

SB1: **Key Concepts in Biology** (Paper 1 and Paper 2)

Lesson	Objectives Tracker Sheet	Date covered	I know this well	I need to do more work on this
SB1a Microscopes	SB1.3 Explain how changes in microscope technology, including electron microscopy, have enabled us to see cells with more clarity and detail than in the past.			
	SB1.4 Demonstrate an understanding of size and scale in relation to microscopy, including magnification calculations.			
	SB1.5 Demonstrate an understanding of the relationship between quantitative units, including: (a) milli (10 ⁻³), (b) micro (10 ⁻⁶), (c) nano (10 ⁻⁹), (d) pico (10 ⁻¹²).			
SB1b Plant and animal cells	SB1.1 Explain how the sub-cellular structures of eukaryotic and prokaryotic cells are related to their functions, including: (a) animal cells – nucleus, cell membrane, mitochondria and ribosomes (b) plant cells – nucleus, cell membrane, cell wall, chloroplasts, mitochondria & ribosomes.			
	SB1.4 Demonstrate an understanding of size and scale in relation to microscopy, including magnification calculations.			
	SB1.6 Investigate biological specimens using microscopes, magnification calculations & labelled scientific drawings from observations.			
SB1c Specialised cells	SB1.2 Describe how specialised cells are adapted to their function, including (a) sperm cells – acrosome, haploid nucleus, mitochondria and tail, (b) egg cells – nutrients in the cytoplasm, haploid nucleus and changes in the cell membrane after fertilisation, (c) ciliated epithelial cells			
	SB1.4 Demonstrate an understanding of size and scale in relation to microscopy, including magnification calculations.			
	SB1.6 Produce labelled scientific drawings from observations of biological specimens using microscopes.			
SB1d Inside Bacteria	SB1.1 Explain how the sub-cellular structures of eukaryotic and prokaryotic cells are related to their			

	functions, including: (c) bacteria – chromosomal DNA, plasmid DNA, cell membrane, ribosomes and flagella.			
	SB1.5 Demonstrate an understanding of the relationship between quantitative units, including: a) milli (10 ⁻³), b) micro (10 ⁻⁶), c) nano (10 ⁻⁹), d) pico (10 ⁻¹²) H e) calculations with numbers written in standard form.			
SB1e Enzymes and nutrition	SB1.12 Explain the importance of enzymes as biological catalysts in the synthesis of carbohydrates, proteins & lipids & their breakdown into sugars, amino acids & fatty acids & glycerol.			
SB1f Testing foods	SB1.14 Explain how the energy contained in food can be measured using calorimetry.			
SB1f Testing foods – Core Practical	SB1.13 Investigate the use of chemical reagents to identify starch, reducing sugars, proteins and fats.			
SB1g Enzyme action	SB1.7 Explain the mechanism of enzyme action including the active site and enzyme specificity.			
	SB1.8 Explain how enzymes can be denatured due to changes in the shape of the active site			
	SB1.10 Investigate the factors that affect enzyme activity			
SB1h Enzyme activity	SB1.9 Explain the effects of temperature, substrate concentration and pH on enzyme activity.			
	SB1.11 Demonstrate an understanding of rate calculations for enzyme activity.			
SB1h pH and enzymes – core practical	SB1.10 Investigate the factors that affect enzyme activity.			
SB1i Transporting substances	SB1.15 Explain how substances are transported by diffusion, osmosis and active transport			
	SB1.17 Calculate percentage gain and loss of mass in osmosis			
SB1i Osmosis in potato slices – core practical	SB1.16 Investigate osmosis in potatoes			