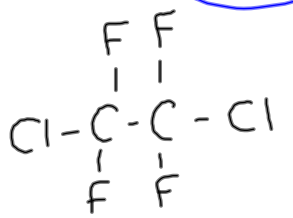
Organic Halide Worksheet

dichloroethyne + fluorine →

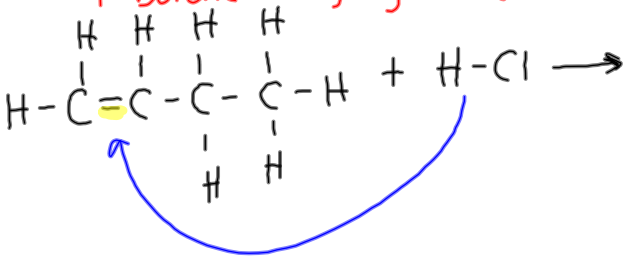
e) Cl-C≡C-Cl + F-F (excess) →

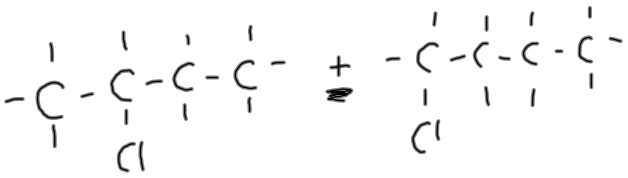


1,2-dichloro-1,1,2,2-tetrafluoro ethane

1-butene + hydrogen chloride →

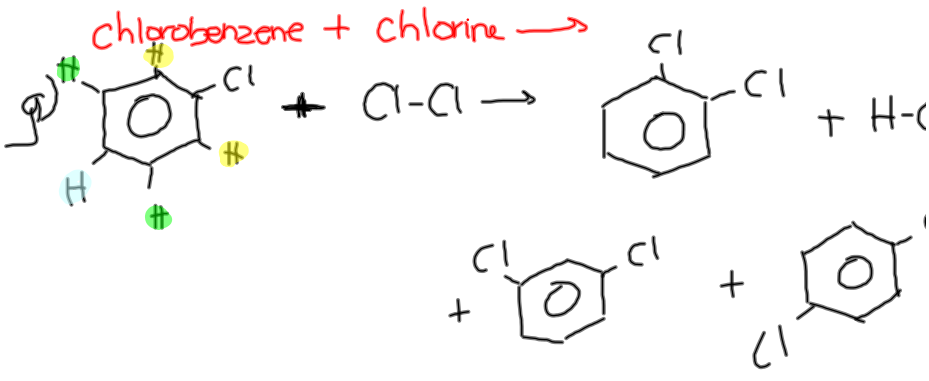
f)



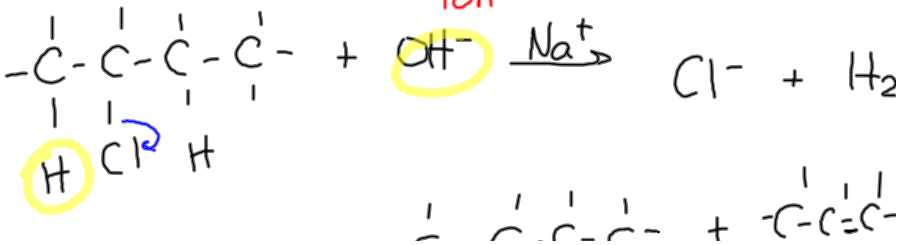


2-chlorobutane + 1-chlorobutane

chlorobenzene + chlorine →



2-chlorobutane + hydroxide ion



ADDITION (break pi bonds)

alkene/alkyne + H_2, X_2, HX, HOH $\longrightarrow$

SUBSTITUTION (exchange X for H)

alkane/benzene + X_2 $\longrightarrow$

ELIMINATION

organic halide + OH^- $\longrightarrow$

alcohol + acid $\longrightarrow$

Alcohols

Alcohols
- hydrocarbon derivatives containing a hydroxide **(OH^-)** functional group

Naming

When naming alcohols, the -e is dropped from the name of the simple alkane, and it is replaced by an **-ol**.

Ex. ethan**ol**

```
    H  H
    1  1
H - C - C - OH
    1  1
    H  H
```

Methanol
⇒known as 'wood alcohol'
⇒used as a fuel...very toxic!

When there are multiple hydroxyl (-OH) groups, the alkane name is given, with the suffix indicating the number of -OH groups.

Ex.

```
      H  OH
      1  1
H - C - C - H
      1  1
     OH  H
```

1,2-ethanediol

Reactions

Alcohols undergo **elimination** reactions, eliminating the hydroxyl group and a hydrogen atom.

Ex.

ethanol + acid ⇒

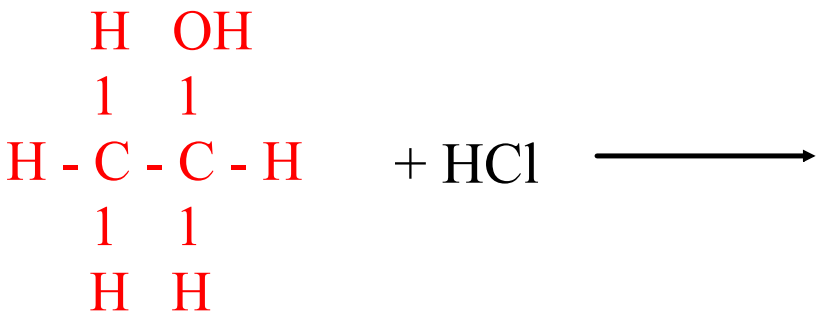
```
    H  OH
    1  1
H - C - C - H   + HCl  ⟶
    1  1
    H  H
```

Reactions

Alcohols undergo **elimination** reactions, eliminating the hydroxyl group and a hydrogen atom.

Ex.

ethanol + acid ⇒



Reactions

Alcohols can be prepared through **addition (hydration)** reactions, adding water to an alkene

Ex.

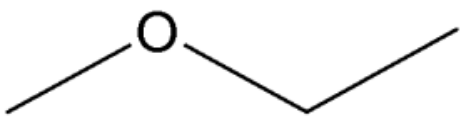
ethene + water ⇒

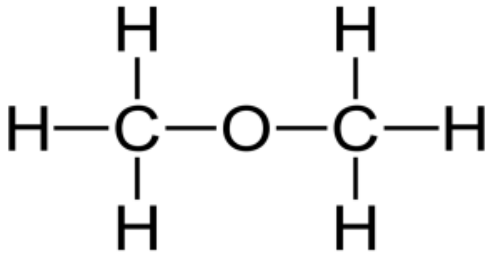
Ethers

Ethers are organic molecules in which an oxygen is bonded to two carbon groups.

R - O - R'

The alkyl groups attached to the oxygen atom are named in alphabetical order and are followed by the word *ether*.

Ex. 

Ex. 

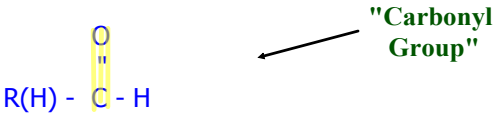
Homework

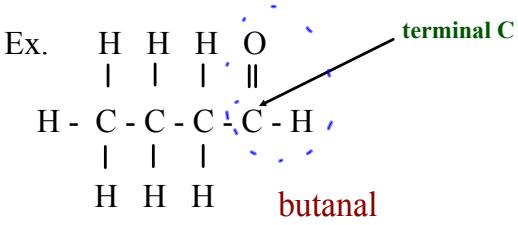
Worksheet

p. 736 #7-12

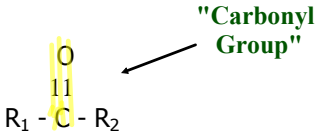
Aldehydes and Ketones

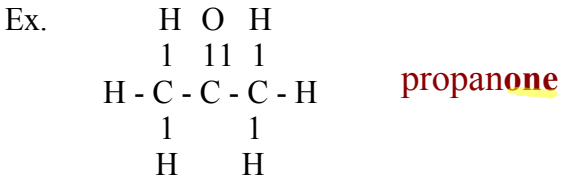
Aldehydes - contain a carbonyl group on a terminal carbon
- are named by replacing the "e" in alkane with al
- begin numbering at the end beginning with the aldehyde functional group





Ketones - have a carbonyl on any carbon but the end carbon
- are named by replacing "e" on the parent alkane with -one.





Aldehydes and ketones with the same number of carbons are isomers

SAMPLE PROBLEM - Name the following:

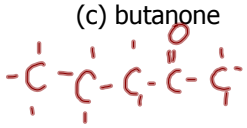
propanal

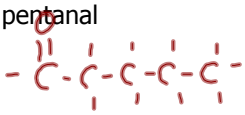
(a) $CH_3CH_2 - C = O$ (H)

propanone

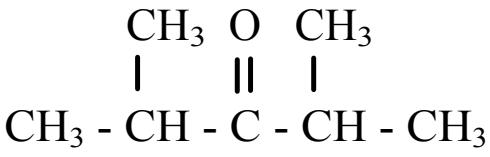
(b) $CH_3 - C - CH_3$ (O)

Draw the condensed structural formula for:
(c) butanone (d) pentanal

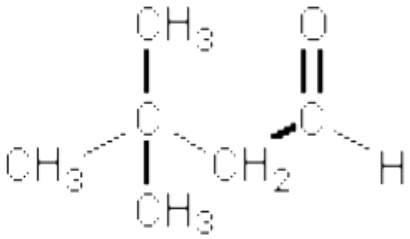




DIAGNOSTIC TEST - Fehling's Solution
aldehyde + fehling's --> red precipitate
ketone + fehling's --> N.R.

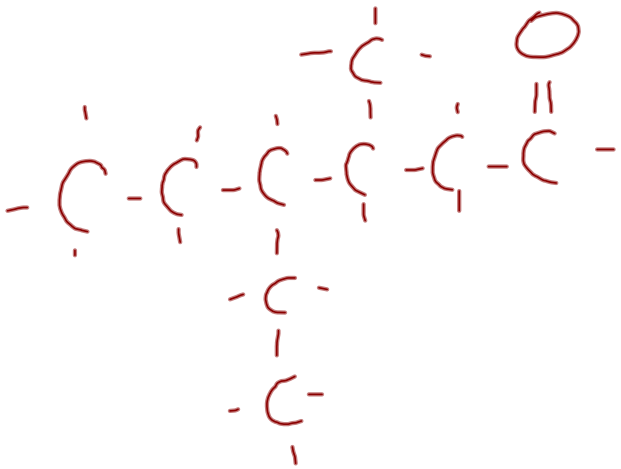


2,4-dimethyl-3-pentanone

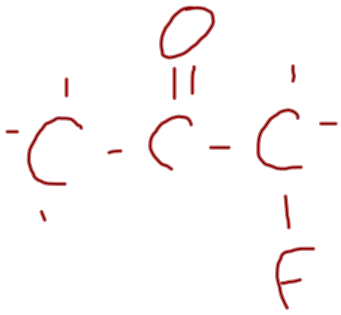


3,3-dimethylbutanal

4-ethyl-3-methylhexanal



fluoropropanone



Aldehydes and Ketones Worksheet