

Organic Families and Functional Groups

A _____ is a particular combination of atoms that contribute to the physical and chemical properties of a substance. Compounds that have the same functional group and therefore similar properties are grouped together into _____.

Example: Alkenes are an organic family. The functional group in this family is a _____.

Some functional groups are groups of atoms that attach onto hydrocarbon skeleton chains:

- Hydroxyl groups (found in alcohols)
- Carbonyl groups (found in aldehydes and ketones)
- Carboxyl groups (found in carboxylic acids)
- Amine groups (found in amines and amides)

Remember: hydrocarbon skeleton chains are _____.

Many functional groups are made of _____ bonds, which give the molecules a slightly positive and negative end. This causes the force of attraction between molecules to be stronger, causing the molecules to have higher melting points and boiling points.

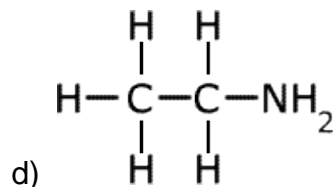
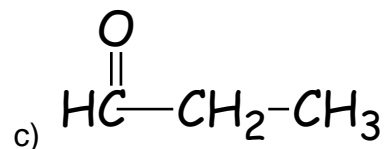
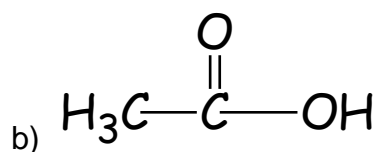
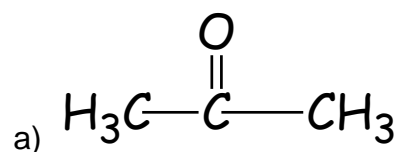
Organic Families

The different organic families are listed in the table below. We will learn how to name compounds in the starred families only. The "R" group in the general formula is an alkyl group, which is just the hydrocarbon chain to which the functional group is attached.

Family Name	General Formula	Name
1. *Alkanes		
2. *Alkenes		
3. *Alkynes		
4. *Alcohols		
5. Ethers		
6. *Aldehydes		
7. *Ketones		
8. *Carboxylic Acids		
9. Esters		

10. Amines		
11. Amides		

Ex. 1 Which family do the following molecules belong to?



Alcohols (R-OH)

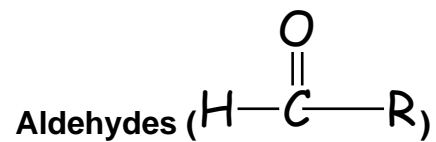
Naming Alcohols:

- ANE ending → _____
- if the OH group is in the middle, use a _____ to indicate its position (count from the closest end)

Properties:

- Most are _____
- Alcohols are _____ and soluble in water
- Undergo _____ (produce only CO_2 and H_2O)

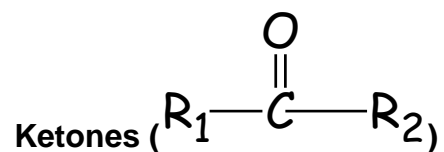
Examples:



Naming Aldehydes:

- **ANE** ending → _____
- Carbonyl group is always on the **END** of the chain in an aldehyde so no numbering is needed.

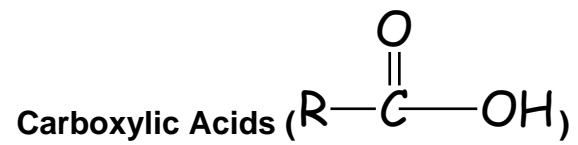
Examples:



Naming Ketones:

- **ANE** ending → _____
- _____ is always in the middle of the chain in a ketone. Numbers are used to indicate position of carbonyl group.

Examples:



Naming Carboxylic Acids:

- ANE ending → _____
- Carboxyl group is always at the _____ of the chain → no numbers needed.

Examples: