

Subject	Biology	Year Group:	7	
Unit/Topic	Cells	Reproduction		Structure of body & Functions
Skills	<p>AF3 – Communicating and collaborating in science</p> <p>Use appropriate scientific forms of language to communicate scientific ideas, processes or phenomena e.g. Write a method how to use a microscope</p> <p>Select appropriate ways of presenting scientific data e.g. Drawing a cell</p> <p>Use scientific and mathematical conventions when communicating information or ideas e.g. Show magnification of image on cell drawing.</p>	<p>AF1- Thinking Scientifically</p> <p>Use scientific ideas when describing simple processes or phenomena e.g. describe the main steps that take place when a plant reproduced successfully.</p> <p>Use simple models to describe scientific ideas e.g. Use a model to show stages in development of a foetus from the production of sex cells to birth./ describe key events on a model of the menstrual cycle</p> <p>Identify scientific evidence that is being used to support or refute ideas or arguments e.g. Use data to explain whether substances are being passed from the mother to the foetus or not to argue the effect of a mother taking drugs/ alcohol/ smoking.</p>		<p>AF5 – working critically with evidence</p> <p>The skills assessed in this topic are AF5 – Working critically with evidence. In this scheme there is a skills focus assessment on AF5 – Working critically with evidence</p> <ul style="list-style-type: none"> •Suggest reasons based on scientific knowledge and understanding for any limitations or inconsistencies in evidence collected e.g. identify and explain; anomalous results, sources of error in method or data set •Select and manipulate data and information and use them to contribute to conclusions e.g. concluding relationship between fitness and lung capacity •Make valid comments on the quality of their data. E.g. Power generated by Muscles
Knowledge	<p>Cell structure</p> <p>Transport in cells</p> <p>Organising an organisms</p> <p>Musculoskeletal system</p>	<p>Reproductive systems in plants and humans</p> <p>Menstrual cycle, pregnancy and birth</p> <p>Contraception and fertility</p> <p>Pollination and seed dispersal</p>		<p>Understanding of the organisation of an organism. The body, breathing, muscles and joints</p>
Recall/review from previous learning	<p>1-5 recall starters (recall from previous lessons)</p> <p>Lessons building on from KS2</p> <p>Identify parts of the body</p> <p>Identify that animals have skeletons or shells, plants do not</p> <p>Classification</p>	<p>1-5 recall starters (recall from previous lessons)</p> <p>Lessons building on from KS2</p> <p>Lifecycles of plants and animals</p> <p>Processes of reproduction in plants and animals</p> <p>Basic needs of plants and animals</p> <p>Basic structure of plants</p>		<p>1-5 recall starters (recall from previous lessons)</p> <p>Lessons building on from KS2</p> <p>Basic needs of animals and their survival</p> <p>Identifying animals with skeletons and those without – understanding why/what skeletons provide and do</p>

			<p>Identify main parts of the circulatory system as well as naming organs such as heart and blood vessels</p> <p>Recognising the role of joints and muscles</p>
Assessment	<p>Formative assessment – end of topic tests. (Pupil receives percentage, step and band taken for data analysis)</p> <p>Summative Interleaving Assessments</p> <p>In class questioning</p> <p>Literacy – extended writing tasks.</p> <p>Self and peer assessment.</p>	<p>Formative assessment – end of topic tests. (Pupil receives percentage, step and band taken for data analysis)</p> <p>Summative Interleaving Assessments</p> <p>In class questioning</p> <p>Literacy – extended writing tasks.</p> <p>Self and peer assessment.</p>	<p>Formative assessment – end of topic tests. (Pupil receives percentage, step and band taken for data analysis)</p> <p>Summative Interleaving Assessments</p> <p>In class questioning</p> <p>Literacy – extended writing tasks.</p> <p>Self and peer assessment.</p>
Cultural Capital	<p>Understanding some structures are microscopic</p> <p>Scientific jobs related to microscopy (I.e. laboratory technician)</p> <p>How the body is structured</p> <p>How the body moves</p> <p>Cross curricular – LS&W, PE</p>	<p>PHSE</p> <p>Health care careers</p> <p>Life skills and personal development</p> <p>Cross curricular LS&W</p>	<p>Cross-curricular: PE, LS and W</p> <p>Healthcare careers</p>
Literacy/Numeracy	<p>Literacy – extended writing assessments, describe and explain work.</p> <p>Numeracy – calculations of magnification</p>	<p>Literacy – extended writing assessments, describe and explain work.</p> <p>Numeracy- sequencing (Menstrual cycle)</p>	<p>Literacy – extended writing assessments, describe and explain work.</p> <p>Numeracy: graph skills</p>

Subject	Biology	Year Group:	8		
Unit/Topic	Biological processes	Healthy Lifestyle	Inheritance	Ecosystems & Adaptation	
Skills	<p>AF4 - Using investigative approaches. In this scheme there is a focus on AF4 – Using investigative Approaches</p> <ul style="list-style-type: none"> •Apply scientific knowledge and understanding in the planning of investigations, identify significant variables and recognising which are independent and which are dependent e.g. investigating effect of light intensity; different distance of pondweed from bulb, same pond weed, counting number of bubbles in a set time. •Justify their choice of data collection method and proposed number of observations and measurements e.g. a range of distances, at regular intervals, table showing 3 repeats, mean number of bubbles calculated. •Collect data using appropriate ranges, numbers and values for measurements and observations e.g. light intensity investigation •Independently recognise range of familiar risks and take action to control them. 	<p>AF5 – working critically with evidence The skills assessed in this topic are AF5 – Working critically with evidence. In this scheme there is a skills focus assessment on AF5 – Working critically with evidence</p> <ul style="list-style-type: none"> •Suggest reasons based on scientific knowledge and understanding for any limitations or inconsistencies in evidence collected e.g. identify and explain; anomalous results, sources of error in method or data set •Select and manipulate data and information and use them to contribute to conclusions e.g. concluding relationship between Incidence of liver failure and alcohol consumption. •Draw conclusions that are consistent with the evidence they have collected and explain them using scientific knowledge and understanding e.g. Incidence of mouth/ throat/ lung cancers and smoking and chemicals in cigarettes. •Make valid comments on the quality of their data. E.g. energy in food (repeats/ consistency with nutritional information packaging) or Smoking/ alcohol related deaths and source of data (cigarettes company/ distillery/ Government stats). 	<p>AF2 – Understanding the applications and implications of Science. In this scheme there is a focus on AF2 – Understanding the applications and implications of science</p> <ul style="list-style-type: none"> •Describe how different decisions on the uses of scientific and technological developments may be made in different economic, social or cultural contexts e.g. suggest arguments for and against genetic modification •Explain how societies are effected by particular scientific application or ideas e.g. discussion on foetal screening for genetic disorders •Describe how particular scientific or technological developments have provided evidence to help scientists pose and answer further questions e.g. work of Watson and crick/ scientist mapping the human genome •Describe how aspects of science are applied in particular jobs or roles e.g. scientist mapping the human genome 	<p>AF3 – Communicating and collaborating in science Present simple scientific data in more than one way, including tables and bar charts e.g. selecting appropriate graph to represent continuous and discontinuous variation</p> <p>Use scientific forms of language when communicating simple scientific ideas, processes or phenomena E.g. describing features of living things in order to classify them within groups and sub-groups.</p> <p>Identify simple advantages of working together on experiments or investigations Skills topic 1- Planning investigations lessons (sharing results & repeats) E.g. collaboration in sampling of habitats e.g. transect/ Quadrat means more data collected so a better representation of the actual population numbers.</p>	

Knowledge	Understanding of :- Balanced and unbalanced diets. Digestive system. Enzymes. Breathing/ respiratory system / gas exchange Aerobic and anaerobic respiration Photosynthesis.	Understanding of: Nutrients, Benefits of Exercise and Healthy Diet; Antibiotics and Vaccines; Dangers of Alcohol, Drugs and Smoking	Understanding of :- DNA Genetics and punnett squares Selective breeding Genetic engineering Cloning Natural selection Extinction	Ecosystems, food chains and webs Interdependence, bioaccumulation Classification Field studies e.g. using quadrats
Recall/review from previous learning	1-5 recall starters from previous lessons. Building from KS2 •identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat •recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function •describe the ways in which nutrients and water are transported within animals, including humans.	1-5 recall starters (recall from previous lessons) Lessons building on from KS2 Basic needs of animals and their survival Describing the importance of exercise, food and hygiene to humans Identifying the need for the right type of food in all animals Identifying animals with skeletons and those without – understanding why/what skeletons provide and do Identify main parts of the circulatory system as well as naming organs such as heart and blood vessels Recognising the impact of lifestyle choices such as smoking, poor diet and alcohol Describing how nutrients are transported in animals	1-5 recall starters from previous lessons. Building from KS2. Describe how living things are classified into groups based on their characteristics. Give reasons for classifying plants and animals based on specific characteristics. Recognise that living things have changed over time and that fossils provide information about living things from millions of years ago. Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to the parents. Identify how animals and plants are adapted for their environment.	1-5 recall starters from previous lessons. Building from KS2. Identifying plants and animals Basic needs of living things Habitats, food chains and key terms to describe organisms in a food chain Justified grouping of organisms
Assessment	Formative assessment – end of topic tests. (Pupil receives percentage, step and band taken for data analysis) Summative Interleaving Assessments	Formative assessment – end of topic tests. (Pupil receives percentage, step and band taken for data analysis) Summative Interleaving Assessments In class questioning	Formative assessment – end of topic tests. (Pupil receives percentage, step and band taken for data analysis) Summative Interleaving Assessments	Formative assessment – end of topic tests. (Pupil receives percentage, step and band taken for data analysis) Summative Interleaving Assessments

	In class questioning Literacy – extended writing tasks. Self and peer assessment.	Literacy – extended writing tasks. Self and peer assessment.	In class questioning Literacy – extended writing tasks. Self and peer assessment.	In class questioning Literacy – extended writing tasks. Self and peer assessment.
Cultural Capital	Understanding of nutrition and balanced diets. Benefits of healthy diets. Cross curricular links with PSHE . Career links :- Doctor, nutritionist , athlete or trainer, botanist	Understanding of: Nutrients, Benefits of Exercise and Healthy Diet; Antibiotics and Vaccines; Dangers of Alcohol, Drugs and Smoking Cross curricular links with PSHE Careers Link: Nutritionist; Personal Trainer; Health Professionals	Understanding of inheritance and genetics. Importance of DNA The importance of cloning and genetic engineering and evaluating them. Careers link:- Geneticist, genetic engineer, livestock/ plant breeder.	Understanding of how the world interacts with each other. Cross-curricular: Geography, environmental science, LS and W Environmental careers Awareness of environmental issues
Literacy/Numeracy	Literacy – extended writing assessments, describe and explain work. Numeracy – interpreting data/ graphs	Numeracy – data analysis and statistics; graph analysis Literacy – extended writing assessments, describe and explain work.	Literacy – extended writing assessments, describe and explain work. Numeracy – Punnett squares	Literacy – extended writing assessments, describe and explain work. Numeracy – Calculating abundance

Subject	Biology	Year Group:	9		
Unit/Topic	Cells	Cell Systems	Fertilisation and implantation	Variation and natural selection	
Skills	<p>Practical skills – how to use a microscope, osmosis practical, identifying risks, following instructions, recording observations</p> <p>Scientific skills – enquiry skills, literacy in science, exam technique, gaining knowledge, memory recall</p> <p>Personal Skills – team work, collaboration, research, independent work, practical skills</p>	<p>Scientific skills – enquiry skills, literacy in science, exam technique, gaining knowledge, Practical skills - memory recall food tests, effect of pH on enzyme activity, effect of temperature on enzyme activity, modelling the digestive system, identifying risks, following instructions, recording observations</p> <p>Personal Skills – team work, collaboration, research, independent work</p>	<p>Scientific Skills – enquiry skills, literacy in science, exam technique, investigating seed dispersal</p> <p>Personal skills - team work, collaboration, research, independent work, practical skills</p>	<p>Practical skills – ecological practicals and investigations</p> <p>Scientific skills – enquiry skills, literacy in science, exam technique, gaining knowledge, memory recall</p> <p>Personal Skills – team work, collaboration, research, independent work, practical skills</p>	
Knowledge	<p>Plant and animal cell structure (organelles) and key differences</p> <p>Unicellular organisms</p> <p>Specialisation of cells</p> <p>Transport in cells including diffusion, osmosis and active transport</p> <p>Cell differentiation</p> <p>Stem cells</p>	<p>Structure of the digestive system</p> <p>Function of digestive organs</p> <p>Role of enzymes</p> <p>Role of bile</p> <p>Making digestion efficient</p>	<p>Fertilisation and implantation</p> <p>Reproduction</p> <p>Menstrual cycle</p> <p>Seed dispersal</p> <p>Cloning</p>	<p>Variation and natural selection</p> <p>Adaptations</p> <p>Competition</p> <p>Antibiotic resistance</p> <p>Biodiversity</p> <p>Ecosystems (biotic and abiotic factors)</p>	
Recall/review from previous learning	<p>Cells covered in 7 and 8 including: structure, transport and organisation and specialised cells</p>	<p>Work covered in year 7 and 8 on function of the digestive system, balanced diet, malnutrition</p>	<p>Review of work covered in year 7 on reproduction and sexual health</p>	<p>Review of work covered in year 7 and 8 on habitats and ecosystems</p>	
Assessment	<p>Practical experiments in microscopy and osmosis</p> <p>Mid topic assessment</p> <p>End of topic assessment</p>	<p>Practical: food tests and effect of pH on enzyme activity.</p> <p>Mid topic assessment</p> <p>End of topic assessment</p>	<p>Mid topic assessments</p> <p>End of topic assessment</p>	<p>Mid topic assessment</p> <p>End of topic assessment</p>	

Cultural Capital	<p>How living things are made up Structural differences between plants and animals How particles move inside living organisms Careers related to microscopy Ethics of stem cells Careers related to scientific research & ethics, child development, health visitor.</p> <p>Cross-curricular – PSHE, geography, PE.</p>	<p>Healthy eating, balanced diet. Careers related to food technology, uses of enzymes, food manufacturing, health & wellbeing careers</p> <p>Cross curricular – RE, PSHE, DT(food)</p>	<p>Staying healthy and safe in relationships and genetics and genetic diseases and cures</p> <p>Cross curriculum – PSHE, health and social care, DT (food)</p>	<p>Knowing and understanding about pollution and factors affecting the earth and animals/plants survival</p> <p>Cross curricular – PSHE, geography, History</p>
Literacy/Numeracy	<p>Literacy – Extended scientific exam questions, reading in science, oracy, research technique Numeracy – calculating magnification, standard form</p>	<p>Literacy – Extended scientific exam questions, reading in science, oracy, research technique Numeracy – interpreting data</p>	<p>Literacy – Extended scientific exam questions, reading in science, oracy, research technique Numeracy – interpreting data</p>	<p>Literacy – Extended scientific exam questions, reading in science, oracy, research technique Numeracy – collecting and presenting data, drawing graphs, interpreting graphs,</p>

Subject	Biology	Year Group:	10	
Unit/Topic	Organising Animals and plants	Disease (triple)		Preventing and treating disease
Skills	Practical skills – heart dissection, lung dissection, transpiration Scientific skills – enquiry skills, literacy in science, exam technique, gaining knowledge, memory recall Personal Skills – team work, collaboration, research, independent work, practical skills	Practical skills – <i>antibiotics and growth of bacteria</i> Scientific skills – enquiry skills, literacy in science, exam technique, gaining knowledge, memory recall Personal Skills – team work, collaboration, research, independent work, practical skills		Practical skills – <i>antibiotics and growth of bacteria</i> Scientific skills – enquiry skills, literacy in science, exam technique, gaining knowledge, memory recall Personal Skills – team work, collaboration, research, independent work, practical skills
Knowledge	Component of blood Structure of blood vessels and the heart Structure and function of the circulatory system Causes and treatments of coronary heart disease Gas exchange system Adaptation of alveoli Tissues and organs in plants Transport systems in plants Evaporation and transpiration in plants	Health and disease Pathogens Preventing infection Human defence responses <i>Growing bacteria in the lab</i> <i>Preventing bacterial growth</i> <i>Plant diseases</i> <i>Plant defence responses</i>		Vaccination Antibiotics and painkillers Discovery of drugs Development of drugs <i>Making and uses of monoclonal antibodies.</i>
Recall/review from previous learning	KS3 – breathing and gas exchange, effect of exercise on heart rate, specialist plant cells.	KS3 – health and disease		KS – health and disease, vaccinations, types of drugs,
Assessment	Mid topic assessment End of topic assessment	<i>Required practical – antibiotics and growth of bacteria</i> Mid topic assessment End of topic assessment		Mid topic assessment End of topic assessment
Cultural Capital	Coronary heart disease Ethics of disease treatment Cross curricular – PSHE, PE,	Ethics of disease treatment and preventing infection. Cross curricular – PSHE, PE,		Ethics of disease treatment (monoclonal antibodies) and preventing infection (vaccination) Cross curricular – PSHE, PE, History,
Literacy/Numeracy	Literacy – Extended scientific exam questions, reading in science, oracy, research technique	Literacy – Extended scientific exam questions, reading in science, oracy, research technique		Literacy – Extended scientific exam questions, reading in science, oracy, research technique

	Numeracy – calculating percentages, interpreting data and graphs, presenting data, calculating means and significant figures.	Numeracy – interpreting data and graphs, presenting data, <i>calculating growth rates, standard form, decimal places, measuring areas of circles,</i>	Numeracy – interpreting data and graphs, presenting data, <i>standard form, decimal places,</i>
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Subject	Biology	Year Group:	10	
Unit/Topic	Non communicable disease	Photosynthesis		Respiration
Skills	Scientific skills – enquiry skills, literacy in science, exam technique, gaining knowledge, memory recall Personal Skills – team work, collaboration, research, independent work, practical skills	Practical skills – effect of light on rate of photosynthesis, testing a leaf for starch, Scientific skills – enquiry skills, literacy in science, exam technique, gaining knowledge, memory recall Personal Skills – team work, collaboration, research, independent work, practical skills		Practical skills - effect of exercise on breathing rate Scientific skills – enquiry skills, literacy in science, exam technique, gaining knowledge, memory recall Personal Skills – team work, collaboration, research, independent work, practical skills
Knowledge	Risk factors and causal mechanisms Cancer Effect of smoking, diet, exercise, alcohol and carcinogens.	Photosynthesis Factors that affect the rate of photosynthesis How plants use glucose Limiting factors of photosynthesis and economic use		Aerobic respiration Response to exercise Anaerobic respiration Metabolism and the liver
Recall/review from previous learning	KS3: health and disease, effect of smoking, diet, exercise and alcohol.	KS3: photosynthesis		KS3: respiration, effect of exercise, anaerobic respiration in yeast
Assessment	Mid topic assessment End of topic assessment	Required practical: rate of photosynthesis Mid topic assessment End of topic assessment		Mid topic assessment End of topic assessment
Cultural Capital	Understanding risk factors for non-communicable disease Cross curricular – PSHE, PE, sociology,	Food security Biodiversity Cross curricular – geography, business & economics		Food and drink production Effect of exercise Cross curricular – PE, business & economics,
Literacy/Numeracy	Literacy – Extended scientific exam questions, reading in science, oracy, research technique	Literacy – Extended scientific exam questions, reading in science, oracy, research technique		Literacy – Extended scientific exam questions, reading in science, oracy, research technique

	Numeracy – calculating percentages, interpreting data and graphs, presenting data, calculating means and significant figures, calculating BMI	Numeracy – calculating percentages, interpreting data and graphs, presenting data, plotting line graph, drawing lines of best fit, calculating means, significant figures, decimal places,	Numeracy – calculating percentages, interpreting data and graphs, presenting data, calculating means, significant figures, decimal places,
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Subject	Biology	Year Group:	10	
Unit/Topic	The human nervous system	Hormonal coordination		
Skills	Practical skills – reaction time, reflex actions, <i>eye dissection</i> Scientific skills – enquiry skills, literacy in science, exam technique, gaining knowledge, memory recall Personal Skills – team work, collaboration, research, independent work, practical skills	Practical skills – <i>plant tropism</i> Scientific skills – enquiry skills, literacy in science, exam technique, gaining knowledge, memory recall Personal Skills – team work, collaboration, research, independent work, practical skills		
Knowledge	Principals of homeostasis Structure and function of the human nervous system Reflex actions <i>The brain</i> <i>The eye</i> <i>Common problems of the eye</i>	Principals of hormonal control Control of blood glucose levels and diabetes Negative feedback Human reproduction Menstrual cycle Artificial control of fertility and infertility treatments <i>Plant hormones and responses</i> <i>Using plant hormones</i>		
Recall/review from previous learning	KS3: effect of alcohol on reaction times, specialist cells (nerve cells)	KS3: menstrual cycle, diabetes, fertility and infertility, human reproduction		
Assessment	Required practical: reaction times Mid topic assessment End of topic assessment	<i>Required practical: plant tropism</i> Mid topic assessment End of topic assessment		
Cultural Capital	Drink and drug driving Cross curricular – PSHE	Diabetes, ethics of contraception and fertility treatments, Growing crops for food security		

		Cross curricular – PSHE, RE, Sociology, History, PE, Business & economics	
Literacy/Numeracy	Literacy – Extended scientific exam questions, reading in science, oracy, research technique Numeracy – interpreting data and graphs, presenting data, calculating means, significant figures, decimal places,	Literacy – Extended scientific exam questions, reading in science, oracy, research technique Numeracy – interpreting data and graphs, presenting data, calculating means, significant figures, decimal places,	

Subject	Biology	Year Group:	11	
Unit/Topic	Reproduction	Variation		Genetics and Evolution
Skills	Modelling Behaviour Genetic Diagrams Modelling Genetic Structure Ethical Debate Literacy Numeracy Oracy Practical	Informed Discussion and Debate Ethical Debate Risk Assessment of Genetic Engineering Literacy Numeracy Oracy Practical		Information Gathering Understanding Time Frames Applying Data Graph Interpretation Literacy Numeracy Oracy Practical
Knowledge	Types of reproduction Meiosis DNA and the HGP Protein Synthesis Gene Expression and Mutation Genetics Genetic Disorders Genetic Screening	Variation Evolution Selective Breeding Genetic Engineering Cloning Ethics of Genetic Technology		History of Genetics Theories of Evolution Darwin's Ideas Evolution and Evidence Fossils Extinction
Recall/review from previous learning	KS3 Genetics Reproduction Reproductive systems	KS3 Genetics Ethical considerations		KS3 Genetics Evolution Famous Scientists
Assessment	Mid Topic Assessment Educake Homework End of Topic Assessment	Mid Topic Assessment Educake Homework End of Topic Assessment		Mid Topic Assessment Educake Homework End of Topic Assessment
Cultural Capital	Understanding genetics Inherited traits Genotype v Phenotype Genetic Disorders Career Link Cross curricular – health and social care, social sciences	Human Evolution Ethical Debate Career Link Cross curricular – environmental science, social sciences		Using Evidence Applying Theories Career Link Cross curricular – history, environmental science, geography
Literacy/Numeracy	Literacy – Reading, Oracy, Extended Reading, Extended Writing, Debating Numeracy – Haploid/Diploid	Literacy – Reading, Oracy, Extended Reading, Extended Writing, Debating Numeracy – Graphs, Charts		Literacy – Extended Reading, Supported Discussion, Research Numeracy – Population numbers, diversity changes

Subject	Biology	Year Group:	11	
Unit/Topic	Adaptations	Organising an ecosystem		Biodiversity and ecosystems
Skills	Generating Scientific Theory Apply Evolutionary Trees Real Life Understanding Graph Interpretation Literacy Numeracy Oracy Practical	Mineral Cycling Diagram Interpretation Literacy Numeracy Oracy Practical		Application to Real Life Understanding Individuals Impact Information Evaluation Literacy Numeracy Oracy Practical
Knowledge	Communities Organisms in the Environment Distribution Abundance Adapt and Survive Adaptations	Feeding Relationships Water Cycle Carbon Cycle Decomposition		Human Population Pollution Deforestation Global Warming Impact on Biodiversity Trophic Levels Biomass Food Security and Sustainability
Recall/review from previous learning	KS3 Ecosystems Adaptations Survival Interdependence	KS3 Ecosystems Food Chains/Webs Mineral Cycling		KS3 Climate Change Deforestation Biodiversity Loss
Assessment	Field Distribution and Sampling RP Mid Topic Assessment Educake Homework End of Topic Test	Milk Decay RP Mid Topic Assessment Educake Homework End of Topic Test		Mid Topic Assessment Educake Homework End of Topic Test
Cultural Capital	Changing distribution of species and populations Adaptation of organisms Cross curricular – environmental science, geography, LS&W	Impact of climate change Sustainability Cross curricular – environmental science, geography, LS&W		Impact of climate change Sustainability Mass extinction Conservation Cross curricular – environmental science, geography, LS&W
Literacy/Numeracy	Literacy – Extended reading, planning investigations	Literacy – Oracy, interpretation of diagrams, practical skills discussion		Literacy – Environmental debate, extended reading, extended writing, oracy

	Numeracy – Population calculations, punnett squares	Numeracy – Water/Carbon cycle process calculations	Numeracy – Biomass calculations, trophic differences calculations
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Subject	A level Biology	Year Group:	12	
Unit/Topic	Biological Molecules	Cells		Organising exchange substances with their environment
Skills	<p>Required practical 1 – Investigation into the effect of a named variable on the rate of an enzyme controlled reaction.</p> <p>Basic numeracy/graph/data analysis and extended writing</p>	<p>Required practical 2 – Preparation of stained squashes of cells</p> <p>Microscopy skills</p> <p>Basic numeracy/graph/data analysis and extended writing</p>		<p>Required practical 3 – Production of a dilution series of a solute to produce a calibration curve.</p> <p>Required practical 4 – Investigation into the effect of a named variable on permeability of cell membrane.</p> <p>Required practical 5 – Dissection of animal or plant gas exchange system.</p> <p>Basic numeracy/graph/data analysis and extended writing</p>
Knowledge	<p>3.1.1 – 3.1.4 Biological molecules</p> <p>3.1.5 Nucleic acids</p>	<p>3.2.1 – 3.2.2 Cell structure</p> <p>3.2.4 Cell recognition and immune system</p>		<p>3.3.1 – 3.3.3 Exchange</p> <p>3.2.3 Transport across membrane</p>
Recall/review from previous learning	<p>KS4; Common molecules used across GCSE.</p> <p>Types of bonding</p>	<p>KS4; Eukaryotic & Prokaryotic Cells</p> <p>Microscopy</p> <p>Infection and response</p>		<p>KS4; Transport methods (Diffusion, Osmosis, Active Transport)</p>
Assessment	<p>End of Topic Assessment</p> <p>Required Practical Lab Report</p> <p>Content on mock exams</p>	<p>End of Topic Assessment</p> <p>Required Practical Lab Report</p> <p>Content on mock exams</p>		<p>End of Topic Assessment</p> <p>Required Practical Lab Report</p> <p>Content on mock exams</p>
Cultural Capital	<p>Structure of basic nutrients in food</p>	<p>How cells are the basic building blocks for life.</p> <p>How diseases spread and are treated</p>		<p>Basic of breathing and digestion</p>
Literacy/Numeracy	<p>Chemical formula for different molecules</p> <p>Lab Reports</p> <p>Basic numeracy/graph/data analysis and extended writing</p>	<p>Magnification equation</p> <p>Calculating Mitotic index</p> <p>Lab Reports</p> <p>Basic numeracy/graph/data analysis and extended writing</p>		<p>Calculating surface area to volume ratio</p> <p>Basic numeracy/graph/data analysis and extended writing</p> <p>Lab Reports</p>

Subject	A level Biology	Year Group:	12	
Unit/Topic	Genetic information, Variation and relationships between organisms			
Skills	Required practical 6 – Use of aseptic techniques to investigate microbial growth (2 hours) Basic numeracy/graph/data analysis and extended writing			
Knowledge	3.4.3 – 3.4.4 Genetic diversity 3.4.5 – 3.4.7 Biodiversity			
Recall/review from previous learning	KS4; Structure of DNA, Basics of inheritance, Classification, Maintaining Biodiversity and Impact of humans on Biodiversity			
Assessment	End of Topic Assessment Required Practical Lab Report Content on mock exams			
Cultural Capital	Understanding inheritance of diseases within families. Local conservation projects			
Literacy/Numeracy	Standard Deviation Species diversity index Lab Reports Basic numeracy/graph/data analysis and extended writing			

Subject	A level Biology	Year Group:	13	
Unit/Topic	Energy transfers in and between organisms	Organisms to changes in their environment		Genetics, populations, evolution and ecosystems
Skills	<p><i>Required practical 7 – Use of chromatography to investigate pigments isolated from leaves.</i></p> <p><i>Required practical 8 – investigation into the named factor on the rate of dehydrogenase activity in extracts of chloroplasts.</i></p> <p><i>Required practical 9 – Investigation into the effect of a named variable on the rate of respiration. Basic numeracy/graph/data analysis and extended writing</i></p>	<p><i>Required practical 10 – investigation into the effect of an environmental variable on the movement of an animal</i></p> <p><i>Required practical 11 – Production of a dilution series of glucose to produce calibration curve.</i></p> <p><i>Basic numeracy/graph/data analysis and extended writing</i></p>		<p><i>Required practical 12 – Investigation into the effect of a named environmental factor on the distribution of a given species. (2 hours)</i></p> <p><i>Basic numeracy/graph/data analysis and extended writing</i></p>
Knowledge	<p>3.5.3 – 3.5.4 Energy and ecosystems</p> <p>3.5.1 Photosynthesis</p> <p>3.5.2 Respiration</p>	<p>3.6.1 Response to stimuli</p> <p>3.6.2 – 3.6.3 Nervous coordination and muscles</p> <p>3.6.4 Homeostasis</p>		3.7.4 – Populations in ecosystems
Recall/review from previous learning	<p>KS4- Photosynthesis</p> <p>Respiration</p> <p>KS5- Cell structure</p>	<p>KS4- Response to environment, Homeostasis</p> <p>KS5- Transport across a membrane, Active Transport, ATP</p>		<p>KS4- Evolution, Genetic inheritance, Enzymes</p> <p>KS5- Continuation of topic from Y12</p>
Assessment	<p>End of Topic Assessment</p> <p>Required Practical Lab Report</p> <p>Content on mock exams</p>	<p>End of Topic Assessment</p> <p>Required Practical Lab Report</p> <p>Content on mock exams</p>		<p>End of Topic Assessment</p> <p>Required Practical Lab Report</p> <p>Content on mock exams</p>
Cultural Capital	<i>Importance of energy in organism growth</i>	<i>How are body reacts to its surroundings</i>		<i>Conservation of organisms</i>
Literacy/Numeracy	<p>Lab Reports</p> <p>Basic numeracy/graph/data analysis and extended writing</p> <p>Essay Writing</p>	<p>Lab Reports</p> <p>Basic numeracy/graph/data analysis and extended writing</p> <p>Essay Writing</p>		<p>Hardy-Weinberg calculation</p> <p>Lab Reports</p> <p>Basic numeracy/graph/data analysis and extended writing</p> <p>Essay Writing</p>

Subject	A level Biology	Year Group:	13	
Unit/Topic	The control of gene expression			
Skills	Basic numeracy/graph/data analysis and extended writing			

Knowledge	3.8.1 – 3.8.3 <i>Gene expression</i> 3.8.4 <i>Recombinant DNA technology</i>		
Recall/review from previous learning	KS4- Genetic inheritance, Enzymes KS5- Continuation of topic from Y12		
Assessment	End of Topic Assessment Required Practical Lab Report Content on mock exams		
Cultural Capital	Inheritance of potential conditions, Genetic counselling		
Literacy/Numeracy	Lab Reports Basic numeracy/graph/data analysis and extended writing Essay Writing		