

Curriculum Plan for Academic Year 2022-23:

Science

Kites ARB, Cape Cornwall School

	Autumn Term (A)	Autumn Term (B)	Spring Term (A)	Spring Term (B)	Summer Term (A)	Summer Term (B)
Unit	Sound (Physics)	Motion and Forces (Physics)	Nutrition and Digestion (Biology)	Genetics and Evolution (Biology)	Chemical Reactions (Chemistry)	States of Matter (Chemistry)
Topics	<ul style="list-style-type: none"> • Sound waves • The Human Ear • Ear Damage and Precautions • Music and Sound • Measuring Sound • Ultrasound • Speed of Sound • Sound Systems and Electronics 	<ul style="list-style-type: none"> • Speed, Distance and Time • Using Graphs and Charts • Forces • Measuring Force • Friction • Gravity 	<ul style="list-style-type: none"> • Understanding a healthy diet • Calculating Energy Requirements • Consequences of Poor Health • The Digestive System • Bacteria in the Body • Diseases 	<ul style="list-style-type: none"> • DNA, Genes and Chromosomes • Inheritance • Natural Selection • Environmental Changes • Human Life Cycle • Evolution 	<ul style="list-style-type: none"> • Rearrangement of atoms • Using basic formulae • Combustion • Oxidation • Acids and Alkalis • Using the pH scale • Catalysts 	<ul style="list-style-type: none"> • What is a solid, liquid and a gas. • Materials • Changes of state • Movement of particles
Learning Objectives	<p>To understand that sounds travels in waves.</p> <p>To be able to explain how sound waves are created, how they travel and how they are interpreted.</p> <p>To be able to name basic parts of the human ear.</p> <p>To be able to explain how the human ear takes in sound and converts it into electrical signals which are sent to the brain.</p> <p>To understand some of the dangers that can impact on human hearing and the consequences of ear damage.</p> <p>To understand the relationships between music and sound.</p> <p>To understand how sound is measured. To be able to explain how this relates to sound waves.</p> <p>To understand that sound waves become weaker over a longer distance.</p> <p>To understand how fast sound travels and compare this to other moving things including light.</p> <p>To understand how sound and electricity can be linked together and how certain sound devices function.</p>	<p>To understand the difference between speed, distance and time.</p> <p>To be able to calculate the missing value for speed, distance and time.</p> <p>To be able to create and interpret information using a distance/time graph.</p> <p>To understand what is meant by "force".</p> <p>To be able to name different types of force and to be able to demonstrate examples of pushing and pulling.</p> <p>To understand the units of measurement which are used for force.</p> <p>To be able to complete a practical experiment which looks at measuring and comparing force.</p> <p>To understand what is meant by friction.</p> <p>To be able to give examples of objects and surfaces which might add or remove friction with another object.</p> <p>To understand what is meant by gravity and how this is a force which we can easily observe.</p>	<p>To understand what comprises a healthy and balanced diet as well as that which might comprise a poor diet.</p> <p>To understand how humans take energy from the food and drink that they consume.</p> <p>To understand the consequences relating to poor diet and how this can impact your overall health.</p> <p>To understand how the human digestive system functions and the role that this has in your body.</p> <p>To be able to name some of the key organs which make up the digestive system.</p> <p>To understand the importance of bacteria in the human body and the role this place in our nutrition and digestion.</p> <p>To understand what is meant by the term "disease" and the causes of common diseases.</p> <p>To understand how we can avoid certain diseases and treat existing diseases.</p>	<p>To understand what is meant by DNA, Genes and Chromosomes.</p> <p>To understand that certain characteristics are inherited from person to person.</p> <p>To look at certain characteristics and understand which are dominant and recessive.</p> <p>To understand what is meant by natural selection and how this factors in to evolution of different species.</p> <p>To understand how environmental changes can influence the evolution of species.</p> <p>To understand what is meant by the human life cycle and to be able to understand at which point different people are on the human life cycle.</p> <p>To be able to identify the different characteristics that might be found in someone who is old and someone who is young.</p> <p>To be able to identify and explain these features from photographs.</p> <p>To be able to explain what is meant by evolution and to be able to observe the different stages of human evolution.</p> <p>To be able to explain some of the changes that have taken place over the course of evolution and why they are important.</p>	<p>To understand what is meant by a chemical reaction and what happens during a chemical reaction.</p> <p>To be able to apply basic formulae to a reaction and understand some of the changes that take place.</p> <p>To understand what is meant by combustion and provide examples.</p> <p>To observe changes during combustion and understand that this is an example of an irreversible change.</p> <p>To understand what is meant by oxidation and give examples of oxidation.</p> <p>To understand what is meant by an acid and an alkali.</p> <p>To be able to give examples of different substances and whether they are classified as acidic, alkaline or neutral.</p> <p>To be able to measure acidic/alkaline solutions and record results.</p> <p>To understand how to use the pH scale and how this relates to acids and alkalis.</p> <p>To be able to explain what is meant by a catalyst.</p>	<p>To understand the differences between a solid, liquid and a gas.</p> <p>To be able to demonstrate examples of changes between states of matter.</p> <p>To understand what happens to particles within different states.</p>

Learning Outcomes	<p>Will be able to explain that sounds travel in waves or vibrations which can be measured and are different in appearance depending on the source of the sound.</p> <p>Will understand that sounds travels from its source,</p> <p>Will be able to explain the functions of different parts of the human ear and how the entire thing works as a whole. Will also be able to explain different ways in which human ears can be protected against damage and the consequences of ear damage.</p> <p>Will be able to understand how different sounds produce sound waves which are different in appearance and will be able to link this in with music.</p> <p>Will be able to explain some of the ways that sound is measured and the units of measurement which are used.</p> <p>Will be able to compare the speed of sound with other moving objects and will also understand that light travels faster than sound.</p> <p>Will be able to see and understand how certain devices work, such as microphones, speakers and record players.</p>	<p>Will be able to calculate the missing value using a speed, distance, time equation.</p> <p>Will be able to create and extract information from graphs which show speed and distance as well as undertaking a practical task which can provide data for this task.</p> <p>Will understand what is meant by force and give examples of different types of force.</p> <p>Will be able to demonstrate examples of force in a practical setting and relationships between two or more objects when force is applied.</p> <p>Will be able to explain what is meant by friction and will be able to complete a practical task which focuses on friction with predictions and outcomes.</p> <p>Will be able to explain what is meant by gravity as well as why it exists and some background information relating to its discovery.</p>	<p>Will be able to give examples of a diet which is healthy and one that is not. Will be able to explain some of the reasons behind a diet being healthy or unhealthy.</p> <p>Will be able to explain how humans take energy from their food through nutrition and digestion.</p> <p>Will be able to explain some of the adverse effects that a poor diet and unhealthy lifestyle can have on your body.</p> <p>Will be able to explain how the digestive system works as well as some of the vital organs that comprise the digestive system.</p> <p>Will be able to look at and explore some different types of bacteria which are classed as good and bad.</p> <p>Will understand the importance of certain types of bacteria in the body.</p> <p>Will be able to explain what is meant by disease as well as naming some common diseases and the reasons they occur.</p> <p>Will be able to suggest ways in which diseases can be avoided and how they can be treated.</p>	<p>Will be able to explain what is meant by DNA, genes and chromosomes.</p> <p>Will be able to identify characteristics which are passed down through genetic inheritance.</p> <p>Will understand which of these characteristics are dominant and recessive and to be able to explain what each of these terms mean.</p> <p>Will be able to explain what is meant by natural selection and some of the external influences on evolution.</p> <p>Will be able to identify characteristics found in younger and older people as well as where they fit in on the human life cycle. Will understand some of the stages that people go through as part of the human life cycle and will be able to provide information about some of these stages.</p> <p>Will understand that humans evolved from animals and will be able to name some of the stages and influences that have resulted in humans as they are today.</p>	<p>Students will be able to observe and explain the changes that occur during a chemical reaction. They will be able to explain what is meant by a chemical reaction and everyday circumstance under which chemical reactions happen. Students will have a basic understanding of written formulae.</p> <p>Students will be able to explain what is meant by combustion and oxidation as well as being able to explain some of the changes that take place in both of these processes.</p> <p>Students will understand the differences between acids and alkalis and will be able to name different examples that they might find in everyday life.</p> <p>They will understand how acids and alkalis can be measured and what happens when substances of different pH levels are mixed with each other.</p> <p>Students will be able to explain what is meant by a catalyst and give examples.</p>	<p>Will be able to give everyday examples of solids, liquids and gas and explain the differences between each state.</p> <p>Will understand how states can change and how this affects water.</p> <p>Will understand that certain things have higher or lower boiling or freezing points and the relationship between boiling, freezing and changes in state.</p> <p>Will understand what happens to particles when changes in state occur and explain this using diagrams.</p>	
Key Words	<p>Decibels, Sound, Soundwave, Frequency, Emit, Audible, Audio.</p>	<p>Gravity, Friction, Force, Newtons, Pressure, Speed, Distance, Time, Motion.</p>	<p>Digestion, Disease, Nutrition, Proteins, Carbohydrates, Enzymes, Obesity, Starvation.</p>	<p>Dominant, Recessive, Inheritance, Hereditary, Life Cycle, Natural Selection, Chromosomes, Evolution.</p>	<p>Catalyst, Combustion, Oxidation, Formulae, Acid, Alkali, Neutral, Indicator.</p>	<p>Solid, Liquid, Gas, Freezing, Boiling, Vapour, Particles, State.</p>	
Activities & Practical Tasks	<ul style="list-style-type: none"> • Creating a tin can phone which can carry sound. • Observe a practical demonstration showing the difference between light speed and sound speed. • Looking at different technology and how it uses sound. • End of topic assessment. 	<ul style="list-style-type: none"> • Predictions and Outcomes for various practical experiments. • Creating Charts • End of topic assessment. 	<ul style="list-style-type: none"> • Creating a digestive system model. • End of topic assessment. 	<ul style="list-style-type: none"> • Using photographs to identify characteristics. • End of topic assessment. 	<ul style="list-style-type: none"> • Students will go through the necessary steps to create a universal indicator solution. • End of topic assessment. 	<ul style="list-style-type: none"> • Observing boiling, freezing and melting with water and commenting on the visual changes. • Creating a visual representation of particle movement. 	