	What will I learn?	How will I learn it?	Why is it important that I learn this?	Why am I learning this now?
Year 7 **HT1** **B1-Cells**	The structure and Function of Cells Specialised cells The organisation of organisms. Using microscopes to view cells.	Through Enquiry and Independent Research Through practical based work to investigate and observe the structure of cells and work safely. Through comparing different types of cells. Through relating the structure of different cells to their different functions Through applying existing knowledge or cells to unfamiliar cells	To understand what all living things are made of. To understand the importance of different types of cells. To be able to work safely preparing and using Biology samples and microscopes.	This unit will build on your knowledge of cells from KS2 and introduce you to new cell structures and cell types. You will learn to use a microscope and plan how to work safely in a laboratory when working. This will be an important skill for your later learning in science. Cells are the basic building blocks of all living things. By studying cells you begin to understand what makes a living organism and what is means to be 'living'. Once you understand the importance of cells you can then start to look at other processes that living organisms need to go through like reproduction
HT1 **C1-Particles**	In this unit you will look at the basic particles that make up all matter: Atoms You will learn the difference between the particles in states of matter, look at how the states of matter can change and how particles can move around. You will also look at how scientific ideas change over time and how scientists work constantly to discover new ideas and how this leads to changes in our	Through a variety of practical activities and demonstrations. Through research and independent work Through using models that demonstrate scientific ideas Through using a periodic table recognise elements Through evaluating scientific ideas and considering how scientific ideas change over time.	An understanding of particles helps you to understand the world around you. You will also be able to understand the importance of scientific research and how the work of one Scientist can be built upon in the future as technology and our understanding develops further. You will plan and carry out investigations into Scientific theories and be able to develop skills on planning	In this unit you will develop an understanding of the skills needed to carry out Scientific investigations. This is a skill that you will use again and again for years to come! You will also gain knowledge of the nature of particles which will be important when looking at how particles interact with each other in future units. You will build on your work from KS2 on the properties of materials.

	understanding over time.		investigations that lead to accurate and valid results.	
HT1 **P1-Magnets and Electromagnets**	In this unit you will look at one of the fundamental forces: Magnetism You will learn about magnets and magnetic materials. You will look at the way our understanding of magnets has changed over thousands of years and how we can investigate factors that affect the strength of magnets and electromagnets.	Through carrying out a variety of tasks including making magnets. Through independent research Through planning and carrying out practical investigations and gathering data Through practical demonstrations by your teacher	You will start to appreciate the importance of magnetism to everyday life and the important uses they have in our day to day lives. You will be able to plan your own scientific investigation and gather your own data. You will learn to analyse your data and form your own conclusions from this.	You will go onto look at a variety of different forces and forms of energy of which magnetism is one. This will help you look at the others types of foces and energy in later units. You will develop your practical skills and also develop your ability to analyse data which will be needed in future investigations. You will build on your work from KS2 on Magnets and will be introduced to new kinds of magnets.
HT2/3 **7B2 Reproduction in animals and plants**	Structure and function of reproductive systems in both animals and plants. Process of fertilisation Changes that occur during puberty, including the menstrual cycle, and the concerns of young people. Importance of adaptations used for pollination and seed dispersal in plant reproduction.	Through comprehension and interpreting diagrams. Through application of prior and new knowledge to a selection of comprehension tasks. Through scientific enquiry, data interpretation and analysis.	Understanding how the human body works and identifying possible complications. Recognising the importance of plants in the production of food.	Follows on from KS2 curriculum describing what reproduction is. Specific link to year 7 cells work focussing on specialised cells. This also expands into first unit in Year 9 In year 11 concepts introduced in this topic will be explore in more detail in reproduction and inheritance topic. This is further expanded into Biology A level. Cross curricula links with PSHE.

HT2/3 **7C4: Atoms, elements and compounds**	You will learn the terms, atoms, compounds and mixtures. You will learn hoe to write word equations. You will learn what a chemical reaction is and different signs that one is taking place. You will be introduced to the periodic table and start using chemical symbols. You will use the knowledge you have built up to carry out and explain a combustion reaction.	Through planning and completing a combustion practical Through teacher input and demonstration. Through using models and diagrams to represent atoms and molecules.	To build the basic foundations of chemistry knowledge, which is vital to understand more advanced concepts in key stage 4. To develop practical skills and safely carry out a practical involving Bunsen burners. To introduce key words and concepts such as compounds and the periodic table.	This knowledge is required for most chemistry that follows in ks3 and ks4. To establish clear standards for how to write a chemical equation, the format of chemical symbols and molecular formulas etc. This is built on and used in most topics.
HT2/3 **7P2: Energy 1**	You will learn about the different types of energy stores and how they are transferred in the world around us. You will compare different stores of chemical energy. You will learn about power, how we pay for electricity and why it is useful to insulate things.	Through planning and completing investigations into chemical stores and insulation. Through teacher input and demonstration. Through independent learning and research. Through using scientific evidence to justify a choice.	To be able to understand the differences between energy stores and how they are transferred, appreciating how science is used in everyday life. To plan and carry out a range of investigations and to work safely. To be able to draw conclusions based on data and observations and to use evidence to justify ideas.	This builds on your work in KS2 when you looked at the properties of materials. This knowledge gained in this topic is essential going into Year 8 where the topic of energy is studied in more detail and it is further built on in GCSE and even A-level. An understanding of energy, power and insulation is useful for adult life.

Ht3/4 **7B3 Variation**	The types and causes of variation Key inheritance terms and how genetic information is inherited The process of natural selection and how this leads to evolution The 7 life processes	Through Enquiry and Independent Research Through collecting class data on human variations and plotting these on suitable graphs By carrying out an investigation into conditions for seed germination Through the analysis of data and the drawing of relevant conclusions	To understand how and why organisms vary and how they have evolved overtime To be able to plan and carry out a scientific investigation accurately and identify scientific variables To be able to evaluate methods and suggest improvements to them	Through building on your existing knowledge of evolution and inheritance from KS2 To develop your understanding of how organisms change over time which will be further developed at GCSE To build cross-curricular links with Maths by developing your graph skills
HT3/4 **7C2 : Solubility and separation**	You will look at pure and impure substances, how solutions are formed and investigate what affects solubility. You will learn the techniques to separate different mixtures and how to select which technique to use for each mixture. You will carry out investigations looking the methods that can be used to separate different mixtures.	Through planning and completing investigations to separate different mixtures. Through teacher input and demonstration. Through independent learning and research.	To be able to understand the differences between substances and how to choose the appropriate technique to separate different mixtures. You will gain practical skills carrying out a range of different activities, selecting appropriate equipment and carrying out risk assessments.	This builds on your work in KS2 when you looked at everyday materials and their solubility and deciding how mixtures could be separated. This knowledge gained in this topic is essential going into Year 9 and is further built on in GCSE and even A-level in terms of solubility and the different techniques that can be used to separate mixtures. You will develop your practical skills which will be needed in future investigations.

HT3/4 **7P3 : Forces**	You will learn about how forces affect the motion and shape of objects. You will learn about the force friction in different situations. You will learn how to calculate pressure, speed and moments	Through planning and completing investigations into friction and pressure Through teacher input and demonstration. Through independent learning and research. Through using scientific evidence to justify a choice.	To be able to understand the how friction and pressure is used in everyday life and how a knowledge of it may be useful in different situations. To plan and carry out a range of investigations and to work safely. To be able to draw conclusions based on data and observations and to use evidence to justify ideas.	This builds on your work in KS2 when you looked at the effects of air resistance, water resistance and friction, that act between moving surfaces. This knowledge gained in this topic is essential going into KS4 where the connection between forces and motion it is further built on in GCSE and even A-level. An understanding of how to use equations involving the motion of objects which relates to the GCSE Mathematics course.
HT 5/6 **B4 -Environment**	Key components of the environment and how they are investigated. The interdependence of living organisms. Predator -prey relationships Human impact on the environment.	Through Enquiry and Independent Research Through using sampling techniques to capture, analyse and record data on invertebrates. Through practical based work to investigate and observe the food chains in the local environment. Through applying existing knowledge to design a new predator. Through using data to model predator/prey relationships.	To develop a love of the natural world, science and learning. To understand the links between science, maths and geography. To appreciate the importance of science in everyday life and its impact on the natural world. To consider the wider ethical implications of human actions.	This unit builds on your knowledge of food chains from KS1 and KS2. You will learn how all living organisms rely on each other. You will see how the decisions humans make can impact on the natural world. This may inform your future choices. You will learn sampling techniques which will prepare you well for GCSE, A-level and even university study.

HT5/6 **7C3 : Acids and alkalis**	You will learn about acids and alkalis in the laboratory and in the world around us. You will learn about dilution, safety and the hazard symbols used to give information about acids and alkalis. You will learn about neutralisation and how change in acidity can be measured on the pH scale using an indicator.	Through planning and completing investigations into indicators and neutralisation Through teacher input and demonstration. Through independent learning and research. Through using scientific evidence to justify a choice.	To be able to understand the differences between substances and appreciate how science is used in everyday life. To plan and carry out a range of investigations and to work safely. To be able to To be able to draw conclusions based on data and observations and to use evidence to justify ideas.	This builds on your work in KS2 when you looked at the properties and change of materials and how these changes can impact on our lives. This knowledge gained in this topic is essential going into Year 8 where the reactions of acids are studied in more detail and it is further built on in GCSE and even A-level. An understanding of acids and the environment is needed for subjects such as Geography and Product Design.
HT5/6 **7P4: Space**	You will learn about our Solar System focusing on the planets and looking at the relative size of each, noting that a light year is a unit of distance rather than time. You will learn the causes of day and night and why we experience seasonal changes throughout the year. You will discover how weight and mass differ and why your weight would vary throughout the Solar System despite your mass staying the same. You will identify the forces on falling objects by	Making scale models of the solar system Teacher input and demonstration. Practical investigation – weight and mass Analysis of experimental data Independent learning and research – Space travel agent! Using scientific evidence to make and conclusion and justify your choice	Understand that scientific methods and theories develop as scientists modify earlier explanations to take account of new evidence and ideas Appreciate the importance of publishing results and peer review Apply mathematical concepts and calculate results Present observations and data using appropriate methods, including tables and graphs. Interpret observations and data, including	You already have some understanding of the differences between seasons (Y1) and the Earth's place in the Solar System (Y5). You will be developing these ideas, to understand how our spinning Earth's rotation leads to day and night, and how its tilted axis leads to changing seasons as it orbits the Sun. You have learnt a great deal about light (Y3 & Y6). You learnt how shadows are formed, and you could explain this when you understood that light travels in straight lines. You also learnt that some objects give out light, while other objects reflect it. You will be using your knowledge of the behaviour of light to explain solar eclipses.

	analysing experimental data You may even get to make water rockets …		identifying patterns and using observations, measurements and data to draw conclusions Use and derive simple equations and carry out appropriate calculations	You will learn much more about light when you study waves in Y8. If you choose the Separate Science route at GCSE (optional extra science), you will learn about the life of stars such as our Sun (and some much, much bigger ones that end their lives as Black Holes!). You will also learn about our expanding Universe and the Big Bang Theory. If you continue your study of Physics at A Level, you will learn Newton's Gravitational theory and the physics of orbits. This is the science that got us to the Moon. You will be studying actual Rocket Science!