Pathway A	Pathway B	Pathway C	Pathway D	Mastery Level	Can do words	AO1 **Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures.**	AO2 **Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures.**	AO3 **Analyse information and ideas to: interpret and evaluate; make judgments and draw conclusions; develop and improve experimental procedures.**
1. Exceeding expected progress	1.Exceeding expected progress	1.Exceeding expected progress	1.Exceeding expected progress	Extend	Compose Construct Argue Theorise Evaluate Prove Hypothesise Design	• Students can demonstrate relevant and comprehensive knowledge and understanding. • Students can apply higher-level knowledge and understanding correctly to both familiar and unfamiliar situations using accurate scientific terminology.	• Students explain how and why some questions can be investigated and why some cannot. • Students can suggest examples of independent, dependent, and control variables in unfamiliar situations. • Students use a range of mathematical skills to perform complex scientific calculations.	• Students compose scientific explanations for unexpected observations or measurements making allowances for anomalies. • Students critically interpret and evaluate conflicting evidence. • Students analyse findings to interpret trends and patterns and draw detailed and complex conclusions from their evidence.
					Create Justify Reflect Generalise Predict Plan	• Students can justify their ideas using relevant scientific content. • Students can correctly interpret information and write detailed answers	• Students can explain the effect of experimental error, and of not controlling all the variables adequately. • Students can identify risks in an experiment and write an appropriate risk specific to the investigation.	• Students suggest and justify improvements to experimental procedures using detailed scientific knowledge and understanding. • Students suggest coherent strategies to take particular investigations further.
2. Making expected progress				A/E	Analyse Compare and contrast Apply Interview Explain causes	• Students can explain processes by making connections between ideas or concepts. • Students can compare and contrast different ideas/ models.	• Students can write a detailed plan for a hypothetical investigation. • Students use appropriate mathematical skills to perform multi-step calculations. • Students can plot data on a graph and draw the line of best fit. • Students can connect theory with particular context,stimuli,materials that are not clearly identified in the specification	• Students explain how data can be interpreted in different ways. • Students analyse findings to interpret trends and patterns and draw conclusions from their evidence. • Students identify quantitative relationships between variables, using them to inform conclusions and make further predictions.
3.Below expect	2. Making expect			Apply		• Students can explain processes using abstract ideas or models.	• Students can describe how to make and record observations and measurements.	• Students assess the strength of evidence, deciding whether it is sufficient to support a conclusion.

							• Students can calculate a mean from three repeat measurements. • Students can present data appropriately as tables and graphs.	• Students explain ways of modifying working methods to improve reliability.
4.Cause for concern	3.Below expected progress	2. Making expected progress			Explain effects Distinguish Question Relate Classify Organise Sequence	• Students demonstrate mostly accurate and appropriate knowledge and understanding using mostly accurate scientific terminology.	• Students can apply knowledge and understanding mostly correctly to familiar and unfamiliar contexts.	• Students interpret data in various formats, recognising anomalous results. • Students explain differences in repeated investigations.
	4.Cause for concern	3.Below expected progress	2. Making expected progress	K/A	Describe Combine Follow a step by step procedure	• Students describe scientific ideas using simple models. • Students can write a basic method for an investigation	• Students can describe how to produce accurate and precise data, and reduce experimental error • Students can describe a risk assessment	• Students draw valid conclusions that use more than one piece of supporting evidence. • Students evaluate working methods suggesting ways to improve them.
		4.Cause for concern	3.Below expected progress	Know	Outline List Define Label Draw	• Students demonstrate some relevant scientific knowledge and understanding using limited scientific terminology • Students can say what a variable is.	• Students can state what should be included in the plan for an investigation and why. • Students can identify different types of variable and experimental errors • Students can state what is meant by a risk assessment • Students can use simple mathematical concepts to calculate results	• Students make comparisons from the data/observation and produce a simple conclusion. • Students make suggestions about how their methods could be improved.
			4.Cause for concern	Developing	Name Match Find Identify	• Students recall basic scientific facts. • Students identify basic structures. • Students label basic diagrams • Students correctly match keywords/definitions.	• With help, students can calculate a mean of two values. • Students can add data to a graph or chart.	• Students can recognise some patterns in results.

KS3 Progress Ladder - Science