Year 10 Maths Foundation Curriculum Plan

	Key questions	Overview of the module	Assessment	Cross Curricular Skills	Suggested reading material and websites:
Module 1 **Sequences**	• 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 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:** 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 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

Negatives, Factors & Primes | • Convince me that -3 - -7 = 4
• Show me an example of a calculation involving addition of two negative numbers and the solution -10. And another. And another …
• Create a Carroll diagram with 'addition', 'subtraction' as the column headings and 'one negative number', 'two negative numbers' as the row headings. Ask pupils to create (if possible) a calculation that can be placed in each of the four positions. If they think it is not possible, explain why. Repeat for multiplication and division.

• Show me two (three-digit) numbers with a highest common factor of 18. And another. And another…
• Show me two numbers with a lowest common multiple of 240. And another. And another… | • apply the four operations, including formal written methods, to integers, decimals and simple fractions (proper and improper), and mixed numbers – all both positive and negative
• use conventional notation for priority of operations, including brackets, powers, roots and reciprocals
• use the concepts and vocabulary of prime numbers, highest common factor, lowest common multiple, prime factorisation, including using product notation and the unique factorisation theorem | 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:**
Negative number
Directed number
Improper fraction
Top-heavy fraction
Mixed number
Operation
Inverse
Long multiplication
Short division
Power
Indices
Roots

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

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Module 3	Jenny thinks that if y = 2x + 1 then x = (y – 1)/2. Kenny thinks that if y = 2x + 1 then x = y/2 – 1. Who do you agree with? Explain your thinking.	• use and interpret algebraic notation, including: a^2b in place of $a \times a \times b$, coefficients written as fractions rather than as decimals • substitute numerical values into scientific formulae • rearrange formulae to change the subject	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:** Product Variable Term Coefficient Common factor Factorise Power Indices Formula, Formulae Subject Change the subject **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/
Changing The Subject					
Module 4 **Graphs**	• Draw a distance-time graph of your journey to school. Explain the key features. • Show me a point on this line (e.g. y = 2x + 1). And another, and another … • (Given an appropriate distance-time graph) convince me that Kenny	• plot graphs of equations that correspond to straight-line graphs in the coordinate plane • identify and interpret gradients and intercepts of linear functions graphically • recognise, sketch and interpret graphs of	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.	**Literacy:** Equation (of a graph) Function Formula Linear Coordinate plane Gradient y-intercept Substitute Quadratic Piece-wise linear	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/

		linear functions and simple quadratic functions	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.	Model Kinematic, Speed, Distance **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.	
is stationary between 10: 00 a.m. and 10:45 a.m.		• plot and interpret graphs and graphs of non-standard (*piece-wise linear)* functions in real contexts, to find approximate solutions to problems such as simple kinematic problems involving distance and speed			
Module 5 **Circles**	• Convince me C = 2πr = πd. • What is wrong with this statement? How can you correct it? The area of a circle with radius 7 cm is approximately 441 cm² because (3 × 7)² = 441. • Convince me the area of a semi-circle = $\frac{\pi d^2}{4}$ • Name a right prism. And another. And another … • Convince me that a cylinder is not a prism	• compare lengths, areas and volumes using ratio notation • calculate perimeters of 2D shapes, including circles • identify and apply circle definitions and properties, including: centre, radius, chord, diameter, circumference • know the formulae: circumference of a circle = 2πr = πd, area of a circle = πr² • calculate areas of circles and composite 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.	**Literacy:** Circle Centre Radius, diameter, chord, circumference Pi (Right) prism Cross-section Cylinder Polygon, polygonal Solid **Thinking Skills:** Students are supported to develop high level problem solving skills, applying challenging mathematical concepts to a range of unforeseen, multi-step	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/

		• know and apply formulae to calculate volume of right prisms (including cylinders)	A copy of the end of unit assessment will be emailed to parents and students as well as being recorded in their work book.	problems. They will also be encouraged to infer the meaning of new vocabulary and deduce different methods of working.	
Module 6 **Fractions**	• Show me a proper (improper) fraction. And another. And another. • Show me a mixed number fraction. And another. And another. • Jenny thinks that you can only multiply fractions if they have the same common denominator. Do you agree with Jenny? Explain your answer. • Benny thinks that you can only divide fractions if they have the same common denominator. Do you agree with Jenny? Explain. • Always/Sometimes/Never: To reverse an increase of x%, you decrease by x% • Lenny calculates the % increase of £6 to £8 as 25%. Do you agree with	• apply the four operations, including formal written methods, to simple fractions (proper and improper), and mixed numbers • interpret percentages and percentage changes as a fraction or a decimal, and interpret these multiplicatively • compare two quantities using percentages • solve problems involving percentage change, including percentage increase/decrease	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	**Literacy:** Mixed number Equivalent fraction Simplify, cancel, lowest terms Proper fraction, improper fraction, top-heavy fraction, vulgar fraction Percent, percentage Multiplier Increase, decrease **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	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/

	Lenny? Explain your answer.		being recorded in their work book.	vocabulary and deduce different methods of working.	