

YEAR 8 MATHS PROGRESS LADDER

Pathway A	Pathway B	Pathway C	AO1 Fluency	AO2 Reason Mathematically	AO3 Problem solving
1. Exceeding expected progress	1. Exceeding expected progress	1. Exceeding expected progress	<ul style="list-style-type: none"> Select and use appropriate calculation strategies to solve increasingly complex problems. Be fluent in algebraic manipulation and use it as a tool to solve problems. 	<ul style="list-style-type: none"> Make and test conjectures about patterns and relationships; look for proofs or counter-examples. Identify variables and express relations between variables algebraically and graphically. Confidently reason deductively in number, algebra and geometry including some geometric constructions. Extend and formalise their knowledge of proportion including working with measures and geometry. Explore what can and cannot be inferred in statistical settings, and express their arguments formally. Extend their understanding of the number system; make connections between number relationships and their algebraic and graphical representations. 	<ul style="list-style-type: none"> Develop their mathematical knowledge, in part through solving complex multi-step problems and evaluate the outcome. Develop their use of formal mathematical knowledge to interpret and solve complex problems. Select appropriate concepts, methods and techniques to unfamiliar and non-routine complex problems.
2. Making expected progress	1. Exceeding expected progress	1. Exceeding expected progress	<ul style="list-style-type: none"> Move freely between different numerical, algebraic and diagrammatic representations for example, equivalent fractions, fractions and decimals. Use language and properties precisely to analyse numbers, 2-D and 3-D shapes, probability and statistics. Select and use appropriate calculation strategies to solve problems. Use algebra to generalise the structure of arithmetic, including to formalise mathematical relationships. Substitute values in expressions, simplify expressions, and solve more complex equations. Further develop algebraic fluency. 	<ul style="list-style-type: none"> Make and test conjectures about patterns and relationships; look for proofs or counter-examples. Identify variables and express relations between variables algebraically. Confidently reason deductively in number, algebra and geometry including some geometric constructions. Extend and formalise their knowledge of proportion including working with measures and geometry. Explore what can and cannot be inferred in statistical settings, and begin to express their arguments formally. Extend their understanding of the number system; make connections between number relationships and their algebraic representations. 	<ul style="list-style-type: none"> Develop their mathematical knowledge, in part through solving complex problems and evaluating the outcomes, including multi-step problems. Develop their use of formal mathematical knowledge to interpret and solve complex problems. Select appropriate concepts, methods and techniques to apply to unfamiliar and non-routine complex problems.
3. Below expected progress	2. Making expected progress	1. Exceeding expected progress	<ul style="list-style-type: none"> Consolidate their numerical and mathematical capability from year 7 and extend their understanding of the number system and place value to include decimals, fractions, powers and roots. Use diagrams to generalise the structure of arithmetic, including to formalise mathematical relationships. Substitute values in expressions, simplify expressions, understand the equality and inequality symbols and solve equations. Select and use appropriate calculation strategies to solve simple problems. Move freely between different numerical, algebraic and diagrammatic representations. Develop algebraic fluency. Use language and properties to analyse numbers, algebraic expressions, 2-D and 3-D shapes, probability and statistics. 	<ul style="list-style-type: none"> Make and test conjectures about simple patterns and relationships; look for proofs or counter-examples. Identify variables and express relations between variables algebraically. Reason deductively in number, algebra and geometry including some geometric constructions. Extend their knowledge of ratio and proportion including when working with geometry. explore what can and cannot be inferred in statistical settings Extend their understanding of the number system; explore connections between number relationships and their algebraic representations. 	<ul style="list-style-type: none"> Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems. Develop their use of formal mathematical knowledge to interpret and solve problems. Select appropriate concepts, methods and techniques to apply to unfamiliar problems.
4. Cause for concern	3. Below expected progress	2. Making expected progress	<ul style="list-style-type: none"> Consolidate their numerical and mathematical capability from year 7 and extend their understanding of the number system and place value to include decimals, fractions and powers. Use diagrams to generalise the structure of arithmetic, including to formalise mathematical relationships. Substitute values in expressions. Move between different numerical, algebraic and diagrammatic representations. Develop some algebraic fluency. Use language and properties to begin to analyse numbers, algebraic expressions, 2-D and 3-D shapes, probability and statistics. 	<ul style="list-style-type: none"> Make and test conjectures about simple patterns and relationships. Identify variables and express relations between variables algebraically. Begin to reason deductively in number, algebra and geometry. Interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning. Extend their knowledge of proportion including when working with geometry. Extend their understanding of the number system. 	<ul style="list-style-type: none"> Begin to solve multi step problems. Select appropriate concepts, methods and techniques solve routine problems.

4. Cause for concern	4. Cause for concern	3. Below expected progress	<ul style="list-style-type: none"> Use diagrammatic representations for example, equivalent fractions, fractions and decimals. Consolidate their numerical and mathematical capability from year 7 and extend their understanding of the number system and place value to include decimals, fractions and some powers. Use diagrams to generalise the structure of arithmetic. Begin to develop some algebraic fluency. 	<ul style="list-style-type: none"> Make and test patterns and relationships. Identify variables and express relations between them. Begin to reason in number and geometry. Begin to interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning. Develop their knowledge of proportion. 	<ul style="list-style-type: none"> Solve single step problems. Explain and reason single step problems.
4. Cause for concern	4. Cause for concern	4. Cause for concern	<ul style="list-style-type: none"> Consolidate their numerical and mathematical capability from year 7 and extend their understanding of the number system and place value to include decimals, fractions and some powers. 	<ul style="list-style-type: none"> Make and test patterns and relationships. Identify variables. Begin to interpret when the structure of a number problem requires additive, multiplicative or proportional reasoning. Develop their knowledge of proportion. 	<ul style="list-style-type: none"> Can use manipulatives to solve single step problems.