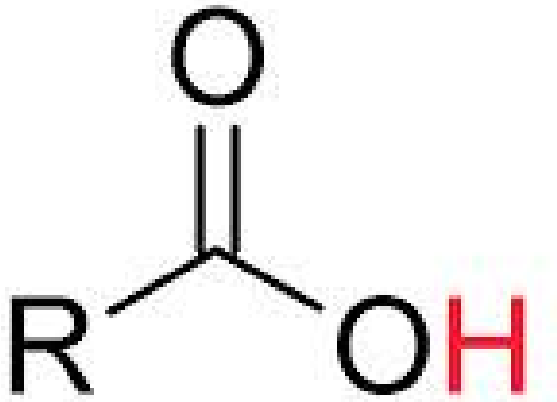
Organic Acids

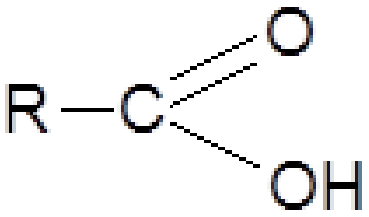


Outcome:

- Outline the transformation of alkenes to alkynes and vice versa.
- Name, Draw and construct molecular models of alkynes and branched alkynes.

Organic Acids:

- Organic acids are also known as **CARBOXYLIC** acids.
- The **FUNCTIONAL** group is made of:
  - a **CARBONYL** (**–C=O**)
  - and a **HYDROXYL** (**–OH**).
- Together they form a carboxyl group:

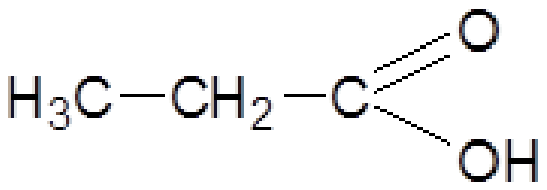


- Oxidizing a **PRIMARY ALCOHOL** can make **CARBOXYLIC** acids.

Naming Carboxylic Acids:

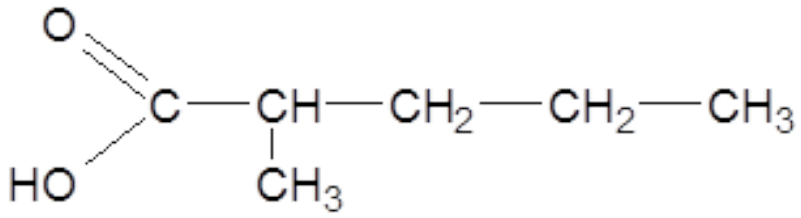
1. Name the **LONGEST CARBON CHAIN** which **CONTAINS** the carboxyl group (include the **C** atom of the carboxyl group).
2. Replace the **–E** ending with the suffix **–OIC ACID**.
3. Number the carbons starting at the **END NEAREST** the carboxyl group.
4. Number the **BRANCHES** based on their **POSITION** on the chain and list in **ALPHABETICAL** order.

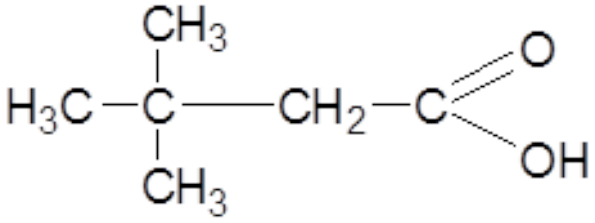
Examples:



Naming Carboxylic Acids:

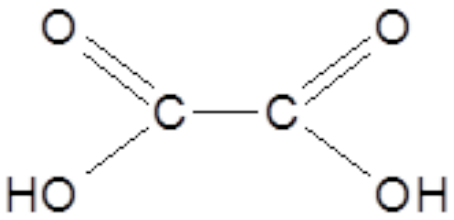
Examples:





Naming Carboxylic Acids:

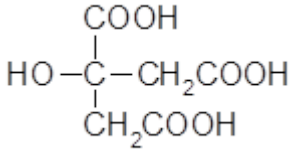
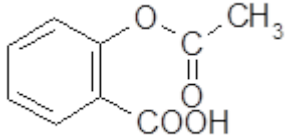
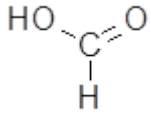
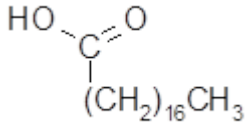
If there are **TWO** or **MORE** carboxyl groups, we use **DI**, **TRI**, **TETRA**, etc as before:



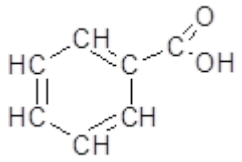
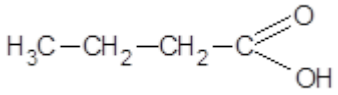
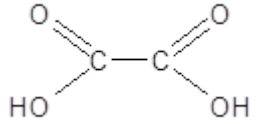
Physical Properties of Organic Acids:

- Acids, like alcohols, have **HIGHER** melting and boiling points than **CORRESPONDING HYDROCARBONS** due to **STRONGER INTERMOLECULAR FORCES**.
- Have a **PUNGENT** odour, but odour **DECREASES** as number of **C-ATOMS** increases.
- Solubility **DECREASES** as the chain length **INCREASES**
  - The carboxyl group makes the molecule **POLAR**, but has less effect as the chain length **INCREASES**.
- The **CARBOXYL** group is often found in **FATTY ACIDS** that are naturally occurring in **FATS** and **OILS**.

Common Carboxylic Acids:

Acid	Structure
Acetic acid (Ethanoic Acid) Also known as vinegar	
Citric acid Found in citrus fruits (lemons/limes)	
Acetylsalicylic acid Active ingredient in asprin (ASA)	
Formic acid Irritant in ant or bee stings	
Stearic acid (octadecanoic acid) Fatty acid in animal fats used to make soaps	

Common Carboxylic Acids:

Acid	Structure
Benzoic Acid Used in food flavouring and preserving	
Butyric Acid (butanoic acid) In butter	
Oxalic Acid (ethanedioic acid) Found in plants, used in wood bleaching	
Ascorbic Acid AKA Vitamin C. Found in citrus fruits/tomatoes