KS3 Science Skills – Learning Objectives

	Beginning	Developing	Secure	Embedding	Extending	Excelling	
Y7	Beginning	Developing	Secure	Embedding	Extending	Excelling	
Y8		Beginning	Developing	Secure	Embedding	Extending	Excelling
Lab Safety	*ALL YEAR 7 STUDENTS MUST BE AT LEAST 'SECURE' IN THIS TOPIC*		Recognise common laboratory dangers and suggest remedies. Recall the meanings of hazard symbols.	Complete a simple risk assessment. Know how to handle hazardous chemicals safely.	Complete a detailed risk assessment, showing likelihood of accident and severity of injury.	-	-
Using Apparatus	Naming of common lab apparatus. Bunsen burner safety. Making simple measurements, and recalling some units of measurement.		Naming and using common glassware. Drawing glassware correctly. Use of Bunsen burner. Selecting correct apparatus for the task. Making accurate measurements.		Use of specialist glassware (eg. condenser, burette). Understanding the use of datalogging apparatus, discussing benefits and drawbacks.	Using datalogging apparatus to complete an experiment.	
Planning Skills	Understanding of 'fair tests'.	Deciding an aim; giving a hypothesis. Identifying independent and dependent variables. Producing a simple, workable method.	Supporting a hypothesis with a scientific reason. Identifying a number of control variables. Detailed method, justifying choice of apparatus, and suggesting range and interval of independent variable. Considers the value of repeat readings.			Researching and comparing suitable methods. Suggesting how control variables may be monitored.	
Presenting Data	-	Use of an appropriate table and graph. Drawing a simple conclusion.	Use of a properly constructed and labelled results table and graph. Identifying anomalies, and knowing how to deal with anomalous data. Correctly discussing whether data is reliable, accurate, precise and valid. Evaluating an experiment, and suggesting improvements to the method.			Calculation of absolute and percentage uncertainties.	
Math. Skills	Basic use of calculator.	Completing simple calculations and graph plotting (with assistance).	Completing calculations, including rearrangement. Calculating mean, mode and median. Selecting the most appropriate type of graph. Accurate plotting of points on a graph.	Converting units. Completing complex calculations. Good scaling of a graph. Drawing appropriate lines/curves of best fit. Calculating gradient, and estimating graph area.		Completing multi-stage problem-solving tasks. Recognising if an answer is realistic. Estimating answers to appropriate order of magnitude.	
Microscopes	Explain the function of a microscope, and when it may be used.	Name the parts of a microscope. With assistance, prepare a slide and focus a microscope.	Prepare a simple slide. Focus a microscope correctly to give a clear image. Make an accurate sketch of the object observed through a microscope.	Calculate the magnification of a microscope image.	-	*TOPIC NOT STUDIED IN YEAR 8*	
Aseptic Technique	-	Precautions when producing and handling samples, and preventing cross-contamination.	Demonstrate aseptic techniques to prepare and handle a petri dish.	Explain how swabbing may be used to collect samples, and how cultures may be grown from the sample.	-	*TOPIC NOT STUDIED IN YEAR 8*	
Chemical Equations	Identifying reactants and products in a reaction. Recognising and using some chemical symbols and formulae.	Naming of chemical compounds. Form word equations for chemical reactions, and unbalanced symbol equations. Understanding the need for balancing an equation.	Balancing simple chemical equations. Use of state symbols.	Using valency to determine the formula of a compound. Balancing complex chemical equations.		Use of ionic chemical equations and equilibria.	
Light and Electricity	*TOPICS NOT STUDIED IN YEAR 7*		Recognising symbols used in ray diagrams. Recognising symbols used in circuit diagrams. Recalling the function of each component / piece of apparatus.	Showing the correct path of light rays. Drawing circuit diagrams; constructing series and simple parallel circuits.	Accurate drawing of reflection and refraction. Constructing complex circuits. Rectifying faults in circuits.	-	