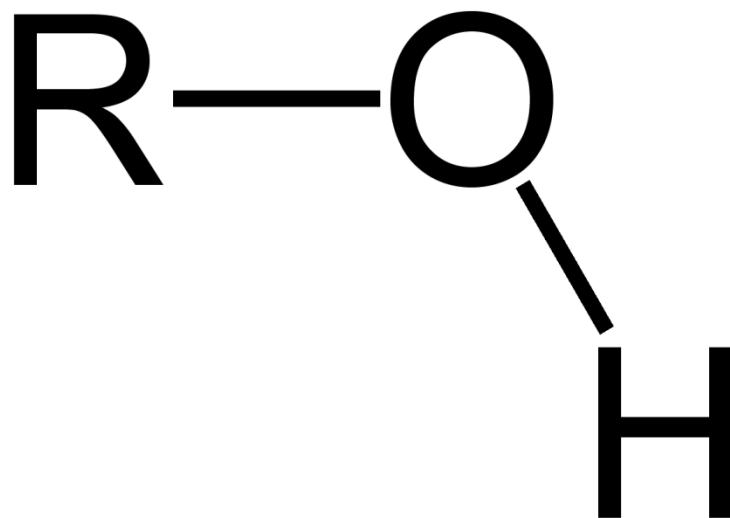


# Alcohols



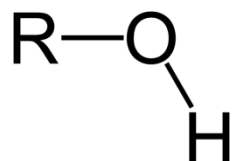
## Outcome:

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

# Alcohols:

Alcohols are compounds that have a **HYDROXYL** (**-OH**) group as a **FUNCTIONAL GROUP** → bonded to a carbon atom in a hydrocarbon chain.

*General Formula* → **R-OH** ('R' is a **HYDROCARBON CHAIN**)

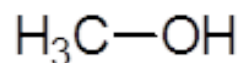


## Naming Alcohols:

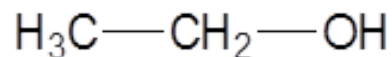
- Name the **LONGEST** hydrocarbon chain.
- Drop the '**E**' and add '**OL**'
- The **OH FUNCTIONAL GROUP** is given **PREFERENCE**, and must have the **LOWEST NUMBER**.
- If there is **MORE** than **ONE** **-OH** group we call it a **DIOL** or **TRIOL**, etc...

# Alcohols:

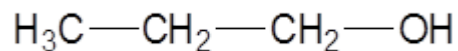
## Examples:



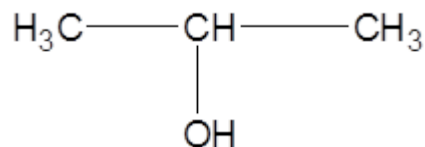
*Methanol (Wood Alcohol)*



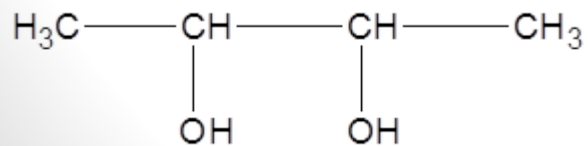
*Ethanol (Grain Alcohol - Fermented sugar)*



*Propanol*



*2-Propanol (rubbing Alcohol/isopropyl alcohol)*

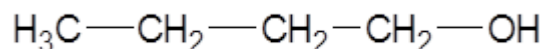


*2,3 butanediol*

# Alcohols:

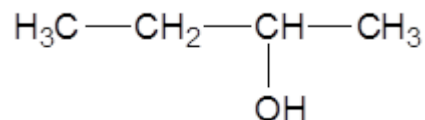
## Primary Alcohols:

Hydroxyl group (OH) is attached to an **END CARBON**.



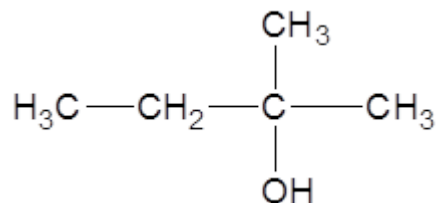
## Secondary Alcohols:

Hydroxyl group (OH) is attached to a **CARBON ATOM THAT IS ATTACHED TO 2 OTHER CARBONS**.



## Tertiary Alcohols:

Hydroxyl group (OH) is attached to a **CARBON ATOM THAT IS ATTACHED TO 3 OTHER CARBONS**.



\*\*\*The **STRUCTURAL** difference between primary, secondary and tertiary alcohols cause **DIFFERENCES** in **CHEMICAL BEHAVIOUR**.

# Common Alcohols:

You need to know the following alcohols and their uses:

## ***Methanol:***

- Highly **TOXIC**, may cause **BLINDNESS/DEATH**
- Antidote → **ETHANOL**
- Used in **SOLVENTS**, **ANTIFREEZE**, **FUELS**.

## ***Ethanol:***

- Essential ingredient in **ALCOHOLIC BEVERAGES**.
- Produced naturally from **FERMENTED SUGARS**.
  - $C_6H_{12}O_6 + \text{Yeast} \rightarrow C_2H_5-OH + 2CO_2$
- Used in **SOLVENTS**, **FUELS**, **ALCOHOLIC BEVERAGES**.

## ***Isopropyl Alcohol:***

- Twice as **TOXIC** as ethanol
- Used in **RUBBING ALCOHOL**, **GAS LINE ANTIFREEZE**, **SOLVENTS**, **DISINFECTANTS**.
- Also known as **2-PROPANOL**

# Physical Properties of Alcohols:

- **MELTING** and **BOILING POINTS INCREASE** as chain length **INCREASES**
  - Molecules are **LARGER** → more **MASS!**
  
- **SOLUBILITY DECREASES** as chain length **INCREASES**
  - The **-OH** makes the molecule **MORE POLAR**.
  - The **LONGER** the **CHAIN**, the **LESS EFFECT** the **-OH** has, making the molecule **LESS POLAR**.