











CC16 Fuels




CC16a Hydrocarbons in crude oil and natural gas

| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
|---|--|--------------------------|--------------------------|--------------------------|
|  4 th | Recall the meaning of the term hydrocarbon. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  6 th | Describe the compounds found in crude oil. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  5 th | Describe the importance of crude oil for the petrochemical industry. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  6 th | Explain why crude oil is a finite resource. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  4 th | Recall the names of some common fossil fuels. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |





CC16b Fractional distillation of crude oil

| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
|---|---|--------------------------|--------------------------|--------------------------|
|  7 th | Describe how crude oil is separated by fractional distillation. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  8 th | Explain how fractional distillation of crude oil works. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  6 th | Recall the names and uses of fractions from crude oil. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  8 th | Describe how fractions differ from each other. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  8 th | Explain why the properties of different fractions differ. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |





CC16c The alkane homologous series

| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
|---|---|--------------------------|--------------------------|--------------------------|
|  6 th | Describe that oil fractions mostly contain alkanes. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  7 th | Describe the main features of an homologous series. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  8 th | Explain why alkanes form an homologous series. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |





CC16d Complete and incomplete combustion

| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
|---|---|--------------------------|--------------------------|--------------------------|
|  | Describe the complete combustion of hydrocarbon fuels. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  | Explain the production of harmful products during the incomplete combustion of hydrocarbon fuels. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  | Explain why carbon monoxide is toxic. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  | Describe the problems caused by incomplete combustion. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

CC16e Combustible fuels and pollution





| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
|---|---|--------------------------|--------------------------|--------------------------|
|  | Explain how some hydrocarbon fuels produce sulfur dioxide in use. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  | Recall the names of the pollutants responsible for acid rain. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  | Describe some effects of acid rain. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  | Explain why oxides of nitrogen are produced when fuels are burned in engines. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

CC16f Breaking down hydrocarbons




| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
|---|--|--------------------------|--------------------------|--------------------------|
|  | Evaluate hydrogen as an alternative fuel to petrol for cars. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  | Describe what happens during cracking. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  | Explain why alkanes are saturated and alkenes are unsaturated. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  | Explain why cracking is necessary. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

CC17 Earth and Atmospheric Science (Paper 4)






CC17a The early atmosphere

| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
|---|--|--------------------------|--------------------------|--------------------------|
|  5 th | Describe how the Earth's early atmosphere was formed. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  5 th | State the names and relative amounts of the gases found in the Earth's early atmosphere. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  7 th | Draw conclusions from evidence about the Earth's early atmosphere. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  6 th | Explain how the oceans are thought to have formed. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |






CC17b The changing atmosphere

| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
|---|--|--------------------------|--------------------------|--------------------------|
|  7 th | Describe how the formation of the oceans influenced the composition of the atmosphere. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  7 th | Explain how photosynthetic organisms (including plants) changed the composition of the atmosphere. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  5 th | State the chemical test for oxygen. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

CC17c The atmosphere today

| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
|--|---|--------------------------|--------------------------|--------------------------|
|  5 th | Recall the names of significant greenhouse gases. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  7 th | Describe the processes involved in the greenhouse effect. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  6 th | Describe how human activity increases the concentration of greenhouse gases. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  10 th | Evaluate the correlation between atmospheric carbon dioxide concentrations and fossil fuel use. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  10 th | Evaluate the evidence for increased atmospheric greenhouse gas concentrations being part of the cause of global warming and climate change. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

CC17d Climate change

| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
|---|--|--------------------------|--------------------------|--------------------------|
|  6 th | Suggest possible effects on the climate of increased levels of carbon dioxide and methane. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  6 th | Describe how human activity leads to increased carbon dioxide levels. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  6 th | Describe how human activity leads to increased methane levels. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  6 th | Describe the projected effects of climate change. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|  7 th | Describe how the potential harmful effects of climate change can be addressed and limited. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |