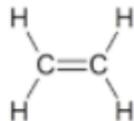


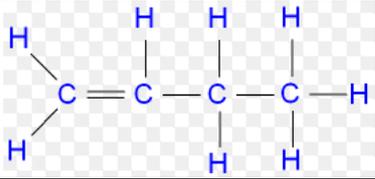
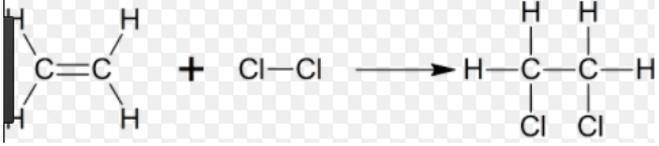
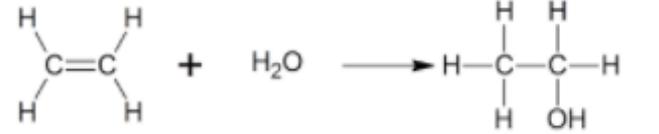
C1 Topic 6 Crude Oil and Polymers REVISION Triple

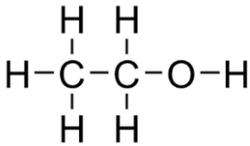
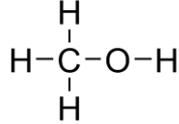
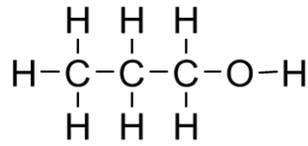
Crude Oil and Fractional Distillation	
1. What is crude oil?	A mixture of hydrocarbons
2. How was crude oil formed?	The remains of an ancient biomass, consisting mainly of plankton, was buried in mud.
3. What is a hydrocarbon?	Made of hydrogen and carbon only
4. How do we separate crude oil?	Fractional distillation
5. What are the fractions used for?	Fuels and feedstock
6. State some products of crude oil	Petrol, diesel oil, kerosene, heavy fuel oil and liquefied petroleum gases, solvents, lubricants, polymers, detergents.
7. How does fractional distillation work?	It is heated and vaporised/evaporates The vapours rise and cool down so they condense
8. What property of the compounds that make up crude oil makes them separate	The have different boiling points
Alkanes	
9. What is the general formula for an alkane?	C_nH_{2n+2}
10. Name the first 4 members of the alkane homologous series	Methane, ethane, propane butane
11. Draw C_2H_6	<pre> H H H — C — C — H H H</pre>
12. Draw CH_4	<pre> H H — C — H H</pre>
13. What happens to flammability (how easily it will burn) as alkanes get longer?	Decrease
14. What happens to the boiling point as alkanes get longer?	Increase
15. What happens to the viscosity (how runny it is) as alkanes get longer?	Increase
16. Are alkanes saturated or unsaturated?	Saturated

17. What is the word equation for the complete combustion of ethane?	Ethane + oxygen → carbon dioxide + water
18. What is the symbol equation for the complete combustion of ethane?	$C_2H_6 + 3.5O_2 \rightarrow 2CO_2 + 3H_2O$

Cracking and testing for alkenes (and general alkenes)	
19. Why do we crack long chain hydrocarbons?	To produce smaller, more useful hydrocarbons
20. What are the products of cracking?	Alkanes and alkenes
21. What conditions do we need for cracking?	Heating and passing the vapour over a hot catalyst or mixing with steam and heating
22. What is the test for alkenes and what is its result?	React with bromine water. It turns it from orange to colourless
23. Are alkenes saturated or unsaturated?	Unsaturated
24. What is the general formula for an alkene?	C_nH_{2n}
25. What can alkenes be used for?	To make polymers
26. Balance the symbol equation for the following cracking reaction (Skill)	$C_{20}H_{42} \rightarrow C_8H_{18} + 2C_6H_{12}$

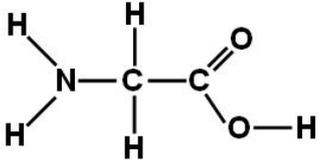
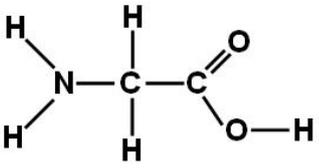
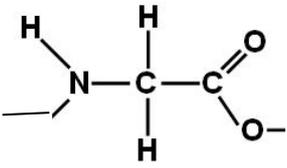
Triple content - alkenes	
27. Why are alkenes described as unsaturated?	They have a double C=C bond and have 2 fewer hydrogens than alkanes
28. What are the first four members of the homologous series of alkenes?	Ethene, propene, butene and pentene.
29. What is the functional group in an alkene?	C=C
30. Draw ethene	

31. Draw butene	
32. How do alkenes normally react with oxygen?	They tend to burn in air with smoky flames because of incomplete combustion.
33. State 3 molecules alkenes can react with	hydrogen, water and the halogens
34. State the conditions needed for hydrogenation of an alkene	Ni catalyst, 60°C
35. State the conditions needed for hydration of an alkene	Add steam with a catalyst
36. Complete the diagram	
37. Complete the diagram	

Triple content - alcohols	
38. What is the functional group in an alcohol?	OH
39. What are the first 4 members of the alcohol homologous series?	Methanol, ethanol, propanol and butanol
40. Write the structural formula of propanol	CH ₃ CH ₂ OH
41. Draw the displayed formula of ethanol	
42. Give the displayed formula of methanol	
43. Give the displayed formula of propanol	

58. What is the functional group of an ester	-COO-
59. What ester is made from ethanoic acid and ethanol?	Ethyl ethanoate
60. What are esters used for?	Perfumes and flavourings
61. How can you tell you have made an ester?	It has a distinctive smell
62. Esters are volatile, what does this mean?	They have a low boiling point
63. Draw the displayed formula of ethyl ethanoate	$ \begin{array}{ccccccc} & \text{H} & \text{O} & & \text{H} & \text{H} & \\ & & & & & & \\ \text{H} & - \text{C} & - \text{C} & - \text{O} & - \text{C} & - \text{C} & - \text{H} \\ & & & & & & \\ & \text{H} & & & \text{H} & \text{H} & \end{array} $

Triple content – polymers	
64. Which polymer does ethane make?	polyethene
65. Which type of polymerisation do alkenes undergo?	Addition polymerisation
66. How do polymers form?	Monomers add together to make a chain
67. Draw the polymer made from ethene	$ \left(\begin{array}{cc} \text{H} & \text{H} \\ & \\ -\text{C} & - \text{C}- \\ & \\ \text{H} & \text{H} \end{array} \right)_n $
68. Draw the polymer made from propene	$ \left(\begin{array}{cc} \text{CH}_3 & \text{H} \\ & \\ -\text{C} & - \text{C}- \\ & \\ \text{H} & \text{H} \end{array} \right)_n $
HIGHER TIER ONLY	
69. What is condensation polymerisation?	When these types of monomers react they join together, usually losing small molecules such as water.
70. What sort of monomers are needed?	Monomers with two functional groups.

<p>71. What is this?</p> 	<p>An amino acid</p>
<p>72. What sort of polymers do amino acids form?</p>	<p>polypeptides</p>
<p>73. Draw the polymer made from</p> 	
<p>74. What are proteins made from?</p>	<p>Different amino acids combined in a chain</p>
<p>75. What does DNA stand for?</p>	<p>deoxyribonucleic acid</p>
<p>76. What is DNA?</p>	<p>A large molecule essential for life.</p>
<p>77. What information does DNA hold?</p>	<p>genetic instructions</p>
<p>78. Describe the structure of DNA</p>	<p>Most DNA molecules are two polymer chains, made from four different monomers called nucleotides, in the form of a double helix.</p>
<p>79. Name some other naturally occurring polymers important for life.</p>	<p>Proteins, starch and cellulose</p>