Year: 13
Subject: Oxford AQA Biology

Term	Week	Focus	Summary	Learning Focus	Learning Skills Being Used
Term 1.1	1	Populations, communities, and ecosystems Required practical 9: A laboratory based investigation of the effect of competition on seedling growth.	Understanding the concepts of populations, communities, and ecosystems in an ecological context.	Explore the relationships between populations, communities, and ecosystems. Analyse the biotic and abiotic factors that influence these ecological structures. Design and carry out an experiment to investigate the influence of light intensity on photosynthesis. Analyse the data obtained and draw conclusions based on the results.	Data analysis, Critical thinking Experimental design, Data interpretation
	2	Variation in population size	Exploring the factors that cause variations in population size, including abiotic factors and interactions between organisms such as competition and predation.	Analyse and interpret data relating to population numbers and distribution. Recognize correlations and causal relationships.	Data interpretation, Statistical analysis
	3	Ecological succession	Understanding the process of ecological succession, from pioneer species to climax community. Examining the impact of species at different stages of succession on the environment and biodiversity.	Investigate the stages of ecological succession and the role of different species in shaping the environment. Understand the concept of biodiversity and its significance in conservation efforts.	Research skills, Critical analysis
	4	Retrieval practise	Application of knowledge gained throughout topic.	Evaluate knowledge of all content from the cells topic and apply it to different retrieval tasks.	Critical thinking, Analysis, Recall, Mathematical skills
	5	The light-dependent reaction	Exploring the process of the light-dependent reaction in photosynthesis, including the absorption of light by chlorophyll, ATP and NADPH production, and the photolysis of water.	Learn the detailed mechanism of the light-dependent reaction. Understand the roles of chlorophyll, ATP, NADPH, and photolysis of water in capturing and converting light energy into chemical energy.	Conceptual understanding, Data analysis

	6	The light-independent reaction	Understanding the light-independent reaction (Calvin cycle) in photosynthesis, focusing on the fixation of carbon dioxide, the production of triose phosphate, and the regeneration of RuBP.	Investigate the biochemical processes involved in the light-independent reaction. Explore the role of carbon dioxide, ATP, and NADPH in the synthesis of organic compounds. Understand the regeneration of RuBP and its significance in sustaining the cycle.	Experimental design, Data interpretation
	7	Limiting factors in photosynthesis	Examining the factors that can limit the rate of photosynthesis, including carbon dioxide concentration, light intensity, and temperature.	Explore the concept of limiting factors and their effects on the rate of photosynthesis. Analyse how carbon dioxide, light, and temperature affect the efficiency of photosynthetic reactions.	Problem-solving, Scientific inquiry
Term 1.2	**1**	Practical Activity: Photosynthesis	Conducting an investigation on the effect of a specific limiting factor, such as light intensity, on the rate of photosynthesis.	Design and carry out an experiment to investigate the influence of light intensity on photosynthesis. Analyse the data obtained and draw conclusions based on the results.	Experimental design, Data analysis
	2	Retrieval practise	Application of knowledge gained throughout topic.	Evaluate knowledge of all content from the cells topic and apply it to different retrieval tasks.	Critical thinking, Analysis, Recall, Mathematical skills
	3	Glycolysis	Understanding the process of glycolysis, a common pathway in both aerobic and anaerobic respiration. Examining the steps involved, including glucose phosphorylation, production of triose phosphate, ATP generation, and reduced NAD production.	Learn the detailed steps of glycolysis and its role in energy production. Analyse the conversion of glucose into pyruvate, the generation of ATP, and the production of reduced NAD.	Data analysis, Conceptual understanding

	1	Anaerobic respiration	Exploring the process of anaerobic respiration, specifically the conversion of pyruvate to either ethanol and carbon dioxide or lactate. Examining the role of reduced NAD in regenerating NAD for further glycolysis.	Understand the pathways of anaerobic respiration and the conversion of pyruvate. Analyse the role of reduced NAD in regenerating NAD for continued glycolysis.	Experimental design, Critical thinking
	2	Aerobic respiration	Understanding the process of aerobic respiration, including the link reaction, the Krebs cycle, and oxidative phosphorylation. Examining the production of ATP, reduced coenzymes, and carbon dioxide during aerobic respiration.	Investigate the detailed steps of aerobic respiration. Analyse the oxidation-reduction reactions, ATP synthesis, and the production of reduced coenzymes and carbon dioxide.	Data interpretation, Conceptual understanding
	3	Respiratory substrates	Examining different respiratory substrates, such as carbohydrates, lipids, and proteins, and their utilization in cellular respiration. Understanding the calculation of the Respiratory Quotient (RQ) and its implications.	Explore the breakdown of different respiratory substrates in cellular respiration. Calculate the Respiratory Quotient (RQ) and interpret its values in terms of the type of substrate being utilized.	Data analysis, Critical analysis
	4	Practical Activity: Respiration	Conducting an investigation on a specific variable, such as substrate or temperature, and its impact on the rate of respiration.	Design and conduct an experiment to examine the effects of a variable (e.g., substrate or temperature) on the rate of respiration. Interpret the results and draw meaningful conclusions from the data collected.	Experimental design, Data interpretation
	5	Energy transfer through ecosystems	Understanding the transfer of energy through trophic levels in food chains and food webs. Analysing the inefficiency of energy transfer and the concept of pyramids of number, biomass, and energy.	Investigate the flow of energy in ecosystems and the inefficiency of energy transfer between trophic levels. Analyse the relationships between pyramids of number, biomass, and energy in food chains and webs.	Research skills, Critical thinking

	6	Energy and human food production	Examining the concepts of gross primary production (GPP) and net primary production (NPP) in the context of human food production. Understanding the factors that increase the efficiency of energy transfer in farming practices.	Explore the concepts of GPP and NPP in relation to food production. Analyse the factors that increase energy transfer efficiency in farming practices. Evaluate the economic, environmental, and ethical implications of these practices.	Data interpretation, Problem-solving
	7	Retrieval practise	Application of knowledge gained throughout topic.	Evaluate knowledge of all content from the cells topic and apply it to different retrieval tasks.	Critical thinking, Analysis, Recall, Mathematical skills