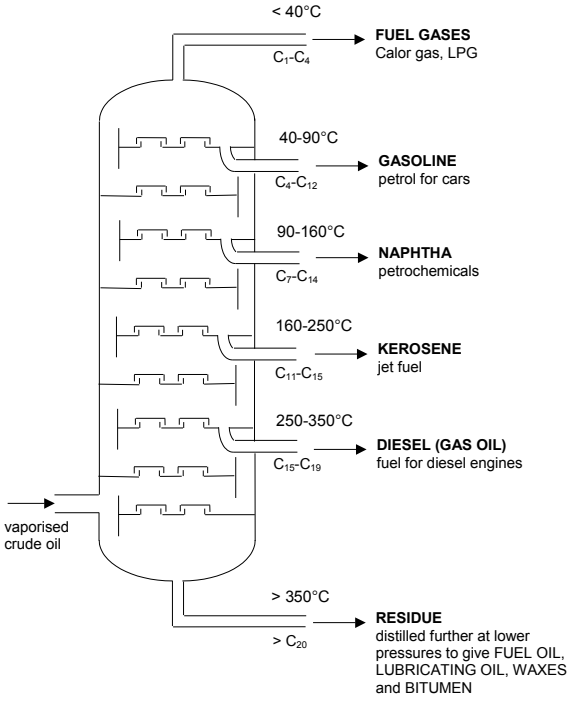
FRACTIONAL DISTILLATION OF CRUDE OIL

What is crude oil?	• a mixture of hydrocarbons • hydrocarbons are compounds that contain hydrogen and carbon only
How is it separated? How does this work?  	• fractional distillation • oil is vaporised by heating • passed into tower/column that is hotter at bottom than top • hydrocarbons cool and condense as they rise • as they have different boiling points • the smaller the molecule, the higher up the tower/column they reach
Are the fractions pure substances or mixtures? How can you tell?	• a mixture • the fraction boils over a range of temperatures rather than one specific temperature
How does the size of the hydrocarbons affect its properties	

	Small hydrocarbons		Big hydrocarbons
Boiling points	low	→	high
Flammability	catch fire easily	→	hard to ignite
Cleanliness of flame	clean	→	smoky
Viscosity	runny	→	viscous

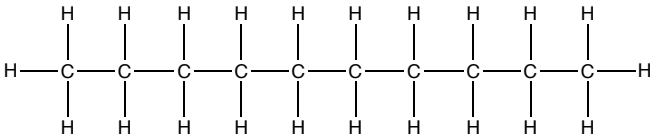
1) Crude oil is a mixture of hydrocarbons. What are hydrocarbons.

compounds that contain hydrogen and carbon only

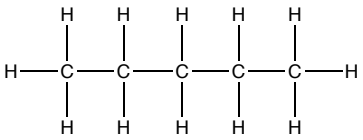
2) The hydrocarbons in crude oil have different properties. Which of these properties does separation by fractional distillation depend on?

different boiling points

3) Two of the hydrocarbons in crude oil are decane and pentane.



decane



pentane

Which of these molecules

a) has the higher boiling point? decane

b) is more runny? pentane

c) catches fire more easily? pentane

d) burns with the smokier flame? decane

e) collects higher up the fractionating column? pentane

4) Kerosene is a fraction of crude oil used as fuel for aeroplanes. Is kerosene a pure substance or a mixture? Explain your answer.

a mixture as the fraction boils over a range of temperatures rather than one specific temperature