**Cycloalkanes**

**Introduction:**

The IUPAC rules for naming rings is similar but slightly different from linear alkanes and haloalkanes.

**How to:**

The following rules must be followed in order.

1) The ring will be the parent chain (even if there is a longer linear chain attached to the ring).  The ring is named by the number of carbons (as before) but with the prefix cyclo.

            i.e.    cyclohexane (six-carbon ring) or cyclooctane (eight-carbon ring)

2) Number the ring starting from the carbon with the substituent lowest in the alphabet.  Number in the direction that give the lower overall substituent numbers.  (In more complex situations go in the direction that is alphabetical).           

3) Name any groups (substituents) attached to the parent ring.

            -**carbon substituents** are named methyl, ethyl, propyl etc.

            -**halogen substituents** are named fluoro, chloro, bromo etc.

4) Groups repeated substituents together using prefixes: di-, tri-, tetra- etc.

5) List the substituents in alphabetical order ignoring the prefixes.

            i.e.    ethyl before methyl

                     ethyl before dimethyl

6) Write out the name in the format:

            #,#-prefixsubstituent-#-prefixsubstituentparentchain

**Examples:**

**Parent Chain = cyclohexane**    (six-carbon ring)  

**Numbers start from the carbon with the Br substituent and go clockwise**.  This gives the lowest substituent numbers (1,1,3).

**Substituents =  1-bromo  1-methyl   3-chloro**

**Order of substituents with prefixes:**

1-bromo  before  3-chloro   before  1-methyl

**Put all together:**

**1-bromo-3-chloro-1-methylcyclohexane**

**Parent Chain = cyclobutane**    (four-carbon ring) 

**Numbers start from the carbon with the butyl substituent and go counter-clockwise**.  Starting from the butyl (counter-clockwise) or chloro (clockwise) would give the same numbering (1,2,3).  So, butyl is chosen over chloro as carbon 1 because it is first alphabetically.

**Substituents =  1-butyl   2-bromo   3-chloro**

**Order of substituents with prefixes:**

2-bromo  before  1-butyl   before  3-chloro

***(\*REMEMBER***: iso- is the only prefix that is used when giving alphabetical priority)

**Put all together:**

**2-bromo-1-butyl-3-chlorocyclobutane**

**PRACTICE:**



