Fatty Acid and Triglyceride Worksheet and Key

1) Draw the condensed structural formula of any **saturated fatty acid**.

2) a) Draw the condensed structural formula of any **monounsaturated fatty acid**.

b) Draw the condensed structural formula of any **polyunsaturated fatty acid**.

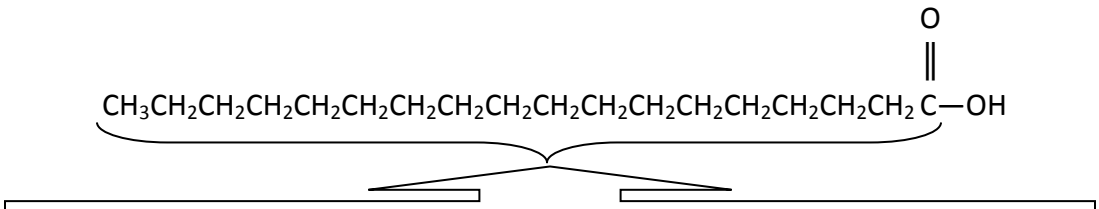
3) Compare and contrast “fat” (triglycerides) and fatty acids.

4) Draw the condensed structural formula of any **saturated fat (triglyceride)**.

5) Draw the condensed structural formula of any **unsaturated fat (triglyceride)**.

KEY

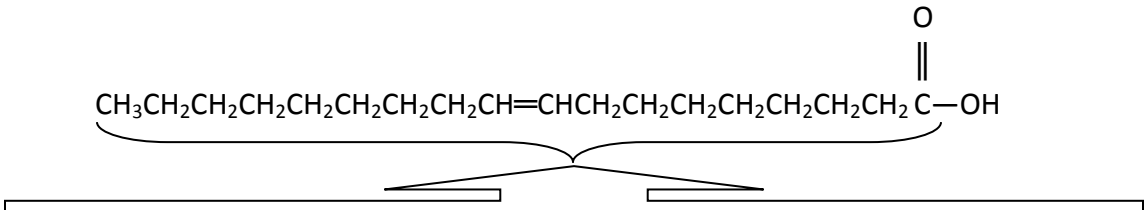
1) Draw the condensed structural formula of any **saturated fatty acid**.



Carbon chain should contain 12 or more carbons **and** should have ***all single bonds***.

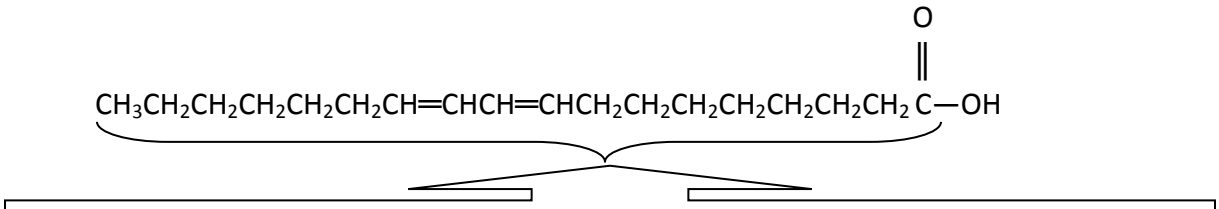
2)

a) Draw the condensed structural formula of any **monounsaturated fatty acid**.



Carbon chain should contain 12 or more carbons **and** should have ***only one double bond***.

b) Draw the condensed structural formula of any **polyunsaturated fatty acid**.



Carbon chain should contain 12 or more carbons **and** should have ***at least two double bonds***.

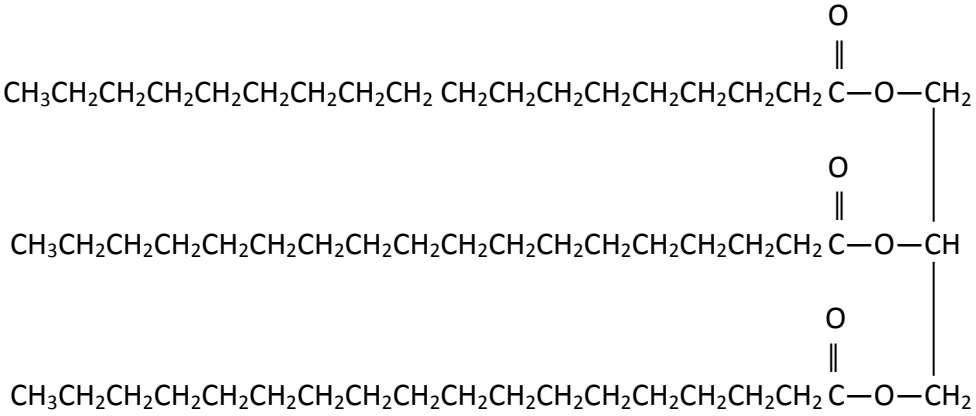
3) Compare and contrast "fat" (triglycerides) and fatty acids.

Fatty acids are long-chain *carboxylic acid* molecules, typically 12-20 carbons in length. Triglycerides contain three fatty acid residues bonded to a glycerol backbone. Triglycerides can be formed by the esterification of three fatty acid molecules and one glycerol molecule.

4) Draw the condensed structural formula of any **saturated fat (triglyceride)**.

In a ***saturated fat molecule*** all ***three hydrocarbon tails are saturated*** (contain all single bonds). You can use any three *saturated* fatty acid residues in your structure.

Example of a correct structure:



5) Draw the condensed structural formula of any **unsaturated fat (triglyceride)**.

In an ***unsaturated fat molecule***, at least one of ***hydrocarbon tails is <u>unsaturated</u>*** (contains at least one double bond). You can use any three fatty acid residues in your structure, so long as at least one of them is unsaturated.

Example of a correct structure: