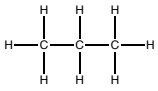
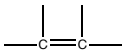
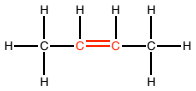
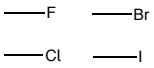
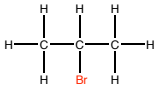
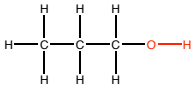
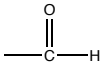
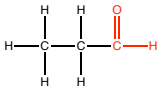
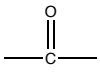
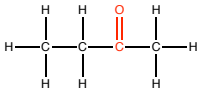
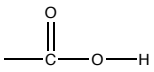
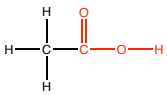
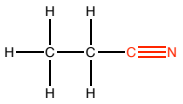
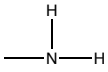
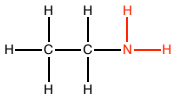
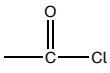
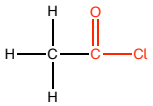
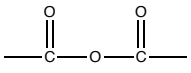
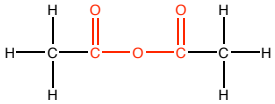
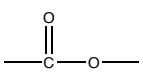
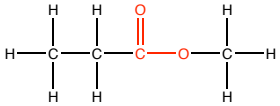
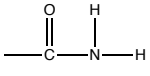
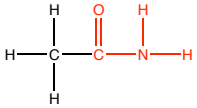
ORGANIC NOMENCLATURE GUIDELINES

number of C atoms	1C	2C	3C	4C	5C	6C
start of name	meth	eth	prop	but	pent	hex

functional group		prefix	suffix	example name	
alkane			ane		propane
alkene			ene		but-2-ene
halogenoalkane		fluoro / chloro / bromo / iodo			2-bromopropane
alcohol		hydroxy	ol		propan-1-ol
aldehyde *			al		propanal
ketone		oxo	one		butanone
carboxylic acid *			oic acid		ethanoic acid
nitrile *			nitrile		propanenitrile
amine		amino	amine		ethanamine (ethylamine)
acyl chloride *			oyl chloride		ethanoyl chloride
acid anhydride			oic anhydride		ethanoic anhydride
ester			oate		methyl propanoate
amide			amide		ethanamide

* indicates this the C atom in this functional group is defined as carbon-1 in the chain

shading indicates that this prefix is only used if the suffix cannot be used

The naming of organic compounds is controlled by IUPAC (International Union of Pure and Applied Chemistry). This gives a very systematic way of naming all organic molecules.

Some guidance on naming organic molecules

1 Longest C chain

- look at the molecule to find the longest C chain – if there is a functional group it must be the longest C chain containing the functional group
- note that alkyl groups (e.g. methyl, ethyl, propyl) are not functional groups.

2 Number the C chain

- number the longest C chain (that contains the functional group) from the end that gives the functional group(s) the lowest numbers
- note that some functional groups (labelled * in the chart, e.g. aldehyde group) are carbon-1 in the chain by definition (and do not need a number themselves therefore), and define which end the numbers start for other groups
- note that we should only include numbers in names when they are necessary – but we usually only omit numbers in the simplest molecules where it is obvious that no number is needed

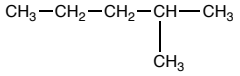
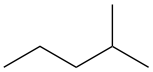
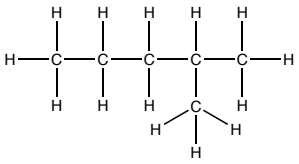
3 Putting the groups on the chain on the name

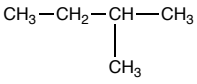
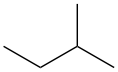
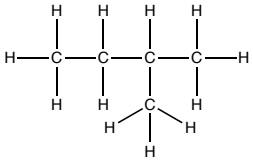
- groups that come off the C chain are given a number to show which C atom they are on (if necessary)
- when we write the name, these groups are listed in alphabetical order
- if there are several groups that are the same, then the prefix di (for two the same), tri (for three the same), tetra (for four the same), etc are added first (note that the prefix di/tri/tetra/etc is ignored when we work out alphabetical order)

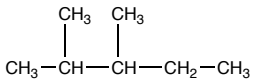
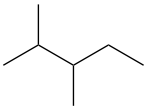
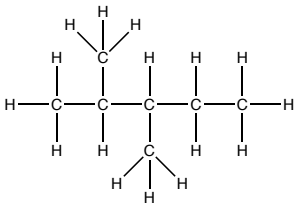
Note

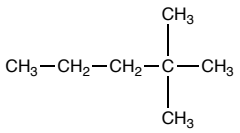
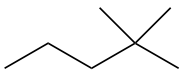
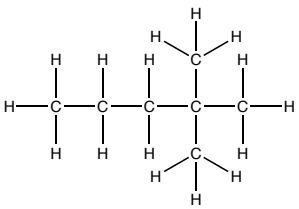
- numbers are separated by commas
- numbers and letters are separated by dashes

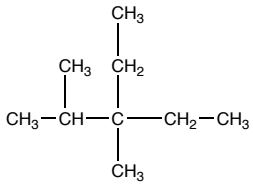
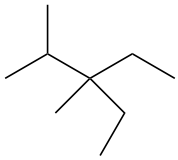
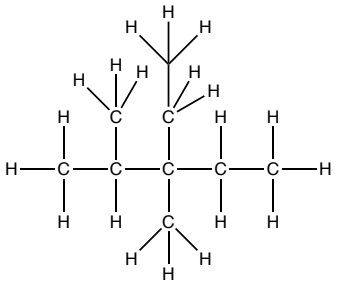
ALKANES

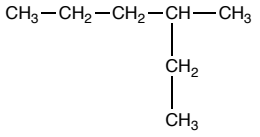
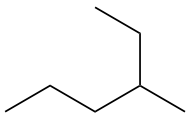
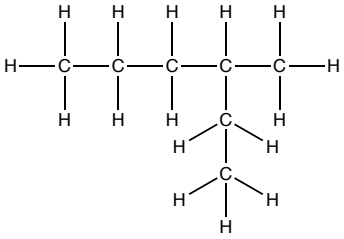
	Structural formula	Skeletal formula	Name & comments
1			Longest C chain is 5C atoms – so it is a *pentane* There is a methyl group coming off the chain. If the chain is counted from the left end it is *4-methyl*, but if it is numbered from the right end if it *2-methyl* which is a lower number. **2-methylpentane**
	Displayed formula		
			

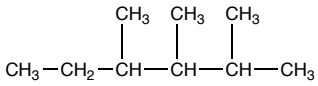
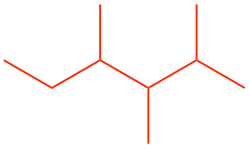
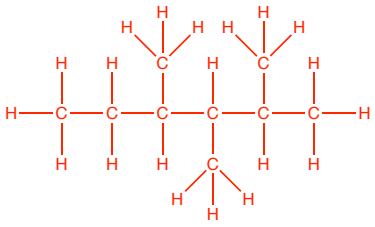
	Structural formula	Skeletal formula	Name & comments
2			Longest C chain is 4C atoms – so it is a *butane* There is a methyl group coming off the chain. If the chain is counted from the left end it is *3-methyl*, but if it is numbered from the right end if it *2-methyl* which is a lower number. However, the methyl group can only be on one of the two central C atoms, and would be *2-methyl* in each case. It if was on one of the end C atoms, it would be *pentane* and not *methylbutane*. As the methyl group can only be on carbon-2, it does not need a number for its position. **methylbutane**
	Displayed formula		
			

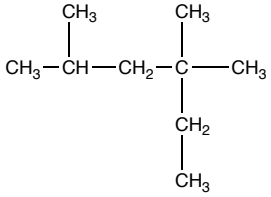
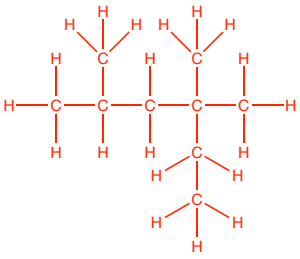
	Structural formula	Skeletal formula	Name & comments
3			Longest C chain is 5C atoms – so it is a *pentane* There are two methyl groups coming off the chain. If the chain is counted from the left end they on carbon-2 and carbon-3. If it is numbered from the right end they on carbon-3 and carbon-4. Therefore we number from the left end to get the lower numbers. To show there are two methyl groups, we use *di*. **2,3-dimethylpentane**
	Displayed formula		
			

	Structural formula	Skeletal formula	Name & comments
4			Longest C chain is 5C atoms – so it is a *pentane* There are two methyl groups coming off the chain. If the chain is counted from the left end they are both on carbon-4. If it is numbered from the right end they on are both on carbon-2. Therefore we number from the right end to get the lower numbers. To show there are two methyl groups, we use *di*. **2,2-dimethylpentane**
	Displayed formula		
			

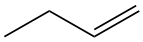
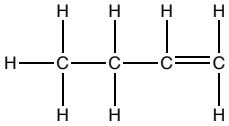
	Structural formula	Skeletal formula	Name & comments
5			Longest C chain is 5C atoms – so it is a *pentane* There are two methyl groups and one ethyl group coming off the chain. If the chain is counted from the left end, then we have *2-methyl*, *3-ethyl* and *3-methyl*. If it is numbered from the right we have *3-methyl*, *3-ethyl* and *4-methyl*. We get lower numbers if we number from the left end. The groups are listed in alphabetical order, but we ignore the *di* of the dimethyl. Therefore, *ethyl* comes before *dimethyl* alphabetically. **3-ethyl-2,3-dimethylpentane**
	Displayed formula		
			

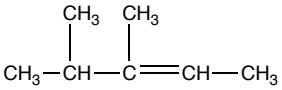
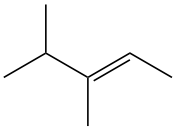
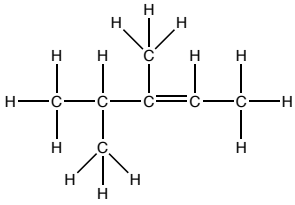
	Structural formula	Skeletal formula	Name & comments
6			Longest C chain is 6C atoms (not 5) – so it is a *hexane* There is one methyl group coming off the chain. If the chain is counted from the left end, then we have *4-methyl*. If it is numbered from the bottom we have *3-methyl*. We get the lower number if we number from the bottom. **3-methylhexane**
	Displayed formula		
			

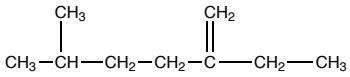
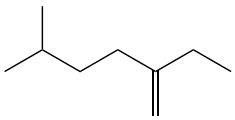
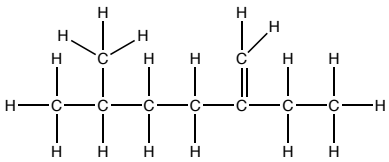
	Structural formula	Skeletal formula	Displayed formula
7			
	Name **2,3,4-trimethylhexane**		

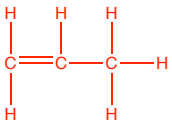
	Structural formula	Skeletal formula	Displayed formula
8			
	Name **2,4,4-trimethylhexane**		

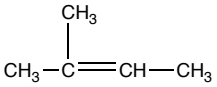
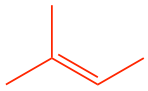
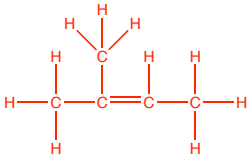
ALKENES

	Structural formula	Skeletal formula	Name & comments
9	$CH_3-CH_2-CH=CH_2$		Longest C chain that contains the C=C functional group is 4C atoms – so it is has a *but* stem. It has an alkene functional group and so is a *butene*. The C=C group could be in different places so needs a number. If we count from the right it is between carbon-1 and carbon-2. If we count from the left it is between carbon-3 and carbon-4. We count from the right therefore to get the lower number, so it is given number 1. **but-1-ene**
	Displayed formula		
			

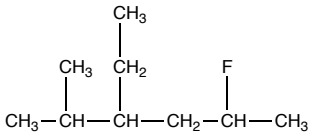
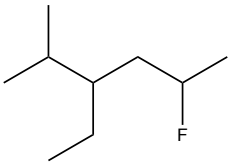
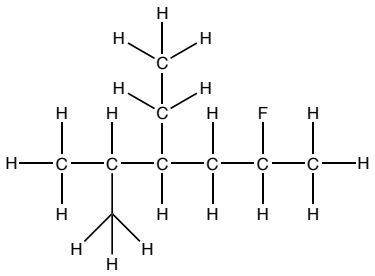
	Structural formula	Skeletal formula	Name & comments
10			Longest C chain that contains the C=C functional group is 5C atoms – so it is has a *pent* stem. It has an alkene functional group and so is a *pentene*. We have two methyl groups and a C=C double bond that need numbers. The methyl groups are not functional groups, so the only functional group is the C=C. We count from the right to give the C=C the lowest number. This means that we have *-2-ene*, *3-methyl* and *4-methyl*. **3,4-dimethylpent-2-ene**
	Displayed formula		
			

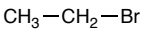
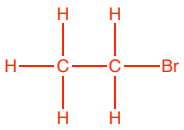
	Structural formula	Skeletal formula	Name & comments
11			The longest C chain here has 7 C atoms, BUT it does not contain any functional group. The longest C chain that does contain the C=C functional group is 6 C atoms and so is a *hexene*. To get the lowest number for the C=C functional group, the numbering starts from the end with the C=C, and so it is *-1-ene*. There are a methyl group on carbon-5 and so it is *5-methyl*. There is also an ethyl group on carbon-2 and so it is 2-*ethyl*. 2-*ethyl* comes before *5-methyl* due to alphabetical order. **2-ethyl-5-methylhex-1-ene**
	Displayed formula		
			

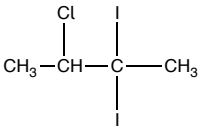
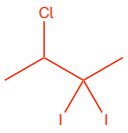
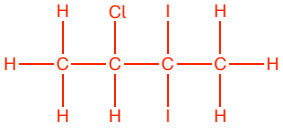
	Structural formula	Skeletal formula	Displayed formula
12	$CH_2=CH-CH_3$		
	Name **propene**		

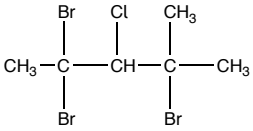
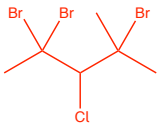
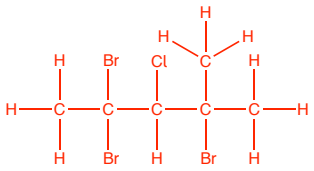
	Structural formula	Skeletal formula	Displayed formula
13			
	Name **methylbut-2-ene** (or 2-methylbut-2-ene)		

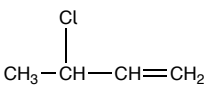
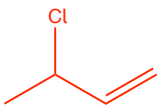
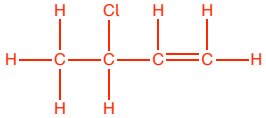
HALOGENOALKANES

	Structural formula	Skeletal formula	Name & comments
14			Longest C chain that contains the F functional group is 6C atoms – so it is has a *hex* stem. There is only one functional group (methyl and ethyl are not functional groups), and to give the F group the lowest number it is numbered from the right end, so it is *2-fluoro*. There is a methyl group on carbon-5, so it is *5-methyl*, and an ethyl group on carbon-4, so it is *4-ethyl*. In alphabetical order, it goes *4-ethyl* then *2-fluoro* and then *5-methyl*. **4-ethyl-2-fluoro-5-methylhexane**
	Displayed formula		
			

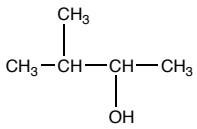
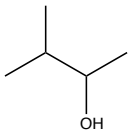
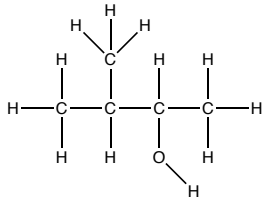
	Structural formula	Skeletal formula	Displayed formula
15			
	Name **bromoethane**		

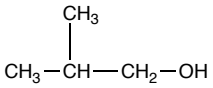
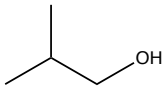
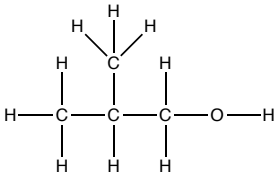
	Structural formula	Skeletal formula	Displayed formula
16			
	Name **3-chloro-2,2-diiodobutane**		

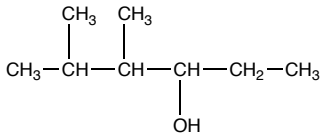
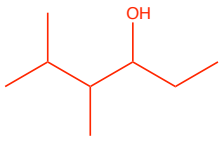
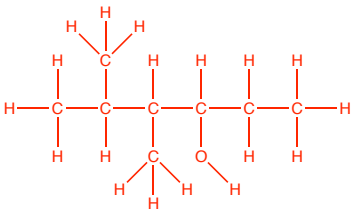
	Structural formula	Skeletal formula	Displayed formula
17			
	Name **2,2,4-tribromo-3-chloro-4-methylpentane**		

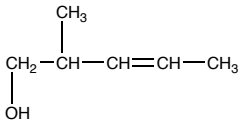
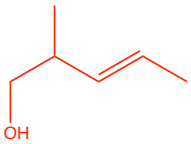
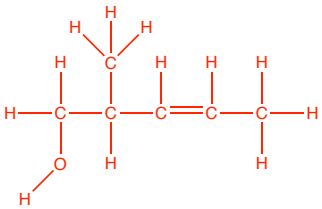
	Structural formula	Skeletal formula	Displayed formula
18			
	Name **3-chlorobut-1-ene**		

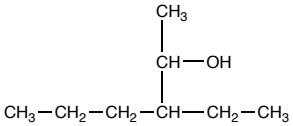
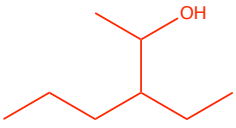
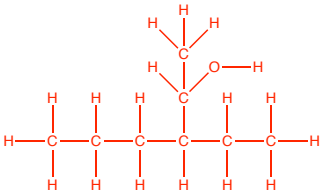
ALCOHOLS

	Structural formula	Skeletal formula	Name & comments
19			Longest C chain that contains the OH functional group is 4C atoms – so it is has a *but* stem. There is only one functional group (methyl is not a functional group), and to give the OH group the lowest number it is numbered from the right end, so it is *-2-ol*. There is a methyl group on carbon-3, so it is *3-methyl*. **3-methylbutan-2-ol**
	Displayed formula		
			

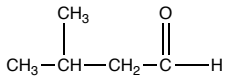
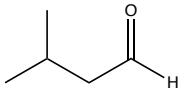
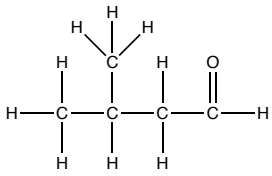
	Structural formula	Skeletal formula	Name & comments
20			Longest C chain that contains the OH functional group is 3C atoms – so it is has a *prop* stem. There is only one functional group (methyl is not a functional group), and to give the OH group the lowest number it is numbered from the right end, so it is *-1-ol*. There is a methyl group on carbon-2. However, the methyl does not need a number in the name because it could not be on any other C atom and still be *methylpropan-1-ol*. However, many people would still put this 2 on the methyl group as it is not that obvious that a number is not needed **methylpropan-1-ol** (2-methylpropan-1-ol)
	Displayed formula		
			

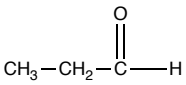
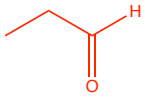
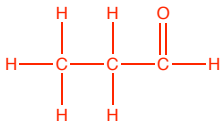
	Structural formula	Skeletal formula	Displayed formula
21			
	Name **4,5-dimethylhexan-3-ol**		

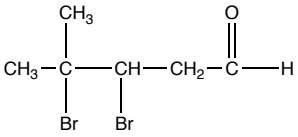
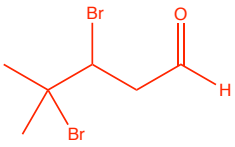
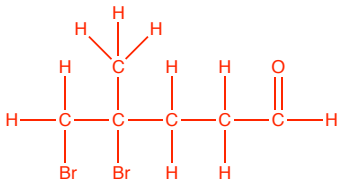
	Structural formula	Skeletal formula	Displayed formula
22			
	Name **2-methylpent-3-en-1-ol**		

	Structural formula	Skeletal formula	Displayed formula
23			
	Name **3-ethylhexan-2-ol**		

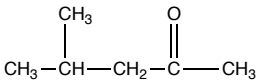
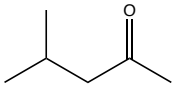
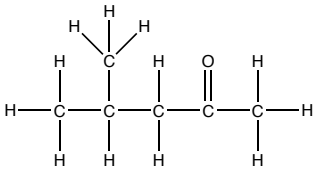
ALDEHYDES

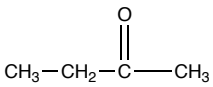
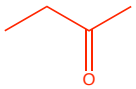
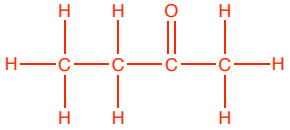
	Structural formula	Skeletal formula	Name & comments
24			Longest C chain that contains the CHO aldehyde functional group is 4C atoms – so it is has a *but* stem. By definition, the aldehyde functional group is carbon-1 and so it does not need a number. As the chain is numbered from the right, the methyl group is on carbon-3 and so it is *3-methyl*. **3-methylbutanal**
	Displayed formula		
			

	Structural formula	Skeletal formula	Displayed formula
25			
	Name **propanal**		

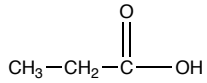
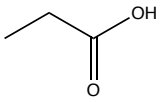
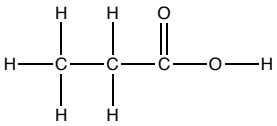
	Structural formula	Skeletal formula	Displayed formula
26			
	Name **3,4-dibromo-4-methylpentanal**		

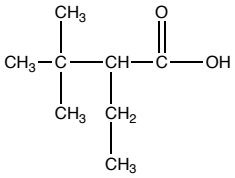
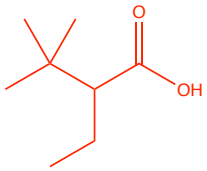
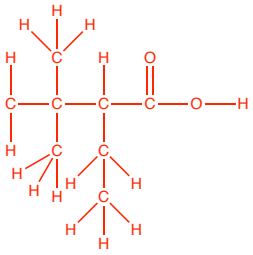
KETONES

	Structural formula	Skeletal formula	Name & comments
27			Longest C chain that contains the CO ketone functional group is 5C atoms – so it is has a *pent* stem. There is only one functional group which is the ketone group (methyl is not a functional group). If the chain is numbered from the left, the ketone group is on carbon-4, but if it is numbered from the right it is carbon-2. Therefore we number from the right and it is *-2-one*. There is a methyl group on carbon-4 and so it is *4-methyl*. **4-methylpentan-2-one**
	Displayed formula		
			

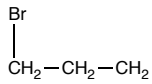
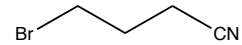
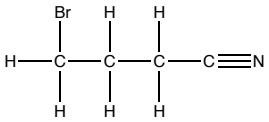
	Structural formula	Skeletal formula	Displayed formula
28			
	Name **butanone**		

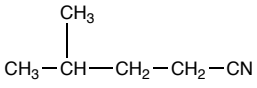
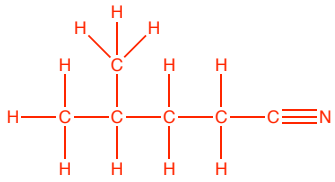
CARBOXYLIC ACIDS

	Structural formula	Skeletal formula	Name & comments
29			Longest C chain that contains the COOH carboxylic acid functional group is 3C atoms – so it is has a *prop* stem. By definition, the carboxylic acid functional group is carbon-1 and so it does not need a number. **propanoic acid**
	Displayed formula		
			

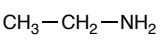
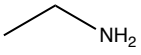
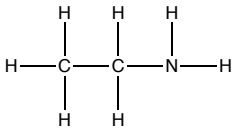
	Structural formula	Skeletal formula	Displayed formula
30			
	Name **2-ethyl-3,3-dimethylbutanoic acid**		

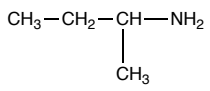
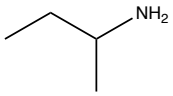
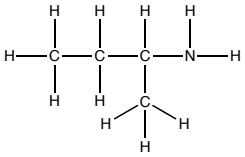
NITRILES

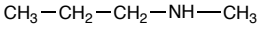
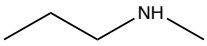
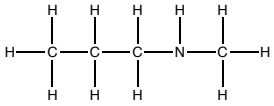
	Structural formula	Skeletal formula	Name & comments
31			There are two functional groups, the –Br and the –CN. By definition, the nitrile functional group –CN is carbon-1 and so it does not need a number. This means that the Br is on carbon-4, so is *4-bromo*. Note that the longest C chain containing the nitrile group has 4 C atoms, including the C of the nitrile group. **4-bromobutanenitrile**
	Displayed formula		
			

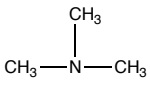
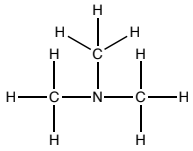
	Structural formula	Skeletal formula	Displayed formula
32			
	Name **4-methylpentanenitrile**		

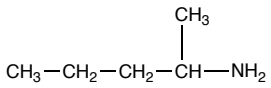
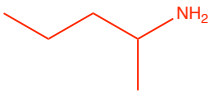
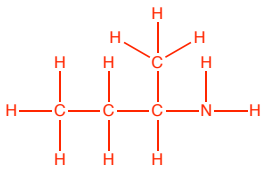
AMINES

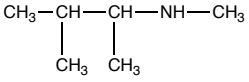
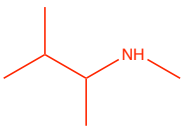
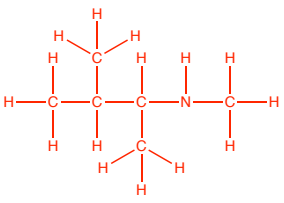
	Structural formula	Skeletal formula	Name & comments
33			The naming of amines can be complicated and you are likely to see different names. The IUPAC rules for amines are not well known or used. This is a very simple amine with one alkyl group bonded to the N (a primary amine). The group bonded to the N is an ethyl group. It can be thought of as *ethane* but with an amine group in place of an H. **ethanamine** *ethylamine or aminoethane also used*
	Displayed formula		
			

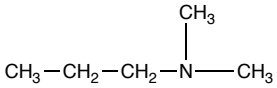
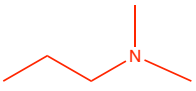
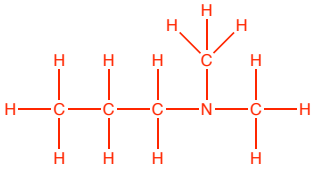
	Structural formula	Skeletal formula	Name & comments
34			This molecule can be thought of as *butane* with an amine group on carbon-2. The amine group does need a number because it could also be on carbon-1. **butan-2-amine** *1-methylpropylamine or 2-aminobutane also used*
	Displayed formula		
			

	Structural formula	Skeletal formula	Name & comments
35			In this molecule, there are two alkyl groups bonded to the N and so it is a secondary amine. This molecule can be thought of as *propanamine* with a methyl group also bonded to the N. In order to show that it is bonded to the N rather than one of the C atoms in the propyl group, it is labelled *N-methyl*. **N-methylpropan-1-amine** *N-methylpropylamine also used*
	Displayed formula		
			

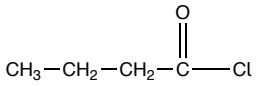
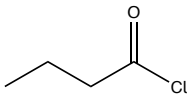
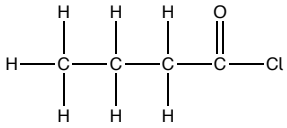
	Structural formula	Skeletal formula	Name & comments
36			In this molecule, there are three alkyl groups bonded to the N and so it is a tertiary amine. This nearly always called *trimethylamine*, but it is not the official IUPAC name. It is effectively *methanamine* with two methyl groups on the N. **N,N-dimethylmethanamine** *trimethylamine usually used*
	Displayed formula		
			

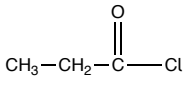
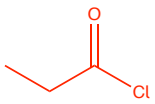
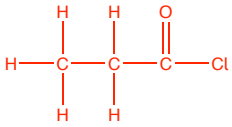
	Structural formula	Skeletal formula	Displayed formula
37			
	Name **2-methylbutanamine**		

	Structural formula	Skeletal formula	Displayed formula
38			
	Name **N,2,3-trimethylpropanamine**		

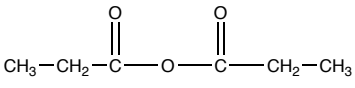
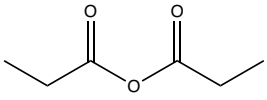
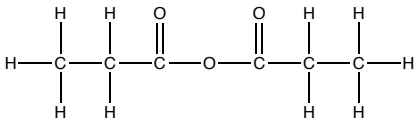
	Structural formula	Skeletal formula	Displayed formula
39			
	Name **N,N-dimethylpropanamine** (dimethylethylamine)		

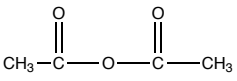
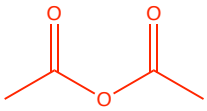
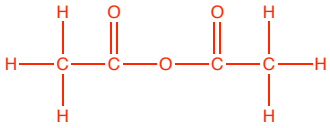
ACYL CHLORIDE

	Structural formula	Skeletal formula	Name & comments
40			The acyl chloride group is by definition on carbon-1 and so no number is needed. The longest chain is 4 C atoms long, so it is a *but*. **butanoyl chloride**
	Displayed formula		
			

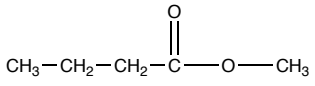
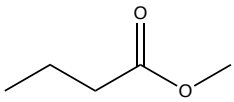
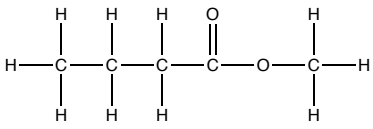
	Structural formula	Skeletal formula	Displayed formula
41			
	Name **propanoyl chloride**		

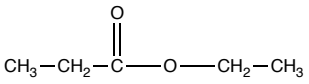
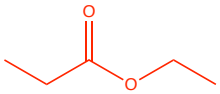
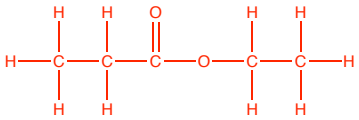
ACID ANHYDRIDE

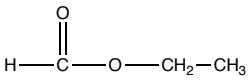
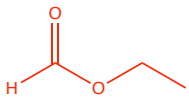
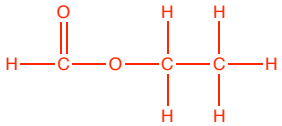
	Structural formula	Skeletal formula	Name & comments
42			Acid anhydrides are symmetrical about the middle oxygen (you could make acid anhydrides that are not, but there is no real use for them). The C chain length stem comes from the number of C atoms in the chain on each side of the central O. In this case, there are 3 C atoms on each side and so the stem is *prop*. **propanoic anhydride**
	Displayed formula		
			

	Structural formula	Skeletal formula	Displayed formula
43			
	Name **ethanoic anhydride**		

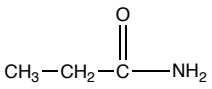
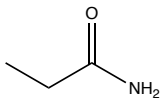
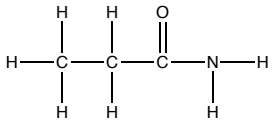
ESTERS

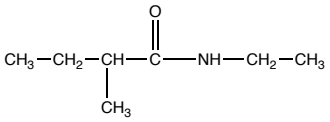
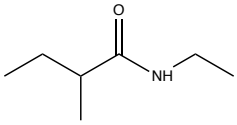
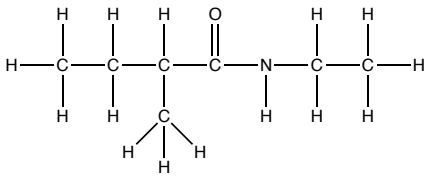
	Structural formula	Skeletal formula	Name & comments
44			There are two parts to the name. Esters can be thought of as being similar to carboxylic acids but with an alkyl group on the O instead of an H. This ester could be thought of as *butanoic acid* with a methyl group in place of the H on the O. The part of the molecule that is like *butanoic acid* without the H is *butanoate*. This *butanoate* has a *methyl* group attached. **methyl butanoate**
	Displayed formula		
			

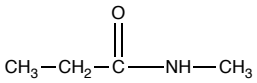
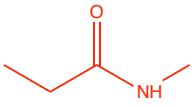
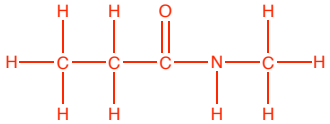
	Structural formula	Skeletal formula	Displayed formula
45			
	Name **ethyl propanoate**		

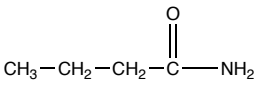
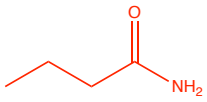
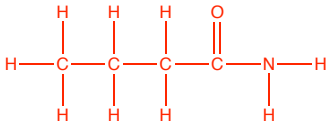
	Structural formula	Skeletal formula	Displayed formula
46			
	Name **ethyl methanoate**		

AMIDES

	Structural formula	Skeletal formula	Name & comments
47			The longest chain containing the amide functional group is 3 C atoms long, and so the stem is *prop*. The amide group is carbon-1 by definition and so no number is needed for it. **propanamide**
	Displayed formula		
			

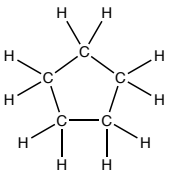
	Structural formula	Skeletal formula	Name & comments
48			The longest chain containing the amide functional group is 4 C atoms long, and so the stem is *but*. The amide group is carbon-1 by definition and so no number is needed for it. There is a methyl group on the main C chain. It could be on different C atoms and so needs a number. As the C of the amide group is carbon-2 by definition, the methyl group is on carbon-2 and so is *2-methyl*. There is an ethyl group on the N of the amide group. In order to show that this is on the N and not on a C atom, it is written as *N-ethyl*. In alphabetical order, the ethyl comes before the methyl. **N-ethyl-2-methylbutanamide**
	Displayed formula		
			

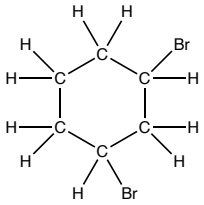
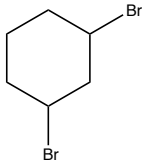
	Structural formula	Skeletal formula	Displayed formula
49			
	Name **N-methyl propanamide**		

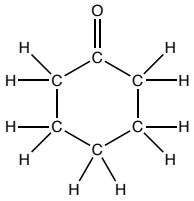
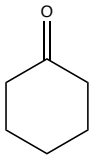
	Structural formula	Skeletal formula	Displayed formula
50			
	Name **butanamide**		

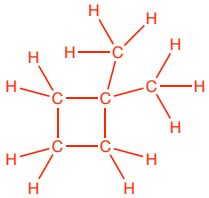
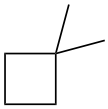
CYCLIC COMPOUNDS

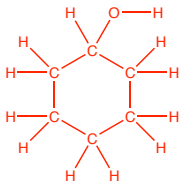
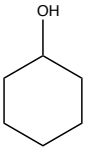
Note - it is normal to draw skeletal (or sometimes displayed) formulas for cyclic compounds – it is quite hard to draw anything else

	Displayed formula	Skeletal formula	Name & comments
51			This is a cyclic alkane (there is no functional group). It has 5 C atoms in the ring. **cyclopentane**

	Displayed formula	Skeletal formula	Name & comments
52			This is a cyclic molecule with 6 C atoms in the ring, and so is *cyclohex*. There are two bromo functional groups. They could be on different C atoms on the ring and so numbers are needed. We take the first Br atom to be on carbon-1, and so the other Br atom is on carbon-3 going clockwise (or carbon-4 anticlockwise, but we go the way that gives the lowest number). **1,3-dibromocyclohexane**

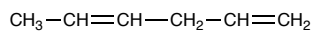
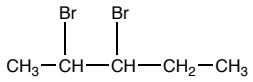
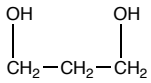
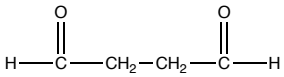
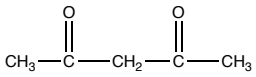
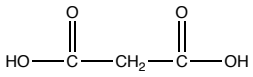
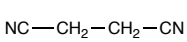
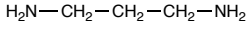
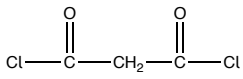
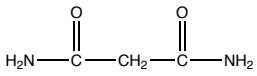
	Displayed formula	Skeletal formula	Name & comments
53			This is a cyclic molecule with 6 C atoms in the ring, and so is *cyclohex*. There is a ketone functional group. It does not need a number as it is the only group on the ring. **cyclohexanone**

	Displayed formula	Skeletal formula	Name
54			**1,1-dimethylcyclobutane**

	Displayed formula	Skeletal formula	Name
55			**cyclohexanol**

COMPOUNDS WITH SEVERAL FUNCTIONAL GROUPS

a) More than one of the same functional group

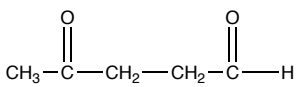
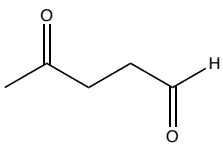
	Structural formula	Name
alkenes		hexa-1,4-diene
halogenoalkanes		2,3-dibromopentane
alcohols		propane-1,3-diol
aldehydes		butanedial
ketones		pentane-2,4-dione
carboxylic acids		propanedioic acid
nitrile		butanedinitrile
amine		propane-1,3-diamine
acyl chloride		propanedioyl dichloride
amide		propanediamide

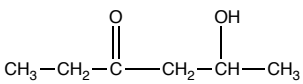
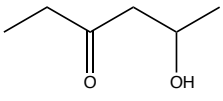
b) Different functional groups

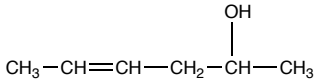
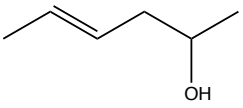
- In terms of numbering the chain, there is an order of priorities with the highest priority groups taking the lowest number – you are not generally expected to know this order as an A level student, but it is useful to be aware of it – some common groups are shown here:

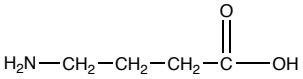
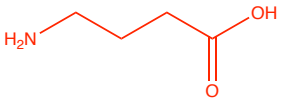
  carboxylic acid > nitrile > aldehyde > ketone > alcohol > amine > alkene > halogenoalkane

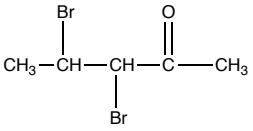
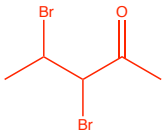
- If there are two groups that have suffixes, then the lower priority group becomes a prefix.

	Structural formula	Skeletal structure	Name & comments
56			This has an aldehyde group and a ketone group. The aldehyde group takes priority and so is carbon-1. The ketone group is therefore carbon-4 and will be the prefix *4-oxo* **4-oxopentanal**

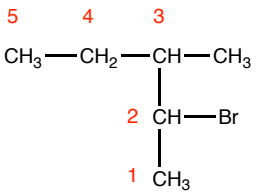
	Structural formula	Skeletal structure	Name & comments
57			This has a ketone group and an alcohol group. The ketone group takes priority and so is carbon-3. The alcohol group is therefore carbon-5 and will be the prefix *5-hydroxy* **5-hydroxypentan-3-one**

	Structural formula	Skeletal structure	Name & comments
58			This has an alkene group and an alcohol group. The alcohol group takes priority and so is carbon-2 with suffix *-2-ol*. The alkene group is therefore carbon-4. **hex-4-en-2-ol**

	Structural formula	Skeletal structure	Name
59			**4-aminobutanoic acid**

	Structural formula	Skeletal structure	Name
60			**3,4-dibromopentan-2-one**

Some more examples for extra guidance

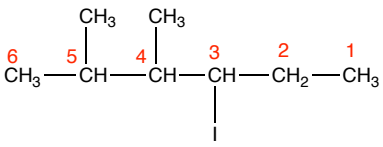


2-bromo-3-methylpentane

In this molecule, the longest C chain that contains the functional group has 5 C atoms (and so the name has *pent* in it.)

In order to give the functional group (bromo, Br) the lowest number, the C chain is numbered from the end shown. This makes it *2-bromo* rather than *4-bromo*.

There is also a methyl group on carbon-3 making it *3-methyl*. When writing the name, we put the *2-bromo* before the *3-methyl* the as *b* comes before *m* in the alphabet.



3-iodo-4,5-dimethylhexane

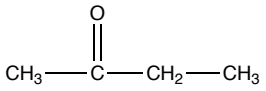
In this molecule, the longest C chain that contains the functional group has 6 C atoms (and so the name has *hex* in it.)

In order to give the functional group (iodo, I) the lowest number, the C chain is numbered from the right hand end. This makes it *3-iodo* rather than *4-iodo*.

There are also two methyl groups, on carbon-4 and carbon-5, making it *4,5-dimethyl*.

When writing the name, we put the *3-iodo* before the *4,5-dimethyl* the as *i* comes before *m* in the alphabet (we ignore the di in the dimethyl when doing this).

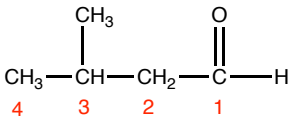
Note that the we would get a lower set of numbers if this was numbered from the other end, but we have to number the C chain to give the functional group the lowest number(s), and the only functional group here is the iodo group (methyl and any other alkyl groups are not functional groups).



butanone

In this molecule, the longest C chain that contains the functional group has 4 C atoms (and so the name has *but* in it.)

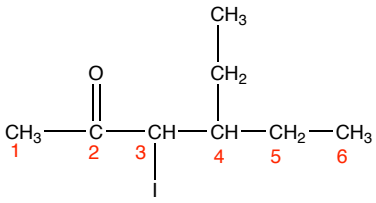
There is a ketone group (C=O) and so it has *-one* at the end. No number is needed for the ketone group because it can only be on one of the two central C atoms (otherwise it would be an aldehyde and not a ketone) and whichever of the two central C atoms it is, it would be carbon-2 and so no number is necessary.



3-methylbutanal

In this molecule, the longest C chain that contains the functional group has 4 C atoms (and so the name has *but* in it.)

The aldehyde group (CHO) is by definition carbon-1 and so the name has *al* at the end (note that no number is needed as the C in an aldehyde is on carbon-1 by definition). This means that the methyl group is on carbon-3 and is *3-methyl*.



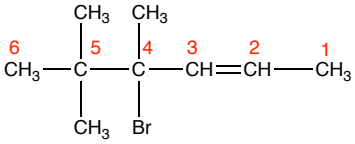
4-ethyl-3-iodohexan-2-one

In this molecule, the longest C chain that contains the functional group has 6 C atoms (and so the name has hex in it.)

There are two functional group (C=O and I). We number it from the end to give the ketone group the lowest number (as ketone groups have higher priority than halo groups). Therefore we number it from the left making it *2-one* and *3-iodo*.

There is also one ethyl group on carbon-4, making it *4-ethyl*.

When writing the name, we put the *4-ethyl* before the *3-iodo* the as *e* comes before *i* in the alphabet.



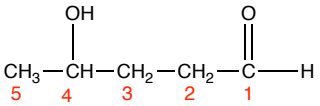
4-bromo-4,5,5-trimethylhex-2-ene

In this molecule, the longest C chain that contains the functional group has 6 C atoms (and so the name has *hex* in it.)

There are two functional group (alkene C=C and bromo Br). We number it from the end to give the alkene group the lowest number (as alkene groups have higher priority than halo groups). Therefore we number it from the right making it *2-ene* and *4-bromo*.

There are also three methyl groups, two on carbon-5 and one on carbon-4, making it *4,5,5-trimethyl*.

When writing the name, we put the *4-bromo* before the *4,5,5-trimethyl* the as *b* comes before *m* (ignore the tri) in the alphabet.



4-hydroxypentanal

In this molecule, the longest C chain that contains the functional group has 5 C atoms (and so the name has *pent* in it.)

There are two functional groups (alcohol OH and aldehyde CHO). By definition, the aldehyde group is carbon-1 and so the alcohol group is carbon-4. (and aldehyde groups are higher priority than alcohol groups anyway)

Usually, these functional groups both are written as endings (ol and al). The aldehyde group is higher priority and so we use *al*, and so we use the prefix *4-hydroxy* for the alcohol.