Big ideas	Developing	Securing	Flourishing	Excelling
Genes 2	Identify some causes of extinction. Give a basic description of the theory of evolution by natural selection. Know how DNA and human characteristics are linked.	Outline how fossils can be formed. Know who developed the theory of natural selection and outline the key features. Describe some features of DNA. Know how to use a genetic diagrams to show how characteristics are inherited.	Describe the different ways that fossils can be formed and how they were used to develop the theory of evolution by natural selection. Outline the structure of DNA. Complete genetic diagrams to show how characteristics are inherited.	Explain why the fossil record is incomplete. Explain how, and when, the theory of evolution by natural selection was developed. Explain how the structure of DNA was discovered. Explain how characteristics are inherited by producing a genetic diagram.
Earth 2	Identify some of the gases in the atmosphere. Know that the natural greenhouse effect is important. Know that resource are running out and recycling can reduce the need to extract resources.	Identify the main gases in the atmosphere and know the proportions of each. Explain why the natural greenhouse effect supports life. Explain why more reactive metals are harder to extract and the methods used to extract them	Describe the reason we need an atmosphere and how damage is caused to the ozone layer. Explain why the enhanced greenhouse affect leads to global climate change. Explain why recycling of some materials is particularly important. Describe how Earth's resources are turned into useful materials or recycled.	Describe how we can protect the atmosphere from further damage. Know the indirect impacts of the enhanced greenhouse effect and global climate change on habitats and ecosystems. Justify the choice of extraction method for a metal, given data about reactivity. Suggest factors to take into account when deciding whether extraction of a metal is practical.
Waves 2	Deduce whether a surface is going to reflect light or not. Identify the difference between reflection and refraction from ray diagrams. Label most features of the human eye.	Describe properties that make a good reflective surface. Describe the differences between a reflective and refractive telescopes. Label all features of a human eye.	Predict the pathway light travels according to the law of reflection. Explain how the shape of a lens affects the nature of the refraction. Explain how the features of a human eye allow for images to be formed.	Apply understanding of lenses and refraction to explain how corrective lenses are used differently for short- and long-sighted vision. Compare and contrast features and image generation of a human eye with a digital camera.
Energy 2	Understand the concept of work. Understand the terms thermal energy and temperature Understand the three pathways of transferring thermal energy: conduction, convection and Radiation	Describe energy transfers involving work. Describe how changing the temperature changes the thermal energy store. Describe the differences between conduction, convection and radiation.	Describe how simple machines can be used to reduce the force needed for tasks. Predict which object has a greater thermal energy store. Explain why different objects transfer thermal energy faster through different pathways.	Apply the concept of work to explain how simple machines reduce the force needed for a task. Explain why increasing the temperature of an object increases the thermal energy store Analyse the effectiveness of different types of insulation

Forces 2	Describe the difference between contact and non-contact forces and be able to name examples of them. Understand what causes pressure and upthrust.	use an equation to calculate pressure using force and area. Know the units for measuring pressure. Explain how objects can be modified to make them more streamlined.	Calculate turning moments. Describe and explain three things that can be done to increases the gas pressure in a container. Find the centre of mass/gravity in both regular and irregular objects.	Balance turning moments with various masses at different distances from the pivot. Design an investigation that explores the effects of drag, including the identification of dependent, independent and control variables.