

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<p>Content</p> <p>Knowledge</p>	<p>Organising Animals and Plants:</p> <ul style="list-style-type: none"> • The heart • Artificial Pacemakers and Stents • Breathing and Gas Exchange • Tissues and organs in plants • Transport systems in plants • Evaporation and transpiration • Factors affecting transpiration <p>Chapter B4 Knowledge: Outline the structure of the heart. Label the atrium and ventricles. Know where the valves are found in the heart and their role. Describe how blood travels in the heart. Discuss the need for an artificial heart or a stent implant. Outline the organs found in plants. Compare the organ systems in plants to the organ systems in animals. Describe how food and water are transported through the plant.</p>	<p>Disease:</p> <ul style="list-style-type: none"> • Growing bacteria • Preventing bacterial growth • Preventing Infections • Bacteria, Viruses, Fungi and Protists in animals and plants • Human and plant defence <p>Chapter 5 Knowledge:</p> <ul style="list-style-type: none"> • Making lists of different diseases caused by certain pathogens. • Knowing how plants and animals prevent and respond to infection. <p>Required Practical:</p> <ul style="list-style-type: none"> • Growing bacteria in a lab (not required to complete prior to required practical) • Investigating the effect of disinfectants and antibiotics on bacterial growth 	<p>a) Bioenergetics: Photosynthesis</p> <ul style="list-style-type: none"> • Plant cells and chloroplast • Rate of photosynthesis • Glucose • Optimising photosynthesis <p>Chapter B8 Knowledge: Recognise the need for photosynthesis in plants and the role that plant cells and their chloroplasts play. Describe the process of photosynthesis identifying the reactants and products. Describe factors that affect the rate of photosynthesis. Describe how plants use the glucose produced in photosynthesis.</p> <p>Required Practical: Light intensity and the rate of photosynthesis</p> <p>Bioenergetics: Respiration:</p> <ul style="list-style-type: none"> • Aerobic vs. Anaerobic respiration • Exercise and the body • Oxygen debt • Fermentation 	<p>b) Biological Responses: The Human Nervous System</p> <ul style="list-style-type: none"> • Homeostasis • Central Nervous System • Reflexes • The Brain <p>Chapter B10 Knowledge: Identify why it is important for the body to maintain an internal balance. Describe how the body maintains homeostasis. Recall parts of the central nervous system. Explain how a reflex occurs and the role of synapses. Outline the structure of the brain and describe what each part is responsible for.</p> <p>Required Practical: Measuring reaction times a) The Human Nervous System:</p> <ul style="list-style-type: none"> • The eye <p>Chapter B10 Knowledge: Outline the structure of the eye and describe what each part is responsible for. Know common problem with the eye and how they can be corrected.</p>	<p>a) Hormonal Communication Plants:</p> <ul style="list-style-type: none"> • Plant hormones and responses • Using Plant hormones <p>Chapter B11 Knowledge: Know the role of auxin as a plant hormone. Describe how plant hormones are used in agriculture</p> <p>b) Homeostasis in Action</p> <ul style="list-style-type: none"> • Controlling Body temperature • Removing Waste • The Kidney <p>Chapter B12 Knowledge: Describe how temperature is controlled to maintain homeostasis in the body. Explain the importance of removing waste products from the body. Outline the structure and function of the kidney. Identify causes of kidney disease and how they can be treated.</p>	<p>a) Revision for Paper 1</p> <ul style="list-style-type: none"> • To focus on recapping key knowledge and re-address common misconceptions • Embed additional exam practice for each chapter • Focus on key aspects of required practicals <p>b) Genetics and Evolution: Reproduction</p> <ul style="list-style-type: none"> • Types of reproduction • Cell division in sexual reproduction • Fungi • The human genome • DNA structure and function • Protein synthesis • Inheritance • Mutations • Inherited disorders • Genetic screening <p>Chapter B13 Knowledge:</p>

	<p>Explain the importance of evaporation and transpiration. Experiment how different factors affect transpiration.</p> <p>Required Practical:</p> <ul style="list-style-type: none"> • Mammalian Heart Dissection <p>Disease:</p> <ul style="list-style-type: none"> • Communicable Diseases • Health • Pathogens <p>Chapter B5 Knowledge: Knowing how infections are spread from organism to organism. Describing how different pathogens infect organisms.</p>	<p>a) Preventing and Treating Disease:</p> <ul style="list-style-type: none"> • Vaccination • Antibiotics vs painkillers • Discovering drugs • Developing drugs • Making and using monoclonal antibodies <p>Chapter B6 Knowledge: Knowing how vaccines work and the importance of herd immunity. Compare and contrast the use and effectiveness of antibiotics vs painkillers. Describe how drugs are discovered and the process involved in their development. Explain how monoclonal antibodies are made and their use of treatment in diseases and pregnancy tests.</p> <p>b) Non-communicable diseases:</p> <ul style="list-style-type: none"> • Health • Non-communicable diseases • Cancer and carcinogens • Smoking and its risks • Diet, exercise and its effects on preventing diseases • Alcohol and its risks <p>Chapter B7 Knowledge: Describe how the term 'health' encompasses both mental and physical wellbeing. Describe what</p>	<p>Chapter B9 Knowledge: Explain the difference between aerobic and anaerobic respiration. Describe how our bodies respond to the increased demands for energy during exercise. Explain what is meant by an oxygen debt. Know that anaerobic respiration takes place in different organisms and how it differs in each.</p>	<p>b) Hormonal Communication Mammals:</p> <ul style="list-style-type: none"> • Hormonal control • Controlling blood glucose levels • Diabetes and its treatment • Negative feedback • Human reproduction • The menstrual cycle • Artificial control of fertility • Infertility treatments <p>Chapter B11 Knowledge: Recognise how hormones are involved with maintaining homeostasis in mammals. Explain how blood glucose levels are controlled. Describe the different types of diabetes and how they are treated. Explain what is meant by negative feedback and its role in the body. Identify hormones involved in human reproduction, their roles and where they are produced. Outline the menstrual cycle and explain how it is controlled by hormones. List different methods of contraception and compare their effectiveness. Evaluate different solutions and treatments for infertility.</p>	<p>Required Practical: The effect of light on newly germinated seedlings</p>	<p>State the two types of reproduction and distinguish between the two. Go through step by step the process of meiosis and its importance. Explain how fungi reproduce. Explore the journey to the discovery of the human genome. Learn the structure of DNA and what its purpose is. Learn how proteins are made. Describe what is meant by inheritance. List characteristics caused by genetics. Compare characteristics/traits caused by genetics vs. The environment. Recall causes of mutations. Describe what a mutation means in terms of the DNA. Explore different inherited disorders and how they are passed on from one generation to the next. Describe how doctors can screen for genetic disorders.</p> <p>Genetics and Evolution: Variation and Evolution</p> <ul style="list-style-type: none"> • Variation • Evolution by Natural Selection <p>Chapter B14 Knowledge: Knowing what is meant by variation. Explaining Darwin's theory of Natural Selection.</p>
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Skills	<ul style="list-style-type: none"> • Dissect a mammalian heart and locate the atria, ventricles, heartstrings, valves, coronary arteries. • Model inhalation and exhalation using a Bell Jar • Make links back to B1 active transport with translocation in plants. • Interpret data and graphs on factors that affect transpiration 	<ul style="list-style-type: none"> • To use aseptic technique to culture bacteria • To grow bacteria under safe lab conditions • To be able to calculate bacterial growth • 	<ul style="list-style-type: none"> • Qualitatively test exercise affects pulse • Qualitatively test reaction times • Interpret data from tables and graph • Writing word and chemical equation for photosynthesis • Quantitatively test the rate of photosynthesis 	<ul style="list-style-type: none"> • Dissect a mammalian eye and identify the different parts relating them to their function 	<ul style="list-style-type: none"> • Planning an investigation to assess how light affects growth of plants • Dissect a mammalian kidney 	<ul style="list-style-type: none"> • Recalling important information • Exam Technique • Spacing • Interleaving • Elaboration
Key Questions	<p>What are communicable diseases and how can we prevent them?</p> <p>How do pathogens infect organisms?</p>	<p>Who is Alexander Fleming?</p> <p>How do vaccines work?</p> <p>Why is herd immunity important in a population?</p>	<p>How does exercise affect breathing and heart rate?</p> <p>How do plants use the glucose they make during photosynthesis?</p>	<p>How do hormones control the release of a mature egg in the human menstrual cycle?</p> <p>Why is the eye part of the nervous system?</p> <p>How are myopia and hyperopia corrected and</p>	<p>How do hormones control responses such as the way plants bend towards light?</p> <p>What are the processes behind temperature control in animals?</p> <p>Why do our kidneys</p>	<p>What is DNA, what is a genome, and why is it so important to be able to analyse the genome of an organism?</p> <p>How are characteristics passed from parents to</p>

		How can your lifestyle affect your risk of developing many non-communicable diseases?		why do they occur? How does the nervous system help with survival? What does the brain do? What factors affect reaction times? What is homeostasis and why is it so important?	remove waste?	their offspring? Who are Watson and Crick? Who was Charles Darwin?
Assessment	Diagnostic test on B5 ReACT tasks B5 End of Chapter Test	Diagnostic tests on B6, B7, and B8 ReACT tasks B6, B7, and B8 End of Chapter Tests	Diagnostic test on B8, B9 ReACT tasks B8, B9 End of Chapter Test	Diagnostic test on B10 ReACT tasks B10 End of Chapter Test	Diagnostic tests on B11 and B12 ReACT tasks B11 and B12 End of Chapter Tests	Mock Exam paper covering content from B1-B9 Diagnostic test on B13 ReAct tasks B13 End of Chapter Test
Literacy/numeracy/ SMSC/Character	Key words: infection, pathogen, communicable disease, virus, bacteria, fungus, protist, aseptic technique, culture Numeracy: Calculating bacterial growth	Key words: vaccine, monoclonal antibodies, health, limiting factors, carcinogen Numeracy: interpreting data from graphs, percentage change	Key words: metabolism, respiration, oxygen debt, limiting factors Numeracy: Interpreting data and graphs, calculating mean, Balacing equations, calculating rate,	Key words: hormone, pupil, lens, menstrual cycle, oestrogen, FSH, LH, contraception, infertility, IVF, homeostasis, reflex, synapse, cerebellum, cerebral cortex, hypothalamus, medulla, pituitary gland Numeracy: Interpreting data and graphs	Key words: auxin, phototropism, tropism, geotropism, hypothalamus, pituitary gland, negative feedback, dialysis, urea, amino acids, carbon dioxide, cortex, medulla	Key words: inheritance, screening, genome, nucleotide, polydactyl, cystic fibrosis, DNA, nucleus, amniocentesis, CVS, template, natural selection, evolution, Numeracy: working out fractions, calculating percentages, working out probability
Enrichment opportunities and futures	Visiting Body World's exhibition in Leicester square- Get up close to real bodies and examine their organs and systems Visit Watson and Crick's original DNA model at the Science Museum in South Kensington- See their model up close Francis Crick Institute at King's Cross- Look into some current research taking place at the Francis Crick Institute in London https://www.crick.ac.uk/ Visit Alexander Fleming's Laboratory at St Mary's Hospital London- see where Fleming discovered penicillin					