NOTTINGHAM BRITISH SCHOOL – CURRICULUM DEVELOPMENT 2019
Year 11 - Maths

	October Assessment	December Assessment	March Assessment	April Assessment	Age Related Expectation **By the end of the year every student will be able to ….**
	Number- 5 **Direct and Inverse Proportion** Demonstrate an understanding of the elementary ideas and notation of direct and inverse proportion and common measures of rate **Increase and Decrease in a Given Ratio** *Increase and decrease a quantity by a given ratio.* **Algebra- 5** **Functions** *Use function notation to describe simple functions and their inverses; form composite functions.* **Factorising 2** *Factorise where possible algebraic expressions* **Cubic Graphs** *Construct tables of values and draw graphs for functions of the form ax^n where a is a rational constant and n = 3* *Estimate gradients of cubic curves by drawing tangents* **Shape and Space- 5** **Surface Area and Volume 2**	**Algebra- 6** **Indices 2** Use and interpret fractional indices. Solve exponential equations. **Solving Quadratic Equations 1** Use factorisation to solve quadratic equations. **Reciprocal Graphs** Draw reciprocal graphs. Estimate the gradient of a reciprocal graph by drawing a tangent. **Shape and Space- 6** **Circle Theorems** Calculate unknown angles using the following geometrical properties angle in a semi-circle, angle between the tangent and radius of a circle, angle at the centre is twice the angle at the circumference, angles in the same segment are equal, angles in opposite segments are supplementary; cyclic quadrilaterals. **Symmetry 2** equal chords are equidistant from the centre, the perpendicular bisector of a chord passes through the centre,	**Statistics- 7** **Cumulative Frequency** *Construct and use cumulative frequency diagrams.* *Estimate and interpret the median, percentiles, quartiles and inter-quartile range.* **Number- 8** **Rational and Irrational Numbers** Identify rational and irrational numbers. Change a recurring decimal to a fraction. **Algebra- 8** **Solving a Quadratic Equation using the Formula** Solve quadratic equations using the quadratic formula. **Algebraic Fractions 2** Add and subtract more complicated algebraic fractions. Solve equations that involve more complicated algebraic fractions. **Variation** Express direct and inverse variation in algebraic terms and use this form of expression to find unknown quantities.	**Algebra - 9** **Solving Quadratic Equations by Completing the Square** *Complete the square of a quadratic expression.* *Solve quadratic equations by the method of completing the square.* **Graphical Solution of Equations** *Use graphs to solve equations.* **Shape and Space - 9** **Vector Geometry** Describe a translation by using a column vector. Add or subtract vectors; multiply a vector by a scalar. *Calculate the magnitude of a vector given in column form.* *Represent vectors by directed line segments; use the sum and difference of*	**Demonstrate knowledge and understanding of mathematical techniques Students should be able to recall and apply mathematical knowledge, terminology and definitions to carry out routine procedures or straightforward tasks requiring single or multi-step solutions in mathematical or everyday situations including:** • Organising, processing and presenting information accurately in written, tabular, graphical and diagrammatic forms • Using and interpreting

The surface area of a sphere, pyramid and cone

Areas of Similar Shapes
Use the relationship between areas of similar triangles, with corresponding results for similar figures and extension surface areas of similar solids.

Volumes of Similar Shapes
Use the relationship between areas of similar triangles, with corresponding results for similar figures and extension to volumes of similar solids.

Probability and Statistics- 5
Grouped Frequency Tables
Calculate an estimate of the mean for grouped and continuous data; identify the modal class from a grouped frequency distribution.

Number- 6
Percentages 2
Carry out calculations involving reverse percentages.
Find simple and Compound Interest.

Speed, Distance and Time
Calculate speed, distance and time.

Algebra- 6
Sets and Venn Diagrams
Use language, notation and Venn diagrams to describe sets and represent relationships between sets.

tangents from an external point are equal in length.

Statistics - 6
Probability 2
Use tree diagrams to represent and calculate the probabilities of combined events.

Number- 7
Distance-time Graphs
Apply the idea of rate of change to easy kinematics involving distance-time graphs.

Speed-time Graphs
Apply the idea of rate of change to easy kinematics involving speed-time graphs, acceleration and deceleration.
Calculate distance travelled as the area under a linear speed-time graph.

Algebra-7
Rearranging Formulae 2
Transform more complicated formulae where the variable appears more than once.

Sequences
Continue a given number sequence.
Recognise patterns in sequences and relationships between different sequences.
Generalise simple algebraic statements relating to sequences.
Generalise algebraic statements relating to more complicated sequences.

Exponential Graphs
Recognise and draw exponential graphs
Estimate the gradient of a reciprocal graph by drawing a tangent.

Shape and Space- 7

Shape and Space (Trigonometry 2)- 8
Sine and Cosine Ratios up to 180°
Extend sine and cosine values to angles between 90° and 180°.

The Area of a Triangle
Calculate the area of a triangle using the formula
$A = ½ \, ab\sin C$

The Sine and Cosine Rules
Solve problems using the sine and cosine rules for any triangle.

Statistics- 8
Histograms
Construct and read histograms with equal and unequal intervals.

Number- 9

Upper and Lower Bounds
Give appropriate upper and lower bounds for data given to a specified accuracy.

Obtain appropriate upper and lower bounds to solutions of simple problems.

Algebra - 9

Simultaneous Equations 2
Solve simultaneous equations using the method of substitution.

Linear Programming
Use the graphical representation of linear inequalities in the solution of simple linear programming problems.

two vectors to express given vectors in terms of two coplanar vectors.

Use position vectors

Statistics - 9

Probability 3
Use Venn diagrams to answer probability questions.

mathematical notation correctly
• Performing calculations and procedures by suitable methods, including using a calculator
• Understanding systems of measurement in everyday use and making use of these
• Estimating, approximating and working to degrees of accuracy appropriate to the context and converting between equivalent numerical forms
• Using geometrical instruments to measure and to draw to an acceptable degree of accuracy
• Recognising and using spatial relationships in two and three dimensions.

Reason, interpret and communicate mathematically when solving problems
Students should be able to analyse a problem, select a

		Matrices and Transformations Transform a shape using a matrix or combination of matrices. Find the matrix for a given transformation.			**suitable strategy and apply appropriate techniques to obtain its solution, including:** • Making logical deductions, making inferences and drawing conclusions from given mathematical data • Recognising patterns and structures in a variety of situations, and forming generalisations • Presenting arguments and chains of reasoning in a logical and structured way • Interpreting and communicating information accurately and changing from one form of presentation to another • Assessing the validity of an argument and critically evaluating a given way of presenting information • Solving unstructured problems by putting

				them into a structured form involving a series of processes • Applying combinations of mathematical skills and techniques using connections between different areas of mathematics in problem solving • Interpreting results in the context of a given problem and evaluating the methods used and solutions obtained.