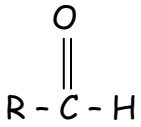
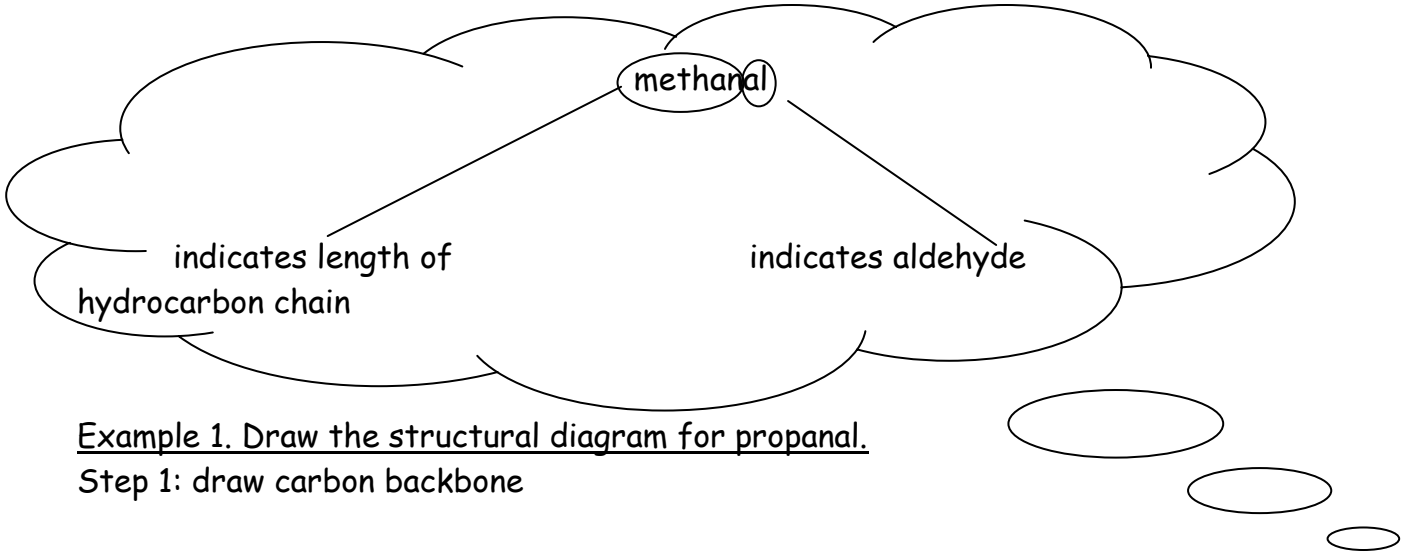
Aldehydes

Aldehydes take the general form of:



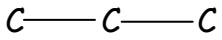
- Aldehydes are part of the carbonyl group because the double bond **occurs at the end** of the carbon chain.
- Aldehydes are **SMELLY**! **Small** ones smell **gross** (formaldehyde). **Big** ones smell **nice** (flowers, essential oils).

Naming Aldehydes/Determining Formulas: (drop the '-e' add '-al')

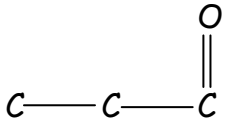


Example 1. Draw the structural diagram for propanal.

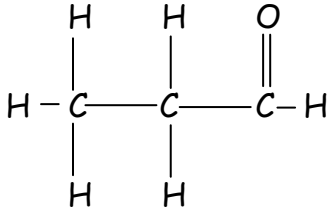
Step 1: draw carbon backbone



Step 2: draw in carbonyl group.

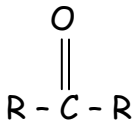


Step 3: fill in remaining positions with hydrogen bonds



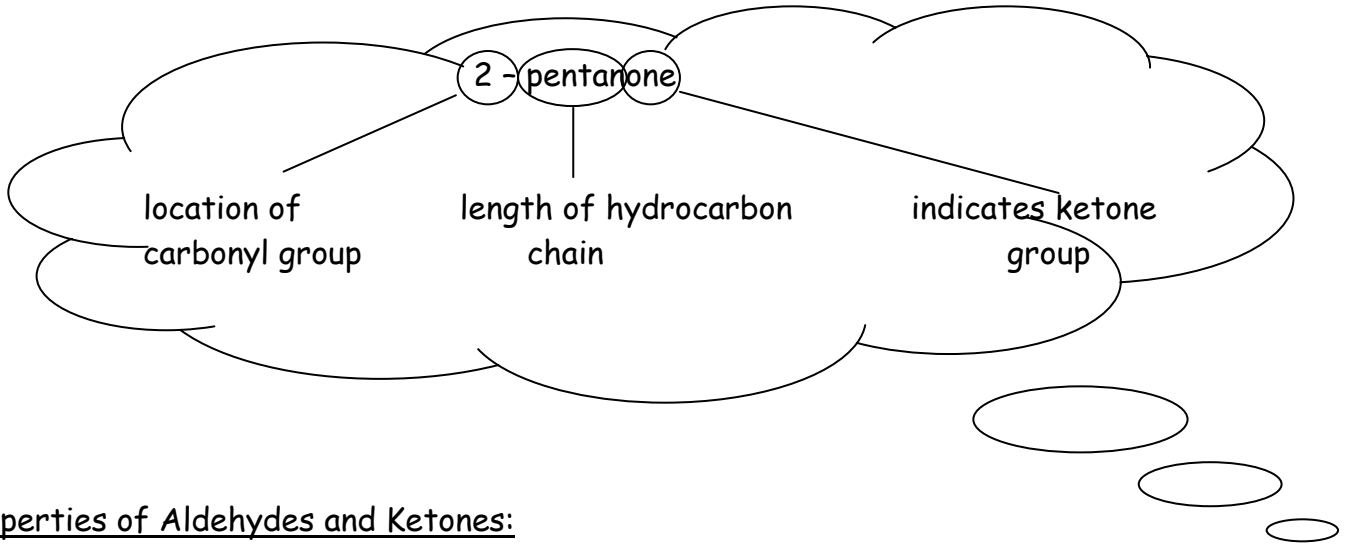
Ketones

Ketones take the general form of:



- Like aldehydes, ketones are members of the carbonyl group because of the double bond between carbon and oxygen.
- Difference is that in ketones, the double oxygen bond **occurs anywhere** on the hydrocarbon chain, but, not at one of the ends.
- Ketones are nearly **odourless**. Pheromones are an example of ketones.
  (Pheromones are chemical signals that change the behavior of another animal of the same species.)
  - another example is propanone (a.k.a. acetone, which is in nail polish remover)

Naming Keytones/Determining Formulas: (drop the '-e' and add '-one')

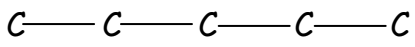


Properties of Aldehydes and Ketones:

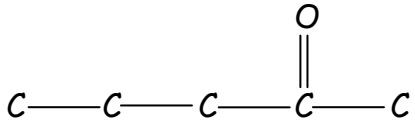
- strongly polar compounds (due to double bond between C atom and O atom).
- both, aldehydes and ketones have lower boiling points than alcohols of similar sizes and both are, in general, less soluble in water than alcohols.
- very soluble in water because of high polarity
- **bigger** they get (in terms of chain length), the more **non-polar** they become
- because they mix well with polar and non-polar substances they are good solvents.

Example 1. Draw the structural diagram for 2- pentanone.

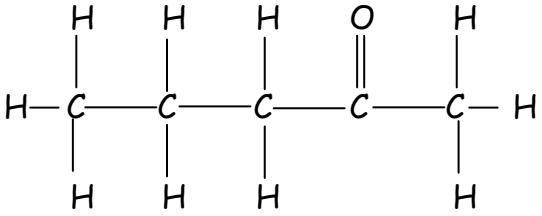
Step 1: draw carbon backbone



Step 2: locate and draw in carbonyl group.



Step 3: fill in remaining positions with hydrogen bonds



HMRK: pg. 213-214
#1-3, 4(recommended for study purposes)