BLESSED TRINITY LEARNING PROGRAMME

SUBJECT: Science   **YEAR:** 9   **Half Term:** 1

Title	Learning Objectives	Classroom Activity	Recommended Homework	Marking & Assessment
Theory of Science	Develop an understanding of how the scientific process occurs	Identify the differences between theory and evidence through discussion Card sort of data—does it support or refute the theory? Can evidence support more than one theory? Inform the pupils of the practical that they will be assessed on		Pupils will be assessed by class work, answers to questions in class time, an assessed practical (to be confirmed by the class teacher) and an end of topic assessment (practice controlled assessment)
Working Safely	Identify risks associated with practical work	Discuss ideas of hazard, harm and prevention. Identify risks related to a practical Carry out a practical and record the results	Write a risk assessment related to the assessed practical that will be done later in the topic ***	

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Preliminary Work and Variables (I)	Understand the importance of carrying out preliminary experiments and variables	Discuss the idea of dependent, independent and control variables Carry out a preliminary experiment to identify any limitations to the equipment/ method used Record results		
Variables (II)	Understand the difference between the 3 main variables	Carry out the previous lessons full practical, making adjustments to the equipment/method and record the results. Scenarios of different investigations in which the pupils have to identify the variables.		
Independent Variable	Understand how to use prior knowledge and preliminary work to identify a factor to test	Rates of reaction Practical - Pupils have to identify what will affect the rate of a chemical reaction (with given equipment) Pupils explain how they have made this assessment linking to prior knowledge (predictions) and the need to carry out preliminary work	Identify and write the variables for the assessed practical that will be done later in the topic ***	

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Hypothesis and Prediction	Understand the difference between these two parts of a scientific investigation	Identify that a hypothesis is a statement that the independent variable will affect the dependent variable. Students will write a hypothesis about several practical scenarios Discuss the idea that a prediction is an 'er' statement based on the hypothesis Pupils then write a prediction for the above scenarios	Write the hypothesis and prediction for the assessed practical that will be carried out later in the topic ***	
Accuracy and Precision	Understand the importance of accuracy and precision within a scientific investigation	Discuss the difference between accuracy and precision Carry out a practical to demonstrate these key ideas i.e. the graduation of different pieces of equipment		
Repeatability and Reproducible	Understand the importance of carrying out repeat practical work (linking with last lessons keywords) and the difference between repeatable and reproducible results	Carry out a class practical which includes repeats within each group Compare class results to discuss differences between repeatable and reproducible		
Results Tables, Repeats and Averages	Understand how to construct a results table, including a need for repeats and averages	Carry out a practical with repeats (can be shared as a class) Record results in a table and include averages	Draw a table of results that can be used for the assessed practical ***	

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Graphs (I)	Understand the key components of drawing graphs—scale, plotting, labels and units	Discuss how to construct a graph Students carry out a practical, record results and draw a graph	Plot different graphs using data	
Graphs (II)	Understand the key components of drawing graphs—line of best fit and ange bars	Demonstrate how to use and draw range bars Students carry out a practical, record results and draw a graph including a line of best fit and range bars	Plot different graphs using data	
Method and Equipment	Understand how to write and justify a method and equipment list	Ask pupils to write a method and equipment list for a practical Carry out the practical investigation	Write a method and equipment list for the assessed practical ***	

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Limitations	Understand the limitations of equipment or a method	Pupils carry out a practical(s) to determine limitations and the impact that has on the accuracy/repeatability of the results		
Assessing Accuracy and repeatability	Understand how to use data to assess accuracy and repeatability	Looking at the previous results and graphs determine how accurate and repeatable the results are. Discuss accuracy in terms of the average results and the line of best fit Discuss repeatability in terms of the range bars	Give pupils data and ask the pupils to assess how accurate and repeatable the data is	
Making a Conclusion	Drawing conclusions based on evidence	Carry out a practical and make a link between cause and correlation and identify trends and patterns		
Making a Conclusion (II)	Drawing conclusions based on evidence	Identify trends, patterns and correlation using examples of data. Link this discussion with variables and cause. State whether or not the results support or refute the predictions (this can be discussed prior to each scenario or given)		

Title	Learning Objectives	Classroom Activity	Recommended Homework	Marking & Assessment
Assessed Practical	Practice Data Analysis	Pupils carry out a practical using the method and results table they have previously made, including repeats		
Assessed Practical	Practice Data Analysis	Pupils use the data to calculate averages and draw a graph		
Assessed Practical	Practice Data Analysis	Assessed Evaluation based on the practical and data		
Assessed Practical	Practice Data Analysis	Assessed Conclusion based on the practical and data		Pupils submit all homework with *** and work carried out during the assessed practical