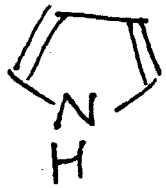
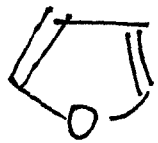
Nomenclature of Aromatic Compounds

benzene

pyridine



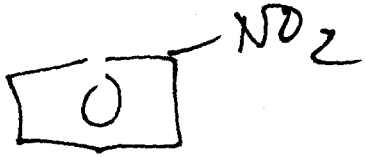
pyrrole

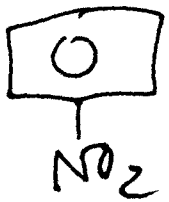


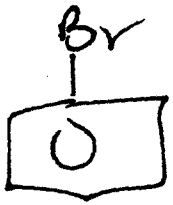
furan

monosubstituted benzenes – name the substituent + then add "benzene"

nitrobenzene

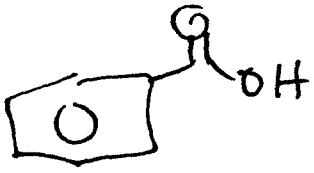




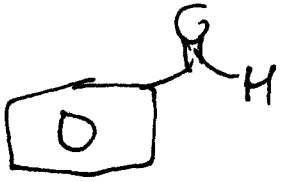


bromobenzene

"Special" compounds



benzoic acid

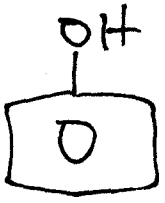


benzaldehyde

* note error in book – structure for benzaldehyde is wrong

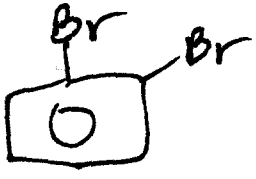
toluene

aniline



phenol

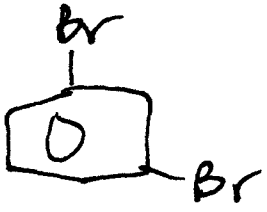
Disubstituted benzenes – dibromobenzene



ortho

o-

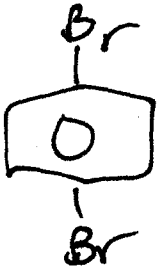
1,2-



meta

m-

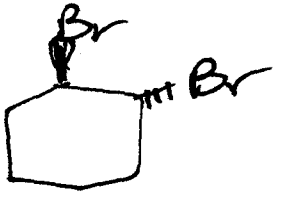
1,3-



para

p-

1,4-

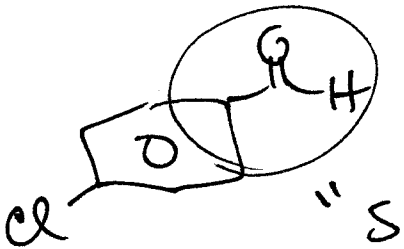


trans-1,2-dibromo cyclohexane

NOT ortho.

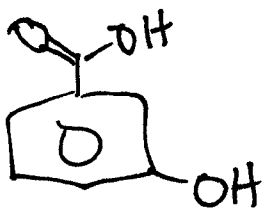
m-bromonitrobenzene

3-bromo nitro benzene



p-chlorobenzaldehyde

"special" substituent wins out = C #1



CO_2H > $C-H$ > NH_2, OH > CH_3

amino

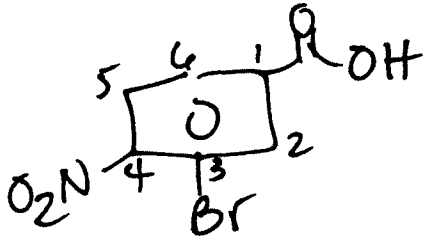
hydroxy

methyl

m-hydroxybenzoic acid

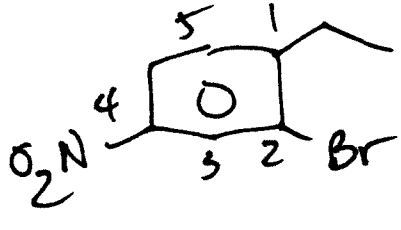
> 2 substituents – use numbers.

a. If you have one of the "special" substs. – that is #1.



3-bromo-4-nitrobenzoic acid

b. Otherwise – number the ring so as to get the lowest set of #s.

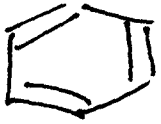


#1	set of #s
NO_2	1, ~~3~~, 4
Br	1, 2, ~~5~~
Et	1, 2, $\boxed{4}$

2-bromo-1-ethyl-4-nitrobenzene

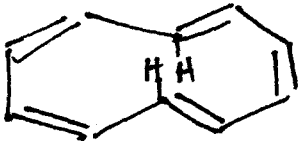
Annulenes – a class of cyclic compounds w/ alternating double + single bonds.

[4] annulene 1,3-cyclobutadiene



[6] annulene benzene

[10] annulene – can have trans double bond



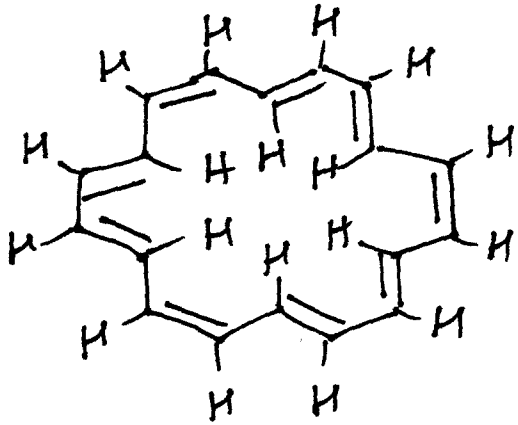
Is this aromatic?

NO.

It should be 10 π e's = 4n + 2

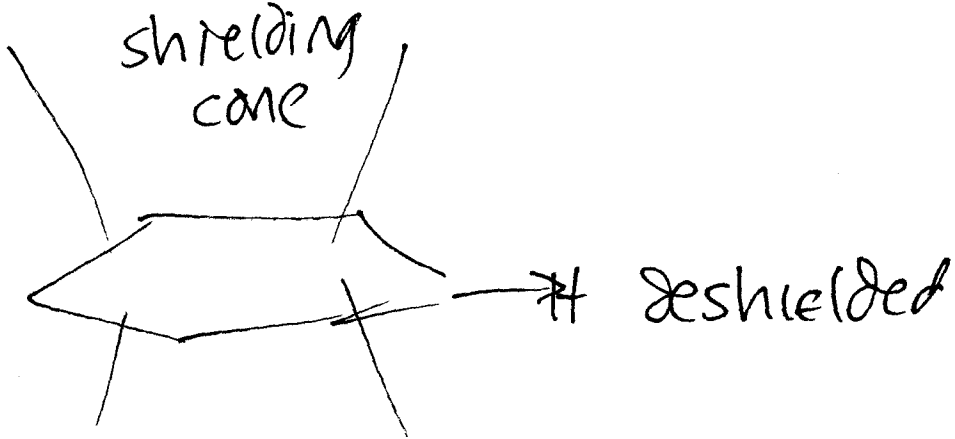
BUT... sterics! Two H's cannot occupy the ~~same~~ space; the molecule twists. Not planar ⇒ not aromatic.

[18] annulene



"outside" H's – very deshielded
9.3 ppm

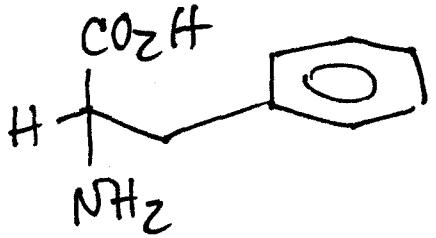
"inside" H's – very shielded
−3.0 ppm!



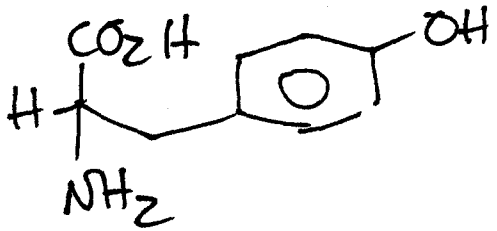
Biochemically Relevant Aromatic Compounds

a. Amino Acids

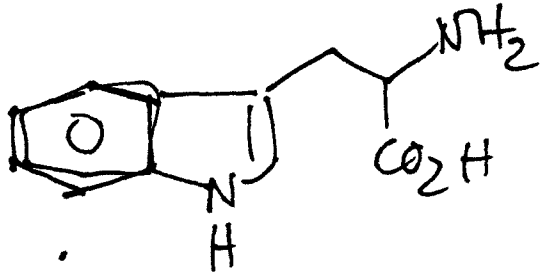
phenylalanine



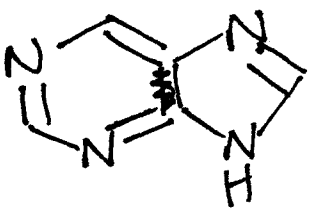
tyrosine



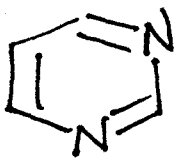
tryptophan



b. DNA contains two heterocyclic aromatics:



purine



pyrimidine

C. NADH ⇌ NAD^+