KS3 Chemistry – Planet Earth – Learning Objectives

	Beginning	Developing	Secure	Embedding	Extending	Excelling
Structure Of The Earth	Explain the difference between a rock and a mineral.	Use an identification key to compare the features of different rocks. Name the layers that make up the Earth.	Describe the common features of igneous, sedimentary and metamorphic rocks, and name some examples of each. Describe the layers that make up the Earth, and name the most common elements found in the crust. Describe continental drift, and use it to explain how similar rocks may be found in different continents.		Explain how the tectonic activity of the Earth's plates cause earthquakes and volcanoes.	
The Rock Cycle	-	Explain, in simple terms, how rocks may be formed. Recognise the similarities between rocks of different types formed of the same compounds (eg. limestone and marble).	Describe the stages in the rock cycle to show how one rock type can be used to form another. Link the size of the crystals formed in igneous rocks to the rate at which the rock cools. Describe how the size of particles in a sedimentary rock varies depending on where the rock is formed. Explain how fossils are formed.		Describe the information and evidence that geologists used to estimate the age of a rock.	Show an understanding of the limestone cycle.
Weathering and Erosion	-	Describe the consequences that could result from weathering and erosion.	Explain how rocks can be broken or degraded by acid rain, plant roots, exfoliation, freeze-thaw weathering and erosion.	Link the weathering processes to areas of science previously studied (eg. acids, thermal expansion). Discuss how the landscape may change over a long period of time as a result of erosion, and how the weathering processes can lead the formation of new rocks.		-
Fossil Fuels and Pollution	Name the three fossil fuels, and explain how they are formed and extracted. Recall that fossil fuels are non-renewable sources of energy, and explain what this means.	Form word equations for the complete and incomplete combustion of fossil fuels. Recall that acid rain results from the emission of SO_2 and NO_x, and that CO_2 emissions lead to global warming.	Explain the greenhouse effect, in terms of solar energy entering and leaving our atmosphere, and how this can lead to global warming. Explain how and where sulfur dioxide and oxides of nitrogen are created, form acid rain, and how these emissions can be controlled. Discuss the consequences of our emissions, how they may be measured, and how they may be reduced.		Construct balanced symbol equations for the complete and incomplete combustion of hydrocarbons. Discuss how CFCs used to be used, and the consequences on their effect on the ozone layer. Discuss some of the other uses for crude oil (besides as an energy source).	
Energy Resources	Explain the differences between renewable and non-renewable sources.	Give an overview of each non-renewable and renewable energy source, explaining how it is used, where it may be used, and the economic, environmental and social advantages and disadvantages of each.			Compare the similarities and differences, advantages and disadvantages of different energy resources, in order to recommend the most suitable source for a given context. Discuss case studies in which various renewable energy sources have been used successfully.	

** Objectives covering more than one grade are assessed based on the level of scientific detail and language used by the learner.*