

## Year 10 Maths Higher Curriculum Plan

	Key questions	Overview of the module	Assessment	Cross Curricular Skills	Suggested reading material and websites:
Module 1 Sequences	<ul> <li>A sequence has the first two terms 1, 2, Show me a way to continue this sequence. And another. And another</li> <li>A sequence has nth term 3n<sup>2</sup> + 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?</li> <li>What is the same and what is different: 1, 1, 2, 3, 5, 8, and 4, 7, 11, 18, 29,</li> </ul>	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	٠	Show me an angle	•	make links to similarity	Students will sit a	Literacy:	www.kerboodle.com
		and its exact sine		(including trigonometric	short diagnostic	Similar	
Trigonometry		(cosine /		ratios) and scale factors	assessment at before	Opposite	www.mymaths.co.uk/
		tangent). And	•	know the exact values of	the start of each topic	Adjacent	
		another		sin $\theta$ and cos $\theta$ for $\theta$ = 0°,	to inform teaching.	Hypotenuse	www.khanacademy.org/
	•	Convince me that		30°, 45°, 60° and 90°;		Trigonometry	
		you have chosen		know the exact value of	The unit will be	Function	https://campus.mangahigh.com
		the correct		tanθ for θ = 0°, 30°, 45°	followed by an end of	Ratio	
		trigonometric		and 60°	unit assessment.	Sine	www.bbc.co.uk/education/subjects/z38pycw
		function	•	know the trigonometric		Cosine	
	•	(When exploring		ratios, sinθ =	These assessments	Tangent	https://nrich.maths.org/
		sets of similar		opposite/hypotenuse,	are stored and	Angle of elevation, angle	
		triangles and		$\cos\theta =$	marked on a system	of depression	
		working out ratios		adjacent/hypotenuse,	called MiniTest. This		
		in corresponding		$tan\theta = opposite/adjacent$	allows us to track the	Thinking Skills:	
		cases) why do you	•	apply it to find angles and	progress made	Students are supported to	
		think that the		lengths in right-angled	throughout the topic.	develop high level	
		results are all		triangles in two		problem solving skills,	
		similar, but not the		dimensional figures	A copy of the end of	applying challenging	
		same? Could we		5	unit assessment will	mathematical concepts to	
		do anything			be emailed to parents	a range of unforeseen,	
		differently to get			and students as well	multi-step problems. They	
		results that are			as being recorded in	will also be encouraged to	
		closer? How could			their work book.	infer the meaning of new	
		we make a final				vocabulary and deduce	
		conclusion for each				different methods of	
		ratio?				working.	
					1		



Module 3	Jenny thinks that if y =	٠	use and interpret	Students will sit a	Literacy:	www.kerboodle.com
	$2x + 1$ then $x = (y - 1)^{-1}$		algebraic notation,	short diagnostic	Product	
Changing	1)/2. Kenny thinks that		including: a <sup>2</sup> b in place of a	assessment at before	Variable	www.mymaths.co.uk/
The Subject	if $y = 2x + 1$ then $x =$		$\times a \times b$ , coefficients	the start of each topic	Term	
	y/2 – 1. Who do you		written as fractions rather	to inform teaching.	Coefficient	www.khanacademy.org/
	agree with? Explain		than as decimals		Common factor	
	your thinking.	٠	substitute numerical	The unit will be	Factorise	https://campus.mangahigh.com
			values into scientific	followed by an end of	Power	
			formulae	unit assessment.	Indices	www.bbc.co.uk/education/subjects/z38pycw
		٠	rearrange formulae to		Formula, Formulae	
			change the subject	These assessments	Subject	https://nrich.maths.org/
				are stored and	Change the subject	
				marked on a system	Thinking Skills:	
				called MiniTest. This	Students are supported to	
				allows us to track the	develop high level	
				progress made	problem solving skills,	
				throughout the topic.	applying challenging	
					mathematical concepts to	
				A copy of the end of	a range of unforeseen,	
				unit assessment will	multi-step problems. They	
				be emailed to parents	will also be encouraged to	
				and students as well	infer the meaning of new	
				as being recorded in	vocabulary and deduce	
				their work book.	different methods of	
					working.	



Module 4 Graphs	<ul> <li>lines</li> <li>2x =</li> <li>and</li> <li>are</li> <li>othe</li> <li>What and</li> <li>diffe</li> <li>x<sup>2</sup>, y</li> <li>?</li> <li>Shoo</li> <li>of a</li> <li>(cub)</li> <li>graphic ano</li> <li>ano</li> <li>Ske</li> <li>distation</li> <li>graphic and</li> <li>and</li> <li>diffe</li> <li>graphic and</li> <li>diffe</li> <li>graphic and</li> <li>diffe</li> <li>graphic and</li> <li>diffe</li> <li>graphic and</li> <li>and</li> <li>diffe</li> <li>graphic and</li> <li>and</li> <li>diffe</li> <li>graphic and</li> <li>and</li> <li>diffe</li> <li>graphic and</li> </ul>	wince me the s $y = 3 + 2x$ , $y - = 7$ , $2x + 6 = y$ 8 + y - 2x = 0 parallel to each er. at is the same what is prent: $y = x$ , $y = y - x^3$ and $y = 1/x$ w me a sketch quadratic bic, reciprocal) bh. And ther. And ther. And ther tch a ance/time bh of your ney to school. at is the same what is prent with the bh of a smate?	•	identify and interpret gradients and intercepts of linear functions algebraically use the form $y = mx + c$ to identify parallel lines find the equation of the line through two given points, or through one point with a given gradient interpret the gradient of a straight line graph as a rate of change recognise, sketch and interpret graphs of quadratic functions recognise, sketch and interpret graphs of simple cubic functions and the reciprocal function $y =$ $1/x$ with $x \neq 0$ plot and interpret graphs of non-standard functions in real contexts, to find approximate solutions to problems such as simple kinematic problems involving distance, speed and acceleration	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 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: Function, equation Linear, non-linear Quadratic, cubic, reciprocal Parabola, Asymptote Gradient, y-intercept, x- intercept, root Rate of change Sketch, plot Kinematic Speed, distance, time Acceleration, deceleration 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/
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Module 5 Arcs, Sectors and Surface Area	•	Show me a sector with area 25π. And another. And another Always/ Sometimes/ Never: The value of the volume of a prism is less than the value of the	•	identify and apply circle definitions and properties, including: tangent, arc, sector and segment calculate arc lengths, angles and areas of sectors of circles calculate surface area of right prisms (including cylinders)	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: Circle, Pi Radius, diameter, chord, circumference, arc, tangent, sector, segment (Right) prism, cylinder Cross-section Hypotenuse Pythagoras' theorem	www.kerboodle.com www.mymaths.co.uk/ www.khanacademy.org/ https://campus.mangahigh.com www.bbc.co.uk/education/subjects/z38pycw
	•	surface area of a prism. Always/ Sometimes/ Never: If $a^2 + b^2 = c^2$ , a triangle with sides a, b and c is right angled. Kenny thinks it is possible to use Pythagoras' theorem to find the height of isosceles triangles that are not right- angled. Do you agree with Kenny? Explain your answer. Convince me the hypotenuse can be represented as a horizontal line.	•	calculate exactly with multiples of $\pi$ know the formulae for: Pythagoras' theorem, a <sup>2</sup> + b <sup>2</sup> = c <sup>2</sup> , and apply it to find lengths in right-angled triangles in two dimensional figures	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.	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.	https://nrich.maths.org/



Module 6	Kenny thinks that	•	solve problems involving	Students will sit a	Literacy:	www.kerboodle.com
	the interest gained		percentage change,	short diagnostic	Percentage change,	
Percentages	when £100 is		including percentage	assessment at before	percentage increase,	www.mymaths.co.uk/
	increased 20% per		increase/decrease	the start of each topic	percentage increase	
	annum for 4 years	•	set up, solve and interpret	to inform teaching.	Compound interest,	www.khanacademy.org/
	can be calculated		the answers in growth		Simple interest	
	by multiplying £100		and decay problems,	The unit will be	Terminating decimal,	https://campus.mangahigh.com
	by 2.0736. Do you		including compound	followed by an end of	Recurring decimal	
	agree with Kenny?		interest	unit assessment.	(Exponential) growth,	www.bbc.co.uk/education/subjects/z38pycw
	Explain your				decay	
	answer.			These assessments		https://nrich.maths.org/
				are stored and	Thinking Skills:	
				marked on a system	Students are supported to	
				called MiniTest. This	develop high level	
				allows us to track the	problem solving skills,	
				progress made	applying challenging	
				throughout the topic.	mathematical concepts to	
					a range of unforeseen,	
				A copy of the end of	multi-step problems. They	
				unit assessment will	will also be encouraged to	
				be emailed to parents	infer the meaning of new	
				and students as well	vocabulary and deduce	
				as being recorded in	different methods of	
				their work book.	working.	