Curriculum Map Subject: Further Maths

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Content- WHAT will be learned? What	Core Pure	Core Pure	Core Pure	Core Pure	Core Pure	Core Pure
previous learning can be linked? Why this	Complex Numbers	<u>Series</u>	<u>Matrices</u>	Proof by Induction	Vectors	Volumes of revolution
order/ sequence ?	Imaginary and	Sums of natural	Introduction to	Proof by	Equation of a line in	Volumes of
······	complex numbers	numbers	matrices	mathematical	3 dimensions	revolution around
We sequence our surrisulum in this	Multiplying complex	Sums of squares and subss	Matrix multiplication	Induction	Equation of a plane in 2 dimensions	the x-axis
we sequence our curriculum in this	Complex conjugation	Roots of polynomials		Proving divisibility results	III 3 dimensions	Volumes of revolution around
order to reduce cognitive load by	Boots of guadratic	Boots of a quadratic	 Determinants Inverting a 2v2 	Proving statements	Calculating angles	the v-axis
drawing on prior knowledge and	equations	equation	matrix	involving matrices	between lines and	Adding and
logically plan episodes of learning so	 Solving cubic and 	Roots of a cubic	 Inverting a 3x3 	Decision	planes	subtracting volumes
that they accumulate in small stages,	quartic equations	equation	matrix	Algorithms on graphs	Points of	Modelling with
securing understanding at one stage	Argand Diagrams	Roots of a quartic	 Solving systems of 	 Using Dijkstra's 	intersection	volumes of
before moving on to the next.	Argand diagrams	equation	equations using a	algorithm to find	Finding	revolution
	Modulus and	Expressions relating	matrix	the shortest path	perpendiculars	Exponentials and Logarithms
Skills are revisited as via interleaved	argument	to the roots of a	Linear Transformations	Floyd's algorithm	Decision	Exponential Eurotions
starters and retrieval practise	Modulus-argument	polynomial	Linear transformations in 2		Route Inspection	
throughout the year.	numbers	transformations of	dimensions	Mechanics	Eulerian graphs Using the route	Exponential
	Loci in the argand	roots	Reflections and	Moments	inspection algorithm	Modelling
Knowledge of course content is covered	diagram	Decision	rotations	Moments	Networks with more	 Logarithms
during early stages of the surrisulum and	Regions in the	Graphs and Networks	Enlargements and	Resultant Moments	than four odd nodes	Laws of Logs
then built men at speed intervals	argand diagram	Modelling with	stretches	Equilibrium	Mechanics	Solving Equations
then built upon at spaced intervals	Decision	graphs	Successive	Centres of Mass	Projectiles	Using Logs
allowing skills to be improved upon over	Algorithms	Graph theory	transformations	• Tilting	Horizontal Projection	Working with
time.	Using and understanding	Special types of graphs	Linear transformations in 2	Forces and Friction	Horizontal and Vertical Components	Natural Logs
	algorithms	Benresenting graphs	dimensions	Inclined Planes	Projection at any Angle	 Logs and Non-Linear Data
	Flow charts	and networks using	The inverse of a	Friction	Projectile Motion	Decision
	Bubble sort	matrices	linear	• Fliction	Formulae	The Travelling Salesman
	Quick sort	The planarity	transformation		Applications of Forces	Problem
	Bin-packing	algorithm	Decision		Static Particles	The classical and
	algorithm	Mechanics	Algorithms on graphs		Modelling with	practical travelling
	Order of algorithm	Forces and Motion	Kruskal's algorithm		Particles	salesman problems
	Mechanics	Force Diagrams Forces as Vectors	Prim's algorithm Applying Drim's		Friction and Static Derticles	Using a minimum spapping tree
	Modelling Constructing a	Forces and	Applying Prints algorithm to a			method to find and
	Model	Acceleration	distance matrix		Bigid Bodies	upper bound
	Modelling	Motion in 2	<u>Mechanics</u>		Dynamics and	 Using a minimum
	assumptions	Dimensions	Variable Acceleration		Inclined Planes	spanning tree
	Quantities and Units	Connected Particles	Functions of Time		Connected Particles	method to find a
	Working with	Pulleys	Using			lower bound
	Vectors		Differentiation			Using the nearest neighbour algorithm
	Constant Acceleration		Iviaxima and iviinima Problems			to find an upper
	Displacement-Time Graphs		Variable Acceleration			bound
	Velocity-Time		Using Integration			Mechanics
	Graphs		Constant			Further Kinematics
	Constant		Acceleration			Vectors in
	Acceleration		Formulae			Kinematics
	Formulae					Vector Methods
	Vertical Motion					With Projectiles
						Variable Acceleration in One
						Dimension
						Differentiating
						Vectors
						 Integrating Vectors

Year Group: 12

Skills- What will be developed?	Learners develop their mathematical fluency in a range of areas through a concrete, pictorial and abstract (CPA) approach. Learners apply their understanding to be able to solve problems in a range of different contexts. Learners explain their reasoning when identifying solutions to problems and when responding to mathematical statements.	Learners develop their mathematical fluency in a range of areas through a concrete, pictorial and abstract (CPA) approach. Learners apply their understanding to be able to solve problems in a range of different contexts. Learners explain their reasoning when identifying solutions to problems and when responding to mathematical statements.	Learners develop their mathematical fluency in a range of areas through a concrete, pictorial and abstract (CPA) approach. Learners apply their understanding to be able to solve problems in a range of different contexts. Learners explain their reasoning when identifying solutions to problems and when responding to mathematical statements.	Learners develop their mathematical fluency in a range of areas through a concrete, pictorial and abstract (CPA) approach. Learners apply their understanding to be able to solve problems in a range of different contexts. Learners explain their reasoning when identifying solutions to problems and when responding to mathematical statements.	Learners develop their mathematical fluency in a range of areas through a concrete, pictorial and abstract (CPA) approach. Learners apply their understanding to be able to solve problems in a range of different contexts. Learners explain their reasoning when identifying solutions to problems and when responding to mathematical statements.	Learners develop their mathematical fluency in a range of areas through a concrete, pictorial and abstract (CPA) approach. Learners apply their understanding to be able to solve problems in a range of different contexts. Learners explain their reasoning when identifying solutions to problems and when responding to mathematical statements.
Key 'How'/'Why' Questions- What powerful knowledge will be gained? What areas/themes/concepts will be explored?	How to apply the content listed above in the real-world address why the skills are learned in school. Contextual questions related to the learning designed to embed the ideas to allow the concepts to be used later in the curriculum where they are built upon in other topics that rely of the fluency of these skills. All skills listed above are used later in the course, so it is essential to build solid foundations before moving on.	How to apply the content listed above in the real- world address why the skills are learned in school. Contextual questions related to the learning designed to embed the ideas to allow the concepts to be used later in the curriculum where they are built upon in other topics that rely of the fluency of these skills. All skills listed above are used later in the course, so it is essential to build solid foundations before moving on.	How to apply the content listed above in the real- world address why the skills are learned in school. Contextual questions related to the learning designed to embed the ideas to allow the concepts to be used later in the curriculum where they are built upon in other topics that rely of the fluency of these skills. All skills listed above are used later in the course, so it is essential to build solid foundations before moving on.	How to apply the content listed above in the real- world address why the skills are learned in school. Contextual questions related to the learning designed to embed the ideas to allow the concepts to be used later in the curriculum where they are built upon in other topics that rely of the fluency of these skills. All skills listed above are used later in the course, so it is essential to build solid foundations before moving on.	How to apply the content listed above in the real- world address why the skills are learned in school. Contextual questions related to the learning designed to embed the ideas to allow the concepts to be used later in the curriculum where they are built upon in other topics that rely of the fluency of these skills. All skills listed above are used later in the course, so it is essential to build solid foundations before moving on.	How to apply the content listed above in the real- world address why the skills are learned in school. Contextual questions related to the learning designed to embed the ideas to allow the concepts to be used later in the curriculum where they are built upon in other topics that rely of the fluency of these skills. All skills listed above are used later in the course, so it is essential to build solid foundations before moving on.
SEND- how will support be seen? Seating plans? Simplified questions?	 SEND and identified pupils placed strategically to ensure the best possible support. Colour copies for all Irlen's students All SEND notes taken into consideration for the pupils that this affects. Support given to pupils who struggle or have been identified as weaker in the groups. Classrooms and boards uncluttered 	 SEND and identified pupils placed strategically to ensure the best possible support. Colour copies for all Irlen's students All SEND notes taken into consideration for the pupils that this affects. Support given to pupils who struggle or have been identified as weaker in the groups. Classrooms and boards uncluttered 	 SEND and identified pupils placed strategically to ensure the best possible support. Colour copies for all Irlen's students All SEND notes taken into consideration for the pupils that this affects. Support given to pupils who struggle or have been identified as weaker in the groups. Classrooms and boards uncluttered 	 SEND and identified pupils placed strategically to ensure the best possible support. Colour copies for all Irlen's students All SEND notes taken into consideration for the pupils that this affects. Support given to pupils who struggle or have been identified as weaker in the groups. 	 SEND and identified pupils placed strategically to ensure the best possible support. Colour copies for all Irlen's students All SEND notes taken into consideration for the pupils that this affects. Support given to pupils who struggle or have been identified as weaker in the groups. Classrooms and boards uncluttered 	 SEND and identified pupils placed strategically to ensure the best possible support. Colour copies for all Irlen's students All SEND notes taken into consideration for the pupils that this affects. Support given to pupils who struggle or have been identified as weaker in the groups. Classrooms and boards uncluttered

	to ensure an optimal learning environment (only relevant information given)	to ensure an optimal learning environment (only relevant information given)	to ensure an optimal learning environment (only relevant information given)	 Classrooms and boards uncluttered to ensure an optimal learning environment (only relevant information given) 	to ensure an optimal learning environment (only relevant information given)	to ensure an optimal learning environment (only relevant information given)
Assessment- What? Why?	Gap task Pure Mini quizzes in lesson	Mechanics and Stats assessments Mini quizzes in lesson	Mock exam – Pure Mini quizzes in lesson	Stats assessment Mini quizzes in lesson	Mechanics assessment Mini quizzes in lesson	Mock exams – Pure and Applied Mini quizzes in lesson
What memory for learning skills will be required- modelling? Concrete answers? Retrieval?	Interleaved starters and retrieval practise, regular skills checks and mini assessments and model answers. Regular homework tasks to check understanding	Interleaved starters and retrieval practise, regular skills checks and mini assessments and model answers. Regular homework tasks to check understanding	Interleaved starters and retrieval practise, regular skills checks and mini assessments and model answers. Regular homework tasks to check understanding	Interleaved starters and retrieval practise, regular skills checks and mini assessments and model answers. Regular homework tasks to check understanding	Interleaved starters and retrieval practise, regular skills checks and mini assessments and model answers. Regular homework tasks to check understanding	Interleaved starters and retrieval practise, regular skills checks and mini assessments and model answers. Regular homework tasks to check understanding
Literacy- reading, extended accurate writing and oracy opportunities	Key words/terms emphasised and highlighted in lessons. Reading and breaking down questions to allow all learners to access the skills needed.	Key words/terms emphasised and highlighted in lessons. Reading and breaking down questions to allow all learners to access the skills needed.	Key words/terms emphasised and highlighted in lessons. Reading and breaking down questions to allow all learners to access the skills needed.	Key words/terms emphasised and highlighted in lessons. Reading and breaking down questions to allow all learners to access the skills needed.	Key words/terms emphasised and highlighted in lessons. Reading and breaking down questions to allow all learners to access the skills needed.	Key words/terms emphasised and highlighted in lessons. Reading and breaking down questions to allow all learners to access the skills needed.
Numeracy/computing skills	All topics require good numeracy skills	All topics require good numeracy skills	All topics require good numeracy skills	All topics require good numeracy skills	All topics require good numeracy skills	All topics require good numeracy skills
Character development	Cold calling ensures that all pupils are required to answer questions as there is a no opt out culture. Pupils with Anxiety around this are managed well and the teachers ensure that they are included but feel supported. Real life examples and experiences are called upon regularly.	Cold calling ensures that all pupils are required to answer questions as there is a no opt out culture. Pupils with Anxiety around this are managed well and the teachers ensure that they are included but feel supported. Real life examples and experiences are called upon regularly.	Cold calling ensures that all pupils are required to answer questions as there is a no opt out culture. Pupils with Anxiety around this are managed well and the teachers ensure that they are included but feel supported. Real life examples and experiences are called upon regularly.	Cold calling ensures that all pupils are required to answer questions as there is a no opt out culture. Pupils with Anxiety around this are managed well and the teachers ensure that they are included but feel supported. Real life examples and experiences are called upon regularly.	Cold calling ensures that all pupils are required to answer questions as there is a no opt out culture. Pupils with Anxiety around this are managed well and the teachers ensure that they are included but feel supported. Real life examples and experiences are called upon regularly.	Cold calling ensures that all pupils are required to answer questions as there is a no opt out culture. Pupils with Anxiety around this are managed well and the teachers ensure that they are included but feel supported. Real life examples and experiences are called upon regularly.
Equality/Diversity opportunities	Real world e.g's used Super curriculum available for all learners. Where the curriculum lends itself, a range of diverse careers are incorporated into the real-life applications of the mathematics.	Real world e.g's used Super curriculum available for all learners. Where the curriculum lends itself, a range of diverse careers are incorporated into the real-life applications of the mathematics.	Real world e.g's used Super curriculum available for all learners. Where the curriculum lends itself, a range of diverse careers are incorporated into the real-life applications of the mathematics.	Real world e.g's used Super curriculum available for all learners. Where the curriculum lends itself, a range of diverse careers are incorporated into the real-life applications of the mathematics.	Real world e.g's used Super curriculum available for all learners. Where the curriculum lends itself, a range of diverse careers are incorporated into the real-life applications of the mathematics.	Real world e.g's used Super curriculum available for all learners. Where the curriculum lends itself, a range of diverse careers are incorporated into the real-life applications of the mathematics.

Homework/Independent learning	Use of exam questions and	Use of exam questions and	Use of exam questions and	Use of exam questions and	Use of exam questions and	Use of exam questions and
	Uplearn to embed the skills	Uplearn to embed the skills	Uplearn to embed the skills	Uplearn to embed the skills	Uplearn to embed the skills	Uplearn to embed the skills
	required	required	required	required	required	required
CIAG coverage/links	Super curriculum activities in	Super curriculum activities in	Super curriculum activities in	Super curriculum activities	Super curriculum activities in	Super curriculum activities in
	maths.	maths.	maths.	in maths.	maths.	maths.
	Real life examples and uses	Real life examples and uses	Real life examples and uses	Real life examples and uses	Real life examples and uses	Real life examples and uses
	for the topics where	for the topics where	for the topics where	for the topics where	for the topics where	for the topics where
	appropriate.	appropriate.	appropriate.	appropriate.	appropriate.	appropriate.