Year 9 Maths Curriculum Plan

	Key questions	Overview of the module	Assessment	Cross Curricular Skills	Suggested reading material and websites:
Module 1 **Calculating**	• Kenny thinks this number is written in standard form: 23×10^7. Do you agree with Kenny? Explain your answer. • When a number 'x' is rounded to 2 significant figures the result is 70. Jenny writes '$65 < x < 75$'. What is wrong with Jenny's statement? How would you correct it? • Convince me that $4.5 \times 10^7 \times 3 \times 10^5 = 1.35 \times 10^{13}$	• calculate with roots, and with integer indices • calculate with standard form $A \times 10^n$, where $1 \leq A < 10$ and n is an integer • use inequality notation to specify simple error intervals due to truncation or rounding • apply and interpret limits of accuracy	Students will sit a short diagnostic assessment at before the start of each topic to inform teaching. The unit finishes with an End of Unit Test. The department emails results to parents including improvements highlighted in pink. Students complete full corrections on tests to ensure they understand the entire unit before moving on.	**Literacy:** Power Root Index, Indices Standard form Inequality Truncate Round Minimum, Maximum Interval Decimal place Significant figure **Thinking Skills:** Students are supported to develop high level problem solving skills, applying challenging mathematical concepts to a range of unforeseen, multi-step problems. They will also be encouraged to infer the meaning of new vocabulary and deduce different methods of working.	www.kerboodle.com www.mymaths.co.uk/ www.khanacademy.org/ https://campus.mangahigh.com www.bbc.co.uk/education/subjects/z38pycw https://nrich.maths.org/

Module 2 **Visualising and Constructing**	• (Given a single point marked on the board) show me a point 30 cm away from this point. And another. And another … • If this is the plan show me a possible 3D shape. And another. And another. • Demonstrate how to create the perpendicular bisector (or other constructions). Challenge pupils to write a set of instructions for carrying out the construction. Follow these instructions very precisely (being awkward if possible; e.g. changing radius of compasses). Do the instructions work? Give pupils the equipment to create standard constructions and challenge them to create a right angle / bisect an angle	• use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/at a given point, bisecting a given angle) • use these to construct given figures and solve loci problems; know that the perpendicular distance from a point to a line is the shortest distance to the line • construct plans and elevations of 3D shapes	Students will sit a short diagnostic assessment at before the start of each topic to inform teaching. The unit will be followed by an end of unit assessment. These assessments are stored and marked on a system called MiniTest. This allows us to track the progress made throughout the topic. A copy of the end of unit assessment will be emailed to parents and students as well as being recorded in their work book.	**Literacy:** Compasses Arc Line segment Perpendicular Bisect Perpendicular bisector Locus, Loci Plan Elevation **Thinking Skills:** Students are supported to develop high level problem solving skills, applying challenging mathematical concepts to a range of unforeseen, multi-step problems. They will also be encouraged to infer the meaning of new vocabulary and deduce different methods of working.	www.kerboodle.com www.mymaths.co.uk/ www.khanacademy.org/ https://campus.mangahigh.com www.bbc.co.uk/education/subjects/z38pycw https://nrich.maths.org/

Module 3 **Algebraic Proficiency**	• The answer is $x^2 + 10x + c$. Show me a possible question. And another. And another … (Factorising a quadratic expression of the form $x^2 + bx + c$ can be introduced as a reasoning activity: once pupils are fluent at multiplying two linear expressions they can be asked 'if this is the answer, what is the question?') • Convince me that $(x + 3)(x + 4)$ does not equal $x^2 + 7$. • What is wrong with this statement? How can you correct it? $(x + 3)(x + 4) \equiv x^2 + 12x + 7$. • Jenny thinks that $(x – 2)^2 = x^2 – 4$. Do you agree with Jenny? Expaloin your answer.	• understand and use the concepts and vocabulary of identities • know the difference between an equation and an identity • simplify and manipulate algebraic expressions by expanding products of two binomials and factorising quadratic expressions of the form $x^2 + bx + c$ • argue mathematically to show algebraic expressions are equivalent, and use algebra to support and construct arguments • translate simple situations or procedures into algebraic expressions or formulae	Students will sit a short diagnostic assessment at before the start of each topic to inform teaching. The unit will be followed by an end of unit assessment. These assessments are stored and marked on a system called MiniTest. This allows us to track the progress made throughout the topic. A copy of the end of unit assessment will be emailed to parents and students as well as being recorded in their work book.	**Literacy:** Inequality Identity Equivalent Equation Formula, Formulae Expression Expand Linear Quadratic **Thinking Skills:** Students are supported to develop high level problem solving skills, applying challenging mathematical concepts to a range of unforeseen, multi-step problems. They will also be encouraged to infer the meaning of new vocabulary and deduce different methods of working.	www.kerboodle.com www.mymaths.co.uk/ www.khanacademy.org/ https://campus.mangahigh.com www.bbc.co.uk/education/subjects/z38pycw https://nrich.maths.org/
Module 4 **Proportional Reasoning**	• Show me an example of two quantities that will be in direct (inverse) proportion. And another. And another … • Convince me that this information shows a proportional relationship. What type of proportion is it? 40 | 3 60 | 2 80 | 1.5	• solve problems involving direct and inverse proportion including graphical and algebraic representations • apply the concepts of congruence and similarity, including the relationships between lengths in similar figures • change freely between compound units (e.g. density, pressure) in numerical and algebraic contexts • use compound units such as density and pressure	Students will sit a short diagnostic assessment at before the start of each topic to inform teaching. The unit will be followed by an end of unit assessment. These assessments are stored and	**Literacy:** Direct proportion Inverse proportion Multiplier Linear Congruent, Congruence Similar, Similarity Compound unit Density, Population density Pressure **Thinking Skills:**	www.kerboodle.com www.mymaths.co.uk/ www.khanacademy.org/ https://campus.mangahigh.com www.bbc.co.uk/education/subjects/z38pycw https://nrich.maths.org/

	Which is the greatest density: 0.65g/cm^3 or 650kg/m^3? Convince me.		marked on a system called MiniTest. This allows us to track the progress made throughout the topic. A copy of the end of unit assessment will be emailed to parents and students as well as being recorded in their work book.	Students are supported to develop high level problem solving skills, applying challenging mathematical concepts to a range of unforeseen, multi-step problems. They will also be encouraged to infer the meaning of new vocabulary and deduce different methods of working.	
Module 5 **Patterns**	• A sequence has the first two terms 1, 2, … Show me a way to continue this sequence. And another. And another … • A sequence has nth term $3n^2 + 2n - 4$. Jenny writes down the first three terms as 1, 12, 29. Kenny writes down the first three terms as 1, 36, 83. Who do agree with? Why? What mistake has been made? • What is the same and what is different: 1, 1, 2, 3, 5, 8, … and 4, 7, 11, 18, 29, …	recognise and use Fibonacci type sequences, quadratic sequences	Students will sit a short diagnostic assessment at before the start of each topic to inform teaching. The unit will be followed by an end of unit assessment. These assessments are stored and marked on a system called MiniTest. This allows us to track the progress made throughout the topic. A copy of the end of unit assessment will be emailed to parents and students as well	**Literacy:** Term Term-to-term rule Position-to-term rule nth term Generate Linear Quadratic First (second) difference Fibonacci number Fibonacci sequence **Thinking Skills:** Students are supported to develop high level problem solving skills, applying challenging mathematical concepts to a range of unforeseen, multi-step problems. They will also be encouraged to infer the meaning of new vocabulary and deduce	www.kerboodle.com www.mymaths.co.uk/ www.khanacademy.org/ https://campus.mangahigh.com www.bbc.co.uk/education/subjects/z38pycw https://nrich.maths.org/

			as being recorded in their work book.	different methods of working.	
Module 6 **Equations and Inequalities**	• Show me an inequality (with unknowns on both sides) with the solution $x \geq 5$. And another. And another … • Convince me that there are only 5 common integer solutions to the inequalities $4x < 28$ and $2x + 3 \geq 7$. • What is wrong with this statement? How can you correct it? $1 - 5x \geq 8x - 15$ so $1 \geq 3x - 15$.	• understand and use the concepts and vocabulary of inequalities • solve linear inequalities in one variable • represent the solution set to an inequality on a number line	Students will sit a short diagnostic assessment at before the start of each topic to inform teaching. The unit will be followed by an end of unit assessment. These assessments are stored and marked on a system called MiniTest. This allows us to track the progress made throughout the topic. A copy of the end of unit assessment will be emailed to parents and students as well	**Literacy:** (Linear) inequality Unknown Manipulate Solve Solution set Integer **Thinking Skills:** Students are supported to develop high level problem solving skills, applying challenging mathematical concepts to a range of unforeseen, multi-step problems. They will also be encouraged to infer the meaning of new vocabulary and deduce different methods of working.	www.kerboodle.com www.mymaths.co.uk/ www.khanacademy.org/ https://campus.mangahigh.com www.bbc.co.uk/education/subjects/z38pycw https://nrich.maths.org/

			as being recorded in their work book.		