Long Term Overview
KS3 Science

	Unit Title	Cells & Organisation	States Of Matter	Energy Changes & Transfers	Reproduction in Animals & Plants	Forces	Atoms and the Periodic table
Year 7	Term	Autumn (a)	Autumn (b)	Spring (a)	Spring (b)	Summer (a)	Summer (b)
	No. Weeks	7 Weeks	8 Weeks	5 Weeks	6 Weeks	6 Weeks	7 Weeks
	What We Will Learn	Students learn about different types of cells and how we can observe them. They look at the different levels of organisation in multicellular organisms and how cells specialise to allow them to function.	Students are introduced to the particle model of matter and the properties of different states. They explore how particles move and how pressure affects them.	Students are introduced to the concepts of energy stores and transfers. They connect these ideas to energy in their food and energy resources. Concluding the unit by looking at renewable and non-renewable resources.	Students learn about reproduction in both animals and plants. They explore how the cells are adapted to allow for successful fertilisation and the structures within the reproductive systems in humans. They also learn about puberty and the changes the body undergoes.	Students continue their study of forces from KS2. They identify contact and non-contact forces and learn how to measure them. They explore the idea of force pairs and also how to reduce the effect of some forces.	Students are introduced to elements and the periodic table. They learn about how they can be bonded to form compounds and how the properties change when they do.
	What We Will Do	Students will carry out simple and engaging experiments, such as using a microscope, to help to build their scientific intrigue and skills. Students will study the structure and behaviour of bacteria, viruses and fungi. Students can then begin to associate this behaviour with diseases and start to understand how bacteria and viruses cause illness and what can be done to treat them. Students will hopefully realise that antibiotics are not necessary for all illnesses.	Students will carry out a range of investigations to separate substances that will include filtering rock salt to leave brine, and then evaporating techniques to leave behind pure salt.	Students will look at the different energy stores that humans use for example: electrical energy or heat energy and then build on their understanding of how we use these stores for our own uses. For example, a dam being used to provide electrical energy for a child`s play station!	Students will also look closely at the reproductive organs of plants and animals so that they can understand how plants produce offspring and how animals have babies. This topic will help them to understand why some animals give birth to live young and why some animals lay eggs instead.	Students will start to understand what happens to objects if they are pulled or pushed. They may start to develop an understanding of gravity and the difference between mass and weight. For example, bathroom scales measure our mass not our weight!	Students will be introduced to atoms and the Periodic Table so that they can gain an appreciation that everything is made up of something and as a young scientist they can then study atoms and which elements to use to make certain compounds. Introduction to the Periodic Table, chances are most students will not have seen one before.
	Skills Learned	• An understanding of how the body functions. How our cells function through healthy lifestyles • To understand what unicellular organisms are and their structure and functions	• An understanding that mixed substances can be made pure, such as drugs and medicines	• To be able to discuss the different energy stores there are how they can be altered used and transferred	• To be able to talk about how babies are made and grown inside a human's body • Understanding how plants reproduction using the process of pollination	• To be able to discuss the different types of forces and the impact they can have	• To be able to discuss patterns and trends displayed in chemical reactions • To be able to predict the name of a compound made from certain elements

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	Unit Title	Health & the Human Body	Chemical Reactions	Electricity & Magnetism	Photosynthesis & Respiration	Earth & The Atmosphere	Space
Year 8	Term	Autumn (a)	Autumn (b)	Spring (a)	Spring (b)	Summer (a)	Summer (b)
	No. Weeks	7 Weeks	8 Weeks	5 Weeks	6 Weeks	6 Weeks	7 Weeks
	What We Will Learn	Students will investigate the three key organ systems in the body. They will explore how they are adapted to their functions and how they ensure we can survive. Students will look at a human skeleton in detail. Drawing on previous knowledge, students explore both communicable and non-communicable diseases. They research how lifestyle factors can affect our health including smoking and drugs and alcohol.	The first part of this unit aims to give pupils an understanding of the particulate nature of matter, the difference in arrangements of particles in solids, liquids and gases based on the particle model, how matter can change from one state to another and the movement of particles in terms of diffusion. The second half of this unit focuses on mixtures, solubility and how mixtures can be separated using a variety of techniques including filtration, evaporation, distillation, and chromatography.	There are many types of force fields around us. In this unit students will explore fields that are responsible for non-contact forces. They will look at how these fields are created and how we can use them to make useful devices such as magnets	Students explore both key biological reactions. They will look at the structure involved, the factors that affect the reactions and the different types of respiration	The Earth's atmosphere is dynamic and forever changing. In this unit we explore the causes of these changes both man-made and natural cycles. We look at the problems caused by increased levels of air pollutants and the requirements of scientists and engineers to develop solutions that help to reduce the impact of human activity.	This topic allows students to build on their knowledge of the universe. They will investigate the solar system in more depth including how gravity is different on different planets, how the moon can affect the earth and why we have seasons and phases of the moon.
	What We Will Do	Students will gain a good understanding of the different types of nutrients that a human body needs and the reasons why we need to eat a balanced diet.	Students will engage in experiments to predict and discover what happens to metals when they react with fire, water, and acids. They will have a go at burning metals, as an example of combustion, to observe and record what happens	Students design and build circuits will a selection of components, such as a bulb, motor, or switch. They will look at force fields and electromagnets. They will identify resistance in circuits, static electricity, the formation of force fields and electromagnets.	Students will explore respiration in plants and the conditions necessary for the process to take place. Students will also study the process of gas exchange.	Students will learn about the different categories of rocks, how they are formed and categorised. Introduction to Space, luminous objects, the solar system, and space travel. They will identify the composition and structure of Earth and focus on the carbon cycle and investigate the impact carbon dioxide has on the Earth's atmosphere.	Students will explore space and its structure to try to understand as much as we can understand about space. Students will learn about the International Space station (ISS) and how astronauts can live in space.
	Skills Learned	• An understanding of how the human body carries out the process of digestion and why nutrients are so important in the human body • How the body produces energy • To be able to discuss how muscles allow movement	• To be able to discuss patterns and trends displayed in chemical reactions • To be able to predict the name of a compound made from certain elements	• To be able to demonstrate understanding of how circuits work • An insight into how most devices are powered by electrical circuits. To be able to build an electrical circuit using different components	• How the body effectively carries out respiration and the difference between breathing and respiration	• To understand the formation of different types of rocks and what they can be used for • To understand the structure of our solar system and how space exploration works	• To understand the structure of our solar system and how space exploration works

Long Term Overview
KS3 Science

	Unit Title	Inheritance and Evolution	Acids & Alkalis	Motion & Pressure	Ecosystems & Interdependence	Materials & Recycling	Waves
Year 9	Term	Autumn (a)	Autumn (b)	Spring (a)	Spring (b)	Summer (a)	Summer (b)
	No. Weeks	7 Weeks	8 Weeks	5 Weeks	6 Weeks	6 Weeks	7 Weeks
	What We Will Learn	In this unit students explore the causes of variation between us. They are introduced to inheritance and genes. They go onto explore how organisms are adapted to survive and the theory of evolution	This unit focuses on acids and alkalis and how they are described using a pH number. It looks at neutralisation reactions and some of their uses and introduces standard hazard symbols.	In this unit we revisit the concept of energy and build on student knowledge of energy stores and transfers. We explore how physicists and engineers are working hard to identify ways to reduce our energy usage. Students will explore how leavers and gears allow us to complete tasks that would otherwise be impossible.	In this unit students learn about how ecosystems are all interdependent. They explore the role different organisms play and how humans are affecting the world around us	Students will explore different types of materials including polymers, ceramics, and composites, identifying their properties and uses. They will investigate the importance of recycling and effects on the environment.	In this unit students will develop their understanding of both light and sound waves. They will explore the uses of both in everyday life including how a camera works and ultrasonics.
	What We Will Do	Students will explore the structure of DNA and how it leads to genetic changes in humans and the idea of natural selection. They will research the role of Watson, Crick, Wilkins and Franklin in the development of the DNA model. They will consider how changes in the environment may leave individuals within a species, and some entire species, less well adapted to compete successfully and reproduce, which in turn may lead to extinction.	Students will carry out scientific experiments using a variety of acids and alkalis and different experimental techniques to build on their practical skills.	Students will explore the connection between the distance objects can travel and how long it takes them to and then learn how to calculate the speed of the object. Students will start to understand what happens to objects if they are pulled or pushed. They may start to develop an understanding of gravity and the difference between mass and weight.	Students will investigate different types of ecosystems, how organisms interact in them and how different factors can influence an ecosystem.	Students will learn about the use of ceramics and glass to make materials. They will start to understand that the Earth is a source of limited resources. They will investigate the order of metals and carbon in the reactivity series as well as identifying the properties of ceramics, polymers and composites	Students will learn how sound produced and recorded. Introduction of a longitudinal wave Students will also explore how sound waves are formed and how our ears and brain detect and transform sound waves into sounds that we understand and can hear. Students will learn about refraction, reflection and how colour is seen. Students will lastly develop their understanding of light and all of the amazing things that light energy can do.
	Skills Learned	• The understanding of how the same species of organisms can be different • To be able to discuss how certain organisms have evolved over time	• Show an understanding of the function of acids and alkalis and be able to discuss their everyday uses	• Understanding how forces are used in the movement of different kinds of objects, for example race cars and industrial cranes	• To demonstrate an understanding that all living organisms live in habitats that are part of ecosystems	• To understand how materials are chosen to make certain products and how they are made • How metals are extracted from the Earth and what we can use metals for	• To be able to talk about ow this type of energy can be produced and transferred, and how a human ear can detect sound • How light and other waves can be used for data communication • An understanding of visible light and how we see objects