Levenshulme High School – Curriculum Map – Maths

		Term 1		Term 2		Term 3	
	Topic Title and NC link	**Percentages and circle theorems**	**Further graphs and Further trig**	**Surface area and Volume and Scales**	**Functions**		
Year 11	*Pupils should know…*	• How to use a calculator effectively • How to multiply decimals by powers of 10 • How to make fractions out of 100 • How divide a percentage by 100 • The concept of interest and the difference between simple and compound • How to calculate angles using circle theorems • That proportions compare one part to the whole whereas ratio compares one part to another part • Iteration is a method of repeating a process	• The general features of cubic, reciprocal and exponential graphs • how to substitute into expression • How to manipulate fractions that are in algebra • how to use trigonometry ratios • when to apply cosine and when to apply sine rule - know when to use each rule • • how to identify missing side or angle questions • identify the hypotenuse of a triangle • find area of a triangle using sine rule	• how to use a calculator effectively • use inverse • how to find surface area and volume of composite solid • how to read scales • How to read bearings • match function with graph	• **how to sketch a function** • **how to transform a function**	**Revision and exam preparation**	**Revision and exam preparation**

		• **How to change recurring decimals to fractions**
		  • **Difference between terminating and recurring decimals**
		  • Identify different transformations and the different features
		  • Describe movement through a vector					

	Pupils should be able to do…	• Identify and describe transformation • Understand and apply invariance • Describe using vectors • Add/ subtract vectors • Multiply by a number • Convert between fractions, decimals and percentages	• Form and solve expression • To know and apply sine and cosine rule • Solve problems using sine and cosine rules •	• Plan a path using vectors • Proof using vectors • Solve functions • Use composite functions • Write inverse functions • Find the surface area of a pyramid, cone and sphere • Find the volume of a	• Sketch translation of functions • Sketch reflection of functions • Understand what transformation is given by a functions **Revision and exam preparation**		

		• Calculate a percentage of an amounts • Calculate percentage increase and decrease • Calculate reverse percentages • Use multipliers to calculate percentages • Calculate compound interest • Solve growth and decay questions • How to use circle theorems including identifying correct theorem • Angle at centre is twice angle at circumference; • Angle in a semi-circle is 90°		cone and sphere • Solve problems using volume and surface area •			

		• Angles in the same segment are equal • Opposite angles in a cyclic quadrilateral sum to 180°; • Tangent at any point on a circle is perpendicular to the radius at that point • Tangents from an external point are equal in length; • Alternate segment theorem • **Draw graphs for cubic, reciprocal and exponential equations** • **Draw and recognise key features of trig graphs** • To rearrange equations to estimate answers using iteration					

	Why are we doing this now? *How does it build on prior learning and prepare for knowledge and learning still to come?*	Learning at KS3 on percentages supports compound and reverse percentage work. Angle facts studied in year 8 and work on circles themselves will now support circle theorems. Multiplicative relationships is seen again within this unit in the use of multipliers. Effective use of a calculator and algebraic manipuation in iteration. Transformations that are taught separately are now combined in the knowledge that pupils should be secure at the differences between them. • Be able to use tracing paper and a ruler when drawing transformation • Understand vectors as a movement and identify x and y axis	Vector calculations are taught building on number skills and geometry skills like Pythagoras. Trigonometry from year 10 is applied to non-right angled triangles. Prior learning that pupils need to remember are: • How to substitute into a formula • Use a scale factor • Be able to find fraction of an amount • Plot coordinates • Substitute into complex formula • Identify the difference between applying trigonometry and Pythgoras' theorem • Adding , subtracting, multiplying and dividing fractions	KS3 work on area is now applied to surface area. This is stretched to include complex shapes. Prior learning that pupils need to remember are: • Inverse functions • Function symbols • The area formulas of a circle, trapezium, rectangle, parallelogram, triangle and trapezium • How to square numbers	Year 10 work on trig graphs are now manipulated looking at translations and stretches of these graphs and how this changes the key features of the graph. Prior learning that pupils need to remember are: • How to read coordinates • Movement on a graph		

		Prior learning that pupils need to remember are: • The concept of percentage as out of 100 • How to divide and multiply • Place value of decimals and fractions • Be able to convert percentages into decimals • Parts of a circle • That a tangent and radius meet at 90 degrees • That there are 360 degree in a circle • That angles in a triangle add to 180 degrees • That angles in a quadrilateral add to 360 degrees • How to double and halve numbers	**Graphs are developed now using knowledge of powers, trig, indices.**				