



Topic name	Term	Skills developed	Link to NC subject content	Prior learning	Next link in curriculum
Cells, Tissues and Organs	Autumn	- Ask questions and develop a line of enquiry based on observations of the real world alongside prior knowledge and experience. - Make predictions - Evaluate risks - Apply mathematical concepts and calculate results - Make and record observations - Use and derive simple equations and carry out appropriate calculations. - Use appropriate techniques, apparatus and materials during lab work paying attention to health and safety - Pay attention to objectivity and concern for accuracy, precision, repeatability and reproducibility - Present observations and data using appropriate methods, including tables and graphs. - Present reasoned explanations, including explaining data in relation to predictions and hypotheses.	Structure and function of living organisms Cells and Organisation - Cells as the fundamental unit of living organisms, including how to observe, interpret and record cell structure using a light microscope. - The functions of the cell wall, cell membrane, cytoplasm, nucleus, vacuole, mitochondria and chloroplasts. - The similarities and differences between plant and animal cells. - The hierarchical organisation of multicellular organisms: from cells to tissue to organs to systems to organisms. - The role of diffusion in the movement of materials in and between cells - The structural adaptations of some unicellular organisms. Nutrition and digestion - The tissues and organs of the human digestive system, including adaptations to function and how the digestive system digests food (enzymes simply as biological catalysts)	Links from KS2: B3.1 PLANTS Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers ANIMALS including HUMANS B4.2 Describe the simple functions of the basic parts of the digestive system in humans B6.2 Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood	Y8 Respiration, breathing and movement Links to GCSE topic: 4.1 Cell biology 4.1.3 Transport in cells 4.2.1 Principles of organisation 4.2.2 Animal tissues, organs and organ systems



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Human Reproduction	Autumn/ Spring	- Ask questions - Evaluate risks - Understand that scientific methods and theories develop as earlier explanations are modified to take account of the new evidence and ideas - Present observations and data using appropriate methods, including tables and graphs - Interpret observations and data including identifying patterns and using observations, measurements and data to draw conclusions. - Present reasoned explanations, including explaining data in relation to predictions and hypotheses. - Evaluate data, showing awareness of potential sources of random and systematic error. - Identify further questions arising from their results. - Ask questions and develop a line of enquiry based on observations of the real world alongside prior knowledge and experience. - Make predictions using scientific knowledge and understanding. - Use appropriate techniques, apparatus and materials during lab work paying attention to health and safety - Make and record observations and measurements using a range of methods for different investigations; and evaluate the reliability of methods and suggest possible improvements.	Structure and function of living organisms Reproduction - Reproduction in humans (as an example of a mammal), including the function of the male and female reproductive systems, menstrual cycle (without details of hormones), gametes, fertilisation, gestation and birth, to include the effect of maternal lifestyle on the foetus through the placenta Genetics and evolution Inheritance, chromosomes, DNA and genes - Hereditary as the process by which genetic information is transmitted from one generation to the next - Differences between species - The variation between individuals within a species being continuous or discontinuous, to include measurement and graphical representation of variation (Basic principles taught in Y7 – spirals to Y9 Inheritance and Variation)	Links from KS2: LIVING THINGS and their HABITATS B5.1: Describe the life process of reproduction in some plants and animal B6.3 EVOLUTION and INHERITANCE Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents	Y9 Inheritance & Variation Links to GCSE topic: 4.1.2 Cell division 4.5.3.1 Hormonal coordination in humans (taught in Y10) 4.6.1 Reproduction 4.6.2 Variation and evolution (taught in Y11)



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Photosynthesis	Summer	Scientific attitudes - Evaluate risks Experimental skills and investigations - Ask questions based on observations of the real world, alongside prior knowledge and experience - Make predictions using scientific knowledge and understanding - Select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables, where appropriate - Use appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety - Make and record observations and measurements - Apply sampling techniques Analysis and evaluation - Present observations and data using appropriate methods, including tables and graphs - Explaining data in relation to predictions and hypotheses Measurement - Carry out appropriate calculations	Material cycles and energy Photosynthesis - the reactants in, and products of, photosynthesis, and a word summary for photosynthesis - the dependence of almost all life on Earth on the ability of photosynthetic organisms, such as plants and algae, to use sunlight in photosynthesis to build organic molecules that are an essential energy store - the adaptations of leaves for photosynthesis Gas exchange systems - the role of leaf stomata in gas exchange in plants Nutrition and digestion - plants making carbohydrates in their leaves by photosynthesis and gaining mineral nutrients and water from the soil via their roots Interactions and interdependencies Relationships in an ecosystem - the interdependence of organisms in an ecosystem – food chains & sampling techniques to estimate population size	Links from KS2: B3.1 PLANTS Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. Investigate the way in which water is transported within plants Links to other KS3 topics: Cells, tissues and organs – plant cells	Y9 Cells & Microscopes Links to GCSE Topic: 4.4 Bioenergetics 4.4.1 Photosynthesis (taught in Y10) 4.7 Ecology 4.7.4 Organisation of an ecosystem - required practical 9 (taught in Y11)