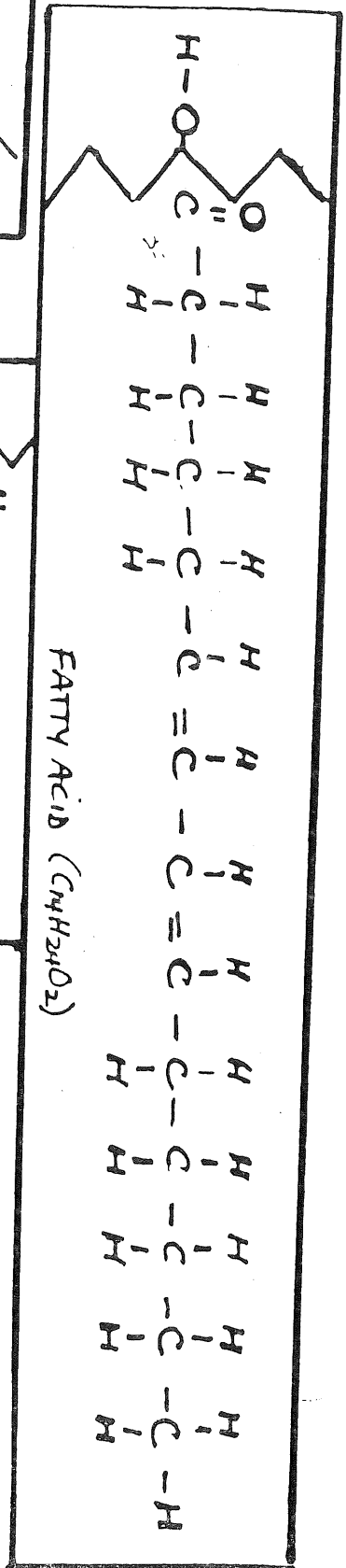


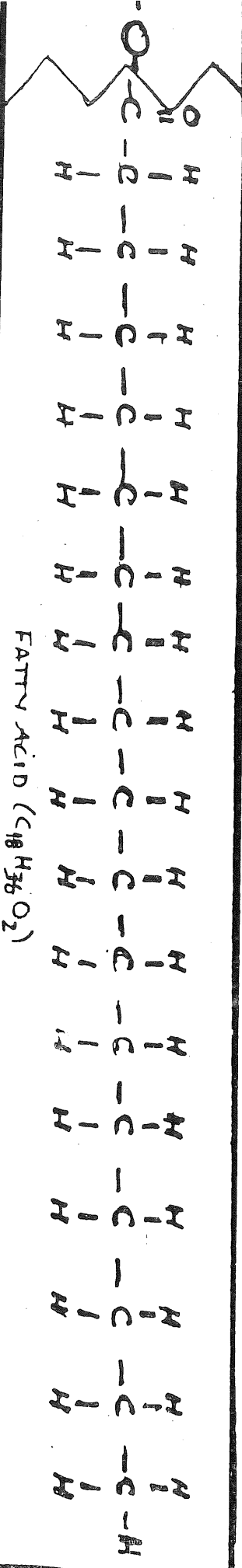
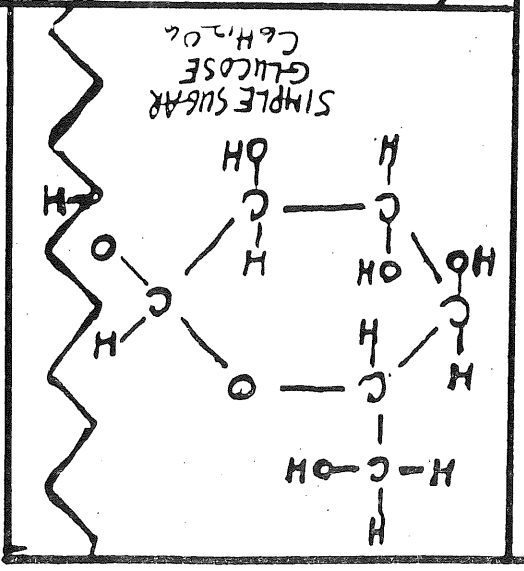
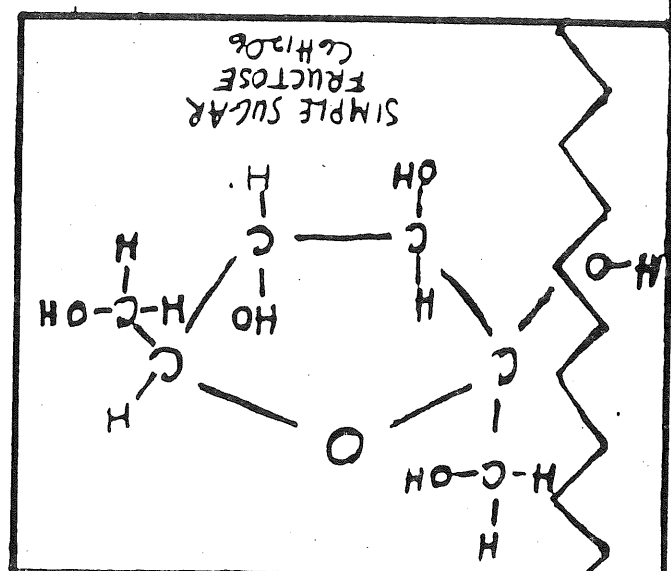
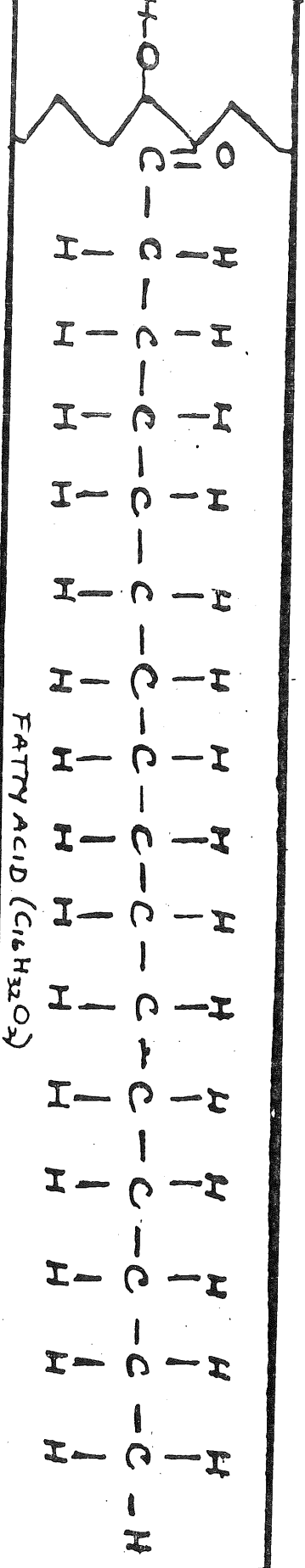
Since a protein is such a large molecule, we will build a tripeptide chain

1. Locate the building blocks necessary to make a tripeptide.
2. Cut them out the same way you did the building blocks for the lipids. Save the H's & OH's.
3. Label the top of another blank paper "PROTEINS".
4. Arrange the amino acids so that the zig-zag lines match and the "C-" of one amino acid is adjacent to the "N" of the next amino acid. Past them on the sheet.
5. Assemble the H's and O's into water molecules and paste them on the same sheet.
6. DRAW A RED CIRCLE AROUND EACH -C-N- unit. This structure is a PEPTIDE bond.

The reverse of this reaction occurs during digestion:







Synthesis of Macromolecules

LIPIDS

Synthesis of Macromolecules

PROTEINS

Synthesis of Macromolecules

CARBOHYDRATES