1.		
	$HO - CH_2 - CH_3 - CH$	$Cl \\ CH_3 - CH - CH - CH_3 \\ Cl$
	$CH_{3}-C-CH-CH_{2}-CH_{2}-CH_{3}$	$\begin{array}{c} CH_2 - CH - CH_2 \\ \downarrow \\ OH \\ OH \\ OH \\ OH \\ OH \end{array}$
	O H-C ^{(//} H	$Br \\ CH_3 - C = C - CH_2 - CH_3 \\ Br \\ Br$
	$\begin{bmatrix} O & O \\ HO & C - CH - CH_2 - CH_2$	CH_{3} $CH_{3} - CH_{2} - CH_{2} - CH_{2} - CH_{3}$
	$CH_3 - CH_2 - NH_2$	$CH_3 - CH_2 - C_{O^- Na^+}^{//}$

2.

a) 5 methyl heptanal	(2 marks)	d) N, N dimethyl ethanamine	(3 marks)
b) N ethyl 2-butanamine	(3 marks)	e) sodium butanoate	(2 marks)
c) propyl propanoate	(2 marks)	f) N,5 dimethyl N ethyl 2-hexanamine	(4 marks)

3. By boiling. Hexane has a lower boiling point than decane, because it has a shorter carbon chain and therefore is not as strongly held by dispersion forces.

4.

- a) The compounds have the same molecular formula (the same number of each element)
- b) Boiling point. Isomeric acids have higher boiling points than isomeric esters because they have the OH bond that ester's don't. This allows them to exhibit hydrogen bonding, which is a strong secondary interaction.
- 5. Ethanoic acid has a carboxyl group which means it has a C=O bond as well as the OH bond which propan-1-ol has. This means there are more sites for hydrogen bonding, which means forces between molecules is higher, hence higher m. pt. and b. pt.