Subject	Science	Year Group	7						
	Autumn			Spring			Summer		
	Biology	Chemistry	Physics	Biology	Chemistry	Physics	Biology	Physics	Physics
Scheme title	Cells	Matter	Forces	Genes	Reactions	Electromagnets	Ecosystems	Energy	Waves
Purpose of scheme	Pupils develop their knowledge of plant,animal and bacteria cells. Pupils will look at cells specialised and how each cell is designed for it's function. They will then look at how humans are organised into cells, tissues, organs and organ systems. Finally they will begin exploring the bones, joints and muscles that are present in the body and the role that they play.	Pupils develop their knowledge of states of matter to explain the properties of solids, liquids and gases using the particle model. Students will then expand on this model to explain changes of state and diffusion.	Pupils build on their knowledge of forces from KS2 to name a variety of contact and non-contact forces. Students then develop this to be able to describe how objects can be stationary or moving based upon these forces. This then links to speed where pupils can caluate the speed of a moving object. Pupils will also be able to draw distance/time graphs, use them to calculate speed and explain what is happening in a journey from the graph drawn.	Pupils will develop their knowledge on what makes humans different. They will begin to look at examples of genetic and environmental variation. They will then develop their understanding of genetic material (DNA) and where this is located in cells. Pupils will then look at how this information is passed onto the offspring through sexual reproduction and fertilisation. They will develop their understanding of puberty, the menstrual cycle and how the foetus develops during pregnancy. Finally they will explore the factor that effect the developing foetus.	Students will explore the physical and chemical properties of metals and non-metals. Pupils will learn about specific types of reaction such as oxidation, displacement and the reactions of acids with metals. Students will learn about acid and alkali reactions.	Pupils will be able to expand their knowledge of circuits from KS2 and be able to build a range of different circuits using different componants. Pupils will also be able to explore and expand on their own knowledge of static electricty to explain why this phemonia occurs	Pupils will deveop their understanding on food chains and food webs. They will look at predator-prey relationships and how chemicals can impact the food chain. They will then begin to look at how plants reproduce, seed dispersal and the importance of insects.	Pupils are introduced to the scientific definition of energy and describe energy as being transferred, never created or destroyed. Pupils will look at how energy is stored and the ways in which it is transferred. This will lead into students being able to identify individual stores and transfers under different situations. Electrical energy is also viewed with a concept of how we get energy into our homes and this is shown as a real-life concept when calculating the cost of electrical energy within the home.	Pupils are able to enhance their knowledge from KS2 to describe how light waves and sounds move through different mediums or be refelcted. This is then built upon by describing and proving the laws of reflection and refraction. Pupils will then look at how we see and how vision can be corrected through the use of different lenses.
Knowledge in sequence	Pupils build on the knowledge of animals and plants from KS2 to explain what they are made up of and how they are organised. They will then explore the role of the skeletal system and other tissues in humans which are involved in movement.	Pupils build on the knowledge of the particle model gained in KS2 and then use this to explain the properties of states of matter and diffusion.	Pupils build on their knowledge of what a force does from KS2. Pupils learn to calculate the speed of an object, draw a distance/time graph and explain it plus how forces act in equilibrium and how forces act in space.	This builds on their knowledge on variation from KS2 and also their knowledge of cells from the previous topic. It will also allow them to explain how genetic information is stored, passed on and the processes involved in human reproduction.	Development of KS2 knowledge of properties of materials to describe and explain different types of reactions. This will be built upon in C4 in year 10.	From KS2 pupils should be able to build simple circuits and know what an insulator and a conductor are. This is built on in Year 7 as pupils learn the circuit symbols and how energy is transferred in the circuit. Pupils study static electricity and its uses.	Pupils build on knowledge from KS2 on food chains and ecosystems. They will begin to look at the importance of insects, fertilisers and factors that effect populations in an ecosystem. This will be built on in B8.	Pupils do not encounter energy as a discreet topic before Year 7. They have studied changes of state and are aware of the effects of energy transfers but they are unaware of the cause for them. Within this topic pupils are introduced to energy stores and transfers. They also study how a power station works and the different resources that are used to generate electricity	Pupils will know that light travels in straight lines and will have studied sound and be aware that different sounds have different pitches and volumes. In year 7 pupils build on this knowledge to look at reflection, refraction and how the eye works. Pupils develop their knowledge on sound by drawing sound waves and comparing the waves for sounds of different pitch and volume. They also study how sound travels through different mediums and what happens when it is reflected.
Skills	Using and manipulating scientific equipment and drawing and labelling scientific diagrams. Making models to represent scientific ideas.	Using and manipulating scientific equipment and drawing and labelling scientific diagrams.	Planning an investigation, variables, drawing a graph.	Using and manipulating scientific equipment and drawing and labelling scientific diagrams. Drawing and interpretating graphs.	Planning an investigation, variables, using and manipulating equipment, writing a conclusion.	Drawing scientific diagrams, drawing a table, investigating	Using and manipulating scientific equipment and drawing and labelling scientific diagrams. Interpretating data and graphs.	Cost of energy calculations, making conclusions.	Drawing scientific diagrams, planning an investigation, making conclusions, evaluation.
Key words	Nucleus, cytoplasm, chloroplasts, mitochondria, cell wall, well membrane, vacuole, ribosomes, specialised cells, unicellular, tissues, organ, organ systems, joints, skeleton, muscles, biomechanics, antagonistic pairs	Particle, particle model, diffusion, condense, evaporation, distillation, solution, solvent, solute	Acceleration, average speed, distance/time graph, gravitational field strength, gravity, speed, weight, air resistance, contact force, force, mass relative motion, stationary.	Variation, DNA, chromosome, gene, sperm, egg, fertilisation, menstual cycle, ovulation, foetus, uterus, puberty,	Oxidation, displacement, acid, alkali, neutralisation, indicator	Ammeter, charge, component, electrical conductor, voltage, electric field, parallel circuit, electrical insulator, static electricity, current, voltmeter, resistance, ohm	Producer, primary consumer, secondary consumer, food chain, food web, ecosystem, population, predator, prey, biodiversity, bioaccummulation, pollination,	Chemcial energy, energy, energy resource, fossil fuel, gravitational potential energy, kilojoule, joule, renewable, non-renewable, dissipate, efficient, energy store, fuel, kinetic energy, thermal energy	absorption, angle of incidence, concave lense, hertz, lens, transparent, oscilloscope, reflection, refraction, spectrum, vacuum, angle of refelction, auditory range, convex lens, image, longitudinal wave, opaque, ray model, translucent, wavelength
End point	Pupils are able to compare plant, animal and bacterial cells. They are able to relate the structure of a cell to it's function. Explain the order of organisation in humans from organelle to organism. They should be able to label the key bones in the skeleton and explain how muscles and joints allow for movement.	Pupils are able to use the particle model to explain the properties of matter, changes of state and how some methods of separation work.	Pupils should be able to identify forces and state if they are contact or non-contact., describe if an object is moving or stationary based on the forces acting on it. Calculate speed from a given distance and time. Draw and describe a distance time graph and use the graph to calculate speed.	Pupils should be able to explain the parts of male and female reproductive systems. They should be able to describe the changes in the body during puberty and begin to understand the menstual cycle. They will then be able to explain how the foetus develops in the uterus and the factors that effect it.	Pupils are able to describe specific types of chemical reaction using particle diagrams and word equations. Students cre able to identify acids and alkalis using an indicator.	Pupils are able to build a variety of circuits and draw them as scientific diagrams. Explain how and why static electricty happens.	Pupils should be able to label a food chain or food web and identify the role an organism plays in the ecosystem. They will be able to explain the relationship between predator-prey populations. They should be able to explain the effect of toxins on the ecosystem and describe bioaccummulation. They should be able to label the reproductive parts of a flower and describe how flowers reproduce.	Define energy and identify its stores and how energy is being transferred. Pupils will be able to explain how energy is brought into the home and be able to calculate home energy costs.	Use a ray box to draw ray diagrams to show reflection and refraction and use these diagrams to show the laws of reflection and refraction. Pupils will be able to describe how the eye works and how vision can be corrected through the use of concave and convex lenses in glasses. Pupils should be able to describe sound waves as longitudinal waves and show how these waves look different depending on their pitch and loudness.
Assessment Methode	Formative assessment: questions and exam style questions. Block test	Formative assessment: questions and writing a method. Block test	Formative assessment: questions and calcaultions. Block test	Formative assessment: questions and exam style questions. Block test	Formative assessment: questions and writing a method. Block test	Formative assessment: questions and writing a method. Block test	Formative assessment: questions and exam style questions. Block test	Formative assessment: questions and exam style questions. Block test	Formative assessment: questions and exam style questions. Block test