

Review C1.4 Crude oil and fuels

<i>Can you...?</i>	😊	😐	😞
C1.4.1 Crude oil			
State that crude oil is derived from an ancient biomass found in rocks			
Describe crude oil as a mixture of a very large number of compounds			
Define the term 'mixture' in terms of elements or compounds, and state that the chemical properties of each substance in the mixture are unchanged			
Recognise that most of the compounds in crude oil consist of molecules made up of hydrogen and carbon atoms only, called hydrocarbons			
Use the term 'saturated hydrocarbons' to describe alkanes, which have the general formula C_nH_{2n+2}			
C1.4.2 Hydrocarbons			
Identify and name methane, ethane and propane			
Represent alkane molecules in the following forms			
<p style="text-align: center;"> $\begin{array}{c} \text{H} \quad \text{H} \\ \quad \\ \text{H} - \text{C} - \text{C} - \text{H} \\ \quad \\ \text{H} \quad \text{H} \end{array}$ </p> <p><i>For example, ethane:</i> C_2H_6</p>			
Explain the process of fractional distillation of crude oil in terms of evaporation and condensation at different temperatures in a continuous process			
Describe the difference between the fractions, in terms of molecules with similar numbers of carbon atoms			
Compare the properties of hydrocarbons, and explain how the size of the molecules affect their boiling points, viscosity and flammability			
C1.4.3 Hydrocarbon fuels			
Relate the products of combustion of fuels to the elements present in their compounds (e.g. all fuels contain carbon, which reacts with oxygen when the fuel burns to produce carbon dioxide) and identify the gases released into the atmosphere when fuels burn			
State that burning fuels may also produce oxides of nitrogen at very high temperatures, and that solid particles (particulates, or 'soot') may also be released into the atmosphere			
Evaluate the impact on the environment of burning hydrocarbon fuels			
Describe combustion as a chemical reaction with oxygen that releases energy, and state that carbon and hydrogen in fuels are oxidised during combustion			
Describe the environmental impacts of sulphur dioxide (acid rain), oxides of nitrogen (acid rain), carbon dioxide (global warming) and solid particles (global dimming)			
Consider and evaluate the social, economic and environmental impacts of the uses of different fuels (you may be given information about fuels to compare)			
Compare different ways of reducing sulphur dioxide emissions (by removing sulphur from fuels before burning, or removing sulphur dioxide from waste gases)			
Define 'biofuels' and state two examples of biofuels made from plants			
Evaluate developments in the production and uses of better fuels, for example ethanol and hydrogen, in terms of: use of renewable resources; storage and use of the fuels; the products of combustion of the fuels			
Evaluate the benefits, drawbacks and risks of using plant materials to produce fuels			