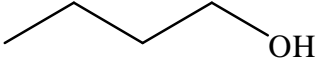
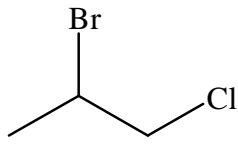
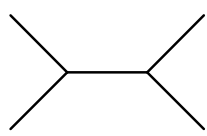
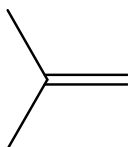
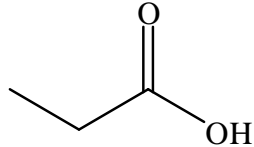
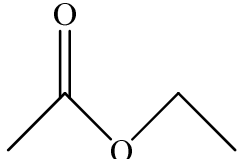
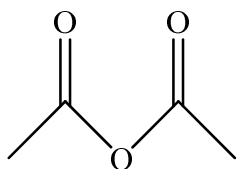
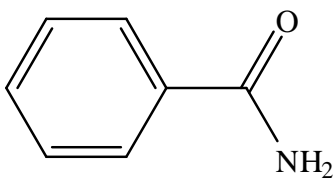




*Answers to Problem Sheet 1*

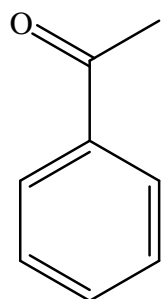
1.

Compound	Condensed structural formula	Stick representation
$\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$	$\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{OH}$	 <b>butan-1-ol</b>
$\text{CH}_3\text{CHBrCH}_2\text{Cl}$	$\begin{array}{c} \text{Br} \\   \\ \text{CH}_3-\text{CH}-\text{CH}_2-\text{Cl} \end{array}$	 <b>2-bromo-1-chloropropane</b>
$(\text{CH}_3)_2\text{CHCH}(\text{CH}_3)_2$	$\begin{array}{ccc} \text{H}_3\text{C} & & \text{CH}_3 \\ & \diagdown & / \\ & \text{CH}-\text{CH} & \\ & / & \diagdown \\ \text{H}_3\text{C} & & \text{CH}_3 \end{array}$	 <b>2,3-dimethylbutane</b>
$(\text{CH}_3)_2\text{CCH}_2$	$\begin{array}{c} \text{H}_3\text{C} \\ \diagdown \\ \text{C}=\text{CH}_2 \\ / \\ \text{H}_3\text{C} \end{array}$	 <b>2-methylprop-1-ene</b>
$\text{CH}_3\text{CH}_2\text{COOH}$	$\begin{array}{c} \text{O} \\    \\ \text{CH}_3-\text{CH}_2-\text{C}-\text{OH} \end{array}$	 <b>propionic acid</b>
$\text{CH}_3\text{COOCH}_2\text{CH}_3$	$\begin{array}{c} \text{O} \\    \\ \text{CH}_3-\text{C}-\text{O}-\text{CH}_2-\text{CH}_3 \end{array}$	 <b>ethyl ethanoate (a.k.a. ethyl acetate)</b>

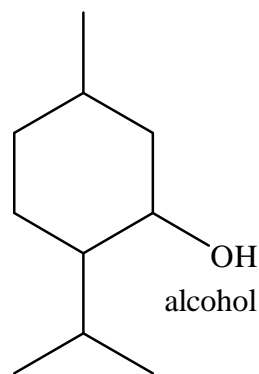
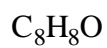
$\text{CH}_3\text{COOCOCH}_3$	$\text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{O}-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$	 <b>ethanoic anhydride</b> <b>(a.k.a. acetic anhydride)</b>
benzamide ( $\text{C}_6\text{H}_5\text{CONH}_2$ )	$\text{C}_6\text{H}_5-\overset{\text{O}}{\parallel}{\text{C}}-\text{NH}_2$	 <b>benzamide</b>

2.

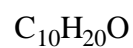
ketone



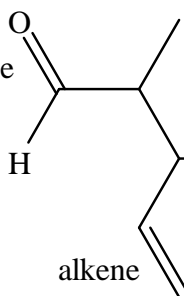
aromatic ring



alcohol



aldehyde

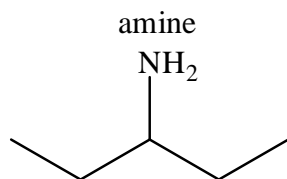
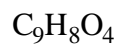
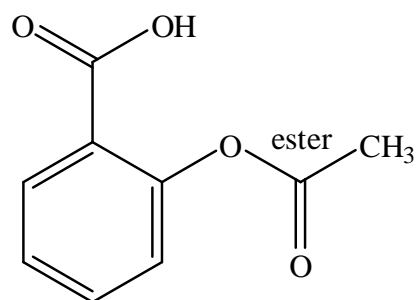


alkyl chloride

alkene

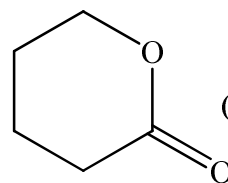
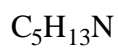


carboxylic acid

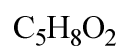


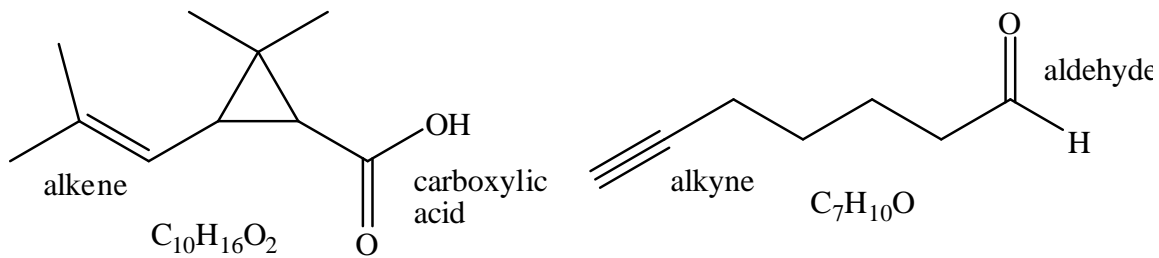
amine

$\text{NH}_2$



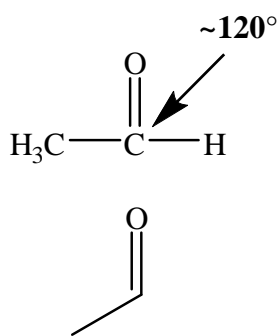
cyclic ester  
(a.k.a. lactone)



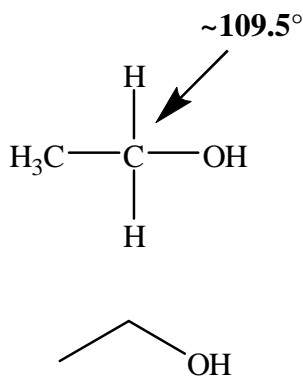


3.

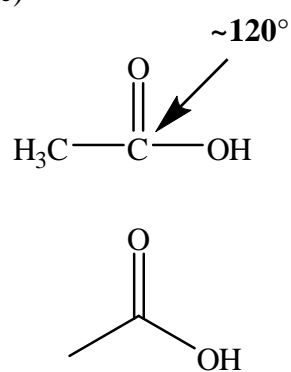
(a)



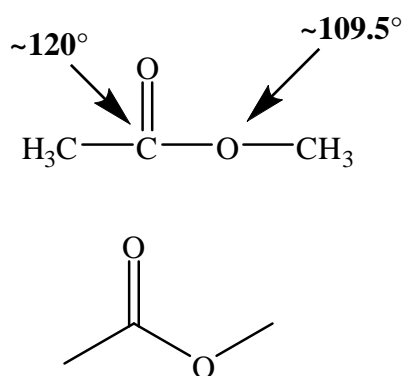
(b)



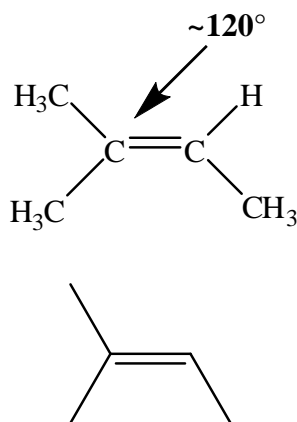
(c)



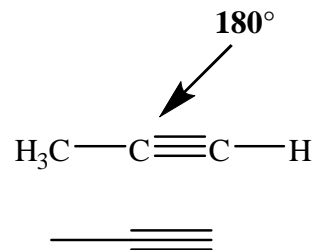
(d)



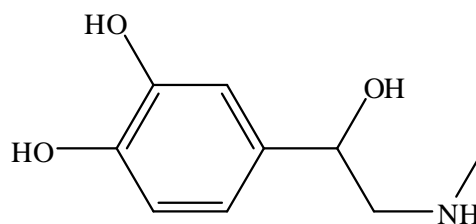
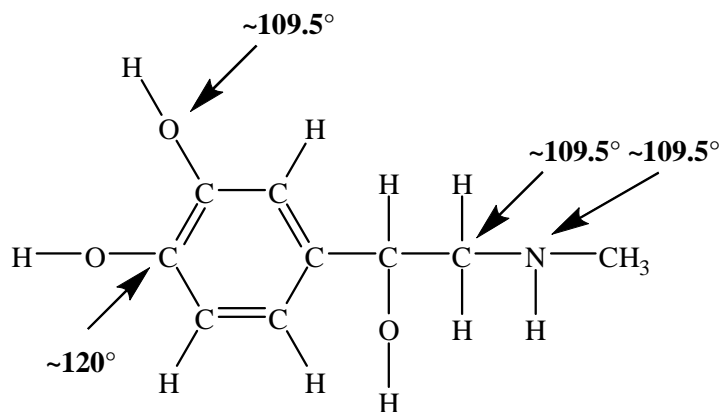
(e)



(f)

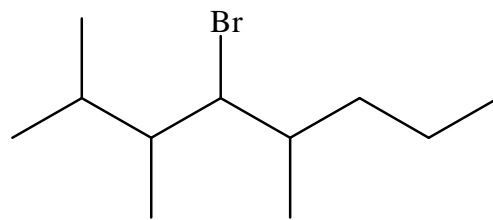


(g)

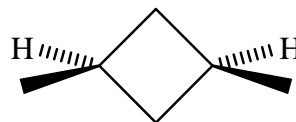


4.

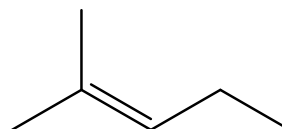
(a) 4-bromo-2,3,5-trimethyloctane



(b) *cis*-1,3-dimethylcyclobutane



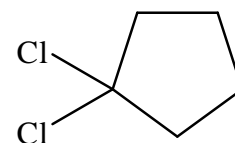
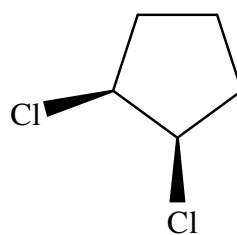
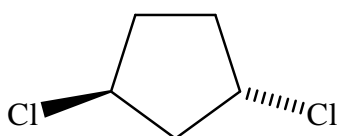
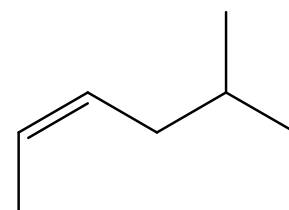
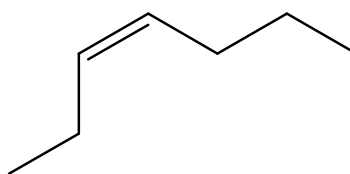
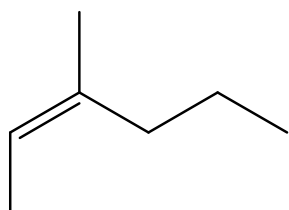
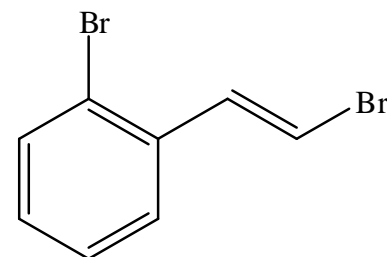
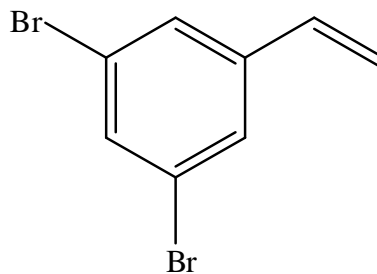
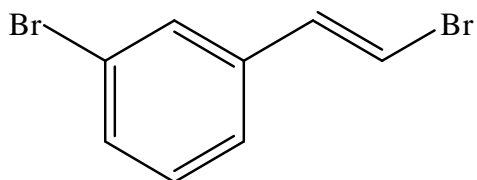
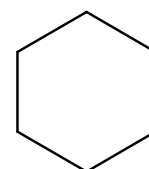
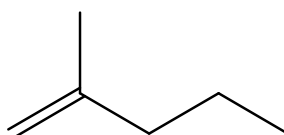
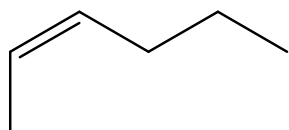
(c) 2-methyl-2-pentene



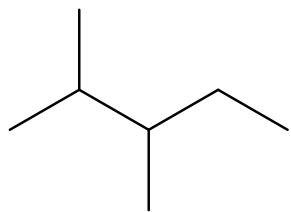
5.

**stereoisomers**

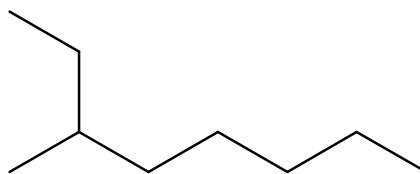
**constitutional isomers**



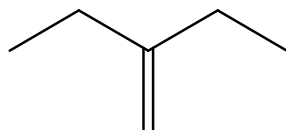
6.



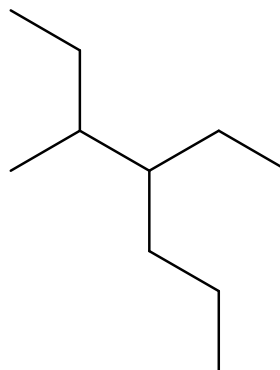
**2,3-dimethylpentane**



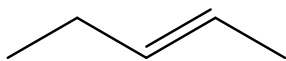
**3-methyloctane**



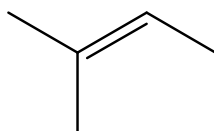
**2-ethylbutene**



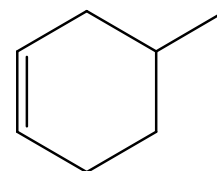
**4-ethyl-3-methylheptane**



**(E)-pent-2-ene**



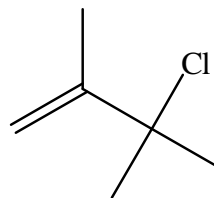
**2-methyl-2-butene**



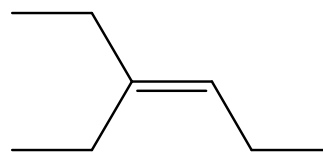
**(Z)-4-methylcyclohex-1-ene**

7.

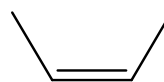
(a) 3-chloro-2,3-dimethyl-1-butene



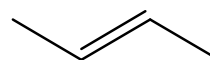
(b) 3-ethyl-3-hexene



(c) (Z)-2-butene



(d) (E)-2-butene



(e) (Z)-2-methyl-3-hexene

