The value of n is typically between 12 and 20. Unsaturated fatty acids contain double —C═C— bonds, such as oleic acid.

$$\text{Oleic acid:}\quad CH_3—(CH_2)_7—HC{=}CH—(CH_2)_7—COOH$$

A list of common fatty acids is presented in Table 2.6. The hydrocarbon chain of a fatty acid is hydrophobic (water insoluble), but the carboxyl group is hydrophilic (water soluble).

Fats are esters of fatty acids with glycerol. The formation of a fat molecule can be represented by the following reaction:

TABLE 2.6 Examples of Common Fatty Acids

Acid	Structure
Saturated fatty acids	
Acetic acid	CH_3COOH
Propionic acid	CH_3CH_2COOH
Butyric acid	$CH_3(CH_2)_2COOH$
Caproic acid	$CH_3(CH_2)_4COOH$
Decanoic acid	$CH_3(CH_2)_8COOH$
Lauric acid	$CH_3\ (CH_2)_{10}COOH$
Myristic acid	$CH_3(CH_2)_{12}COOH$
Palmitic acid	$CH_3(CH_2)_{14}COOH$
Stearic acid	$CH_3(CH_2)_{16}COOH$
Arachidic acid	$CH_3(CH_2)_{18}COOH$
Behenic acid	$CH_3(CH_2)_{20}COOH$
Lignoceric acid	$CH_3(CH_2)_{22}COOH$
Monoenoic fatty acids	
Oleic acid	$CH_3(CH_2)_7CH \overset{cis}{=} CH(CH_2)_7COOH$
Dienoic fatty acid	
Linoleic acid	$CH_3(CH_2)_4(CH \overset{cis}{=} CHCH_2)_2(CH_2)_6COOH$
Trienoic fatty acids	
α-Linolenic acid	$CH_3CH_2(CH \overset{cis}{=} CHCH_2)_3(CH_2)_6COOH$
γ-Linolenic acid	$CH_3(CH_2)_4(CH \overset{cis}{=} CHCH_2)_3(CH_2)_3COOH$
Tetraenoic fatty acid	
Arachidonic acid	$CH_3(CH_2)_4(CH \overset{cis}{=} CHCH_2)_4(CH_2)_2COOH$
Unusual fatty acids	
Tariric acid	$CH_3(CH_2)_{10}C{\equiv}C(CH_2)_4COOH$
Lactobacillic acid	$CH_3(CH_2)_5CH(CH_2)CH(CH_2)_9COOH$
Prostaglandin (PGE_2)