Curriculum Map Year 9 -Maths

Topic Name	Term	Content / skills developed with link to NC / exam board subject content (if applicable)	Reflection on previous learning	Progress to future learning	Global Citizenship links	Qatar National Identity links
Integers, Place Value and directed numbers	1	• Understand and use integers (positive, negative and zero) • Understand place value • Use directed numbers in practical situations. • Order integers • Use the four rules of addition, subtraction, multiplication and division • Use brackets and the hierarchy of operations • Round integers to a given power of 10 • HCF, LCM	• Numbers to 10,000,000- reading, writing, comparing, ordering • Comparing and ordering any integers • Rounding any integer • Times tables • Odd and even numbers Square numbers	This will give them a strong foundation on basic number skills which is required when in comes to the application of symbols as well as other real life context.	PRIDE values Prepare for challenge. Developing skills for the future	**Sustainability**: self esteem and participation **Sustainability**: responsibility and creativity
Angle,shape properties and nets	1	• Lines of symmetry and order of rotational symmetry • Angle properties of intersecting lines, parallel lines and straight line • Exterior angle of a triangle property and angle sum of a triangle • Understand the terms ‘isosceles’, ‘equilateral’ and ‘right-angled triangles • Quadrilateral’ and the angle sum property of quadrilaterals • Understand and use the properties of the parallelogram, rectangle, square, rhombus, trapezium and kite	• Measuring and classifying angles • Calculating angles • Vertically opposite angles • Angles in a triangle • Angles in quadrilaterals • Angles in polygons •	Similar shapes in context of 2D and 3D shapes. Key skills can be applied to solve word problems in algebra.	PRIDE values Prepare for challenge. Developing skills for the future	**Sustainability**: self esteem and participation **Sustainability**: responsibility and creativity

		• Give informal reasons, where required, when arriving at numerical solutions to geometrical problems • Recognise and give the names of solids • Understand the terms 'face', 'edge' and 'vertex' in the context of 3-D solids				
Algebraic manipulation	1+2	• Understand that symbols may be used to represent numbers in equations or variables in expressions and formulae • Understand that algebraic expressions follow the generalised rules of arithmetic • Use index notation for positive and negative integer powers (including zero) • Use index laws in simple cases • Collect like terms • Multiply a single term over a bracket • Factorisation: take out common factors	Form expressions Substitution Formula Form equations	Key skills can be applied to future topics such as expand on algebraic concepts, solving linear equations and inequalities, quadratic equations and graphing functions.	PRIDE values Prepare for challenge. Developing skills for the future	**Sustainability**: self esteem and participation **Sustainability**: responsibility and creativity
Probability introduction	2	• Understand the language of probability • Understand and use the probability scale • Understand and use estimates or measures of probability from theoretical models • Understand the concepts of a sample space and an event, and how the probability of an event happening can be determined from the sample space • List all the outcomes for single events and for two successive events in a systematic way • Estimate probabilities from previously collected data	Reading and writing fractions. Listing outcomes	Venn Diagrams	PRIDE values Prepare for challenge. Developing skills for the future	**Sustainability**: self esteem and participation **Sustainability**: responsibility and creativity

		• Calculate the probability of the complement of an event happening • Use the addition rule of probability for mutually exclusive events • Understand and use the term 'expected frequency'				
Constructions and bearings	2+3	• Interpret scales on a range of measuring instruments • Calculate time intervals in terms of the 24-hour and the 12-hour clock • Make sensible estimates of a range of measures • Understand angle measure including three-figure bearings • Distinguish between acute, obtuse, reflex and right angles • Measure an angle to the nearest degree • Measure and draw lines to the nearest millimetre • Solve problems using scale drawings • Use and interpret maps and scale drawings • Convert measurements within the metric system to include linear and area units • Convert between units of volume within the metric system • Construct triangles and other two-dimensional shapes using a combination of a ruler, a protractor and compasses • Use straight edge and compasses to:(i)construct the perpendicular bisector of a line segment(ii) construct the bisector of an angle	• Measuring and classifying angles • Drawing shapes accurately, • Nets of 3D shapes	Mastering perimeter, area, and establishes a basis for mathematical concepts which include using formulas for calculating areas and volumes of shapes, applying basic algebraic principles to solve geometric problems, and exploring real-world applications in fields like construction and geometry	PRIDE values Prepare for challenge. Developing skills for the future	**Sustainability**: self esteem and participation **Sustainability**: responsibility and creativity
Expressions, substitution and rearranging formulae	3	• Evaluate expressions by substituting numerical values for letters	• expressions • Substitution	Mastery of multiplicative	PRIDE values	**Sustainability**: self esteem

		• Understand that a letter may represent an unknown number or a variable • Use correct notational conventions for algebraic expressions and formulae • Substitute positive and negative integers, decimals and fractions for words and letters in expressions and formulae • Use formulae from mathematics and other real-life contexts expressed initially in words or diagrammatic form and convert to letters and symbols • Derive a formula or expression • Change the subject of a formula where the subject appears once	• Formula • Form equations	reasoning enhances problem-solving skills and facilitates mathematical fluency across disciplines. This works as groundwork for advanced mathematical concepts which includes topics such as algebraic expressions, equations, and inequalities, geometric transformations and similarity, as well as applications in finance, physics, and engineering .	Prepare for challenge. Developing skills for the future	and participation **Sustainability**: responsibility and creativity
Forming and solving linear equations and inequalities	4	• Solve linear equations, with integer or fractional coefficients, in one unknown in which the unknown appears on either side or both sides of the equation • Set up simple linear equations from given data • Understand and use inequality symbols <, >, = • Understand and use the convention for open and closed intervals on a number line • Solve simple linear inequalities in one variable and represent the solution set on a number line	• expressions • Substitution • Formula • Form equations • Solving step 1 equations • Solving step 2 equations • Finding pairs of values • Solving problems with two unknowns.	Mastering equations serves as a springboard for advanced topics. Students progress to systems of equations, quadratic equations, and polynomial equations.	PRIDE values Prepare for challenge. Developing skills for the future	**Sustainability**: self esteem and participation **Sustainability**: responsibility and creativity
Fractions, Decimals and percentages	4	• Understand and use equivalent fractions, simplifying a fraction by cancelling common factors • Understand and use mixed numbers and vulgar fractions	• Equivalent fractions and simplifying	Decimals serve as a foundation for understanding more complex arithmetic operations involving	PRIDE values Prepare for challenge.	**Sustainability**: self esteem and participation

		• Identify common denominators • Order fractions and calculate a given fraction • of a given quantity • Express a given number as a fraction of another number • Use common denominators to add and subtract fractions and mixed numbers • Understand and use fractions as multiplicative inverses • Add, subtract, multiply and divide fractions and mixed numbers • Use decimal notation • Understand place value • Order decimals • Convert a decimal to a fraction or percentage • Recognise that a terminating decimal is a fraction • Round to a given number of significant figures or decimal places • Identify upper and lower bounds where values are given to a degree of accuracy • Use estimation to evaluate approximations to numerical calculations • Use a scientific electronic calculator to determine numerical results • Convert a fraction to a decimal or percentage	• Equivalent fractions on an umber line • Comparing and ordering fractions • Adding and subtracting fractions • Adding mixed numbers • Subtracting mixed numbers • Multi- step problems • Multiplying fractions by integers • Multiply fractions by fractions • Divide a fraction by an integer • Fractions of amounts • Fractions of amounts- finding the whole.	fractions, percentages, and ratios. Students can apply decimal skills extensively in algebraic expressions, equations, and geometric calculations	Developing skills for the future	**Sustainability**: responsibility and creativity
Straight line graphs	5	• Understand and use conventions for rectangular Cartesian coordinates • Plot points (x, y) in any of the four quadrants or locate points with given coordinates • Determine the coordinates of points identified by geometrical information	• 1 step function machines • 2 step function machines • Form expressions • Substitution • Formula	Solving simultaneous equations. Application of proportions	PRIDE values Prepare for challenge. Developing skills for the future	**Sustainability**: self esteem and participation **Sustainability**: responsibility and creativity

		• Determine the coordinates of the midpoint of a line segment, given the coordinates of the two end points • Draw and interpret straight line conversion graphs • Find the gradient of a straight line • Recognise that equations of the form • y = mx + c are straight line graphs with gradient m and intercept on the y-axis at the point (0, c) • Recognise, generate points and plot graphs of linear functions	• Form equations • Solving step 1 equations • Solving step 2 equations • Finding pairs of values			
Sequences and patterns	5	• Generate terms of a sequence using term-to-term and position-to-term definitions of the sequence • Find subsequent terms of an integer sequence and the rule for generating it • Use linear expressions to describe the nth term of arithmetic sequences	• 1 step function machines • 2 step function machines	This will lead to non linear patterns, arithemetic sequences.	PRIDE values Prepare for challenge. Developing skills for the future	**Sustainability**: self esteem and participation **Sustainability**: responsibility and creativity
Statistics introduction	5	• Understand the concept of average • Calculate the mean, median, mode and range for a discrete data set	• Line graphs • Dual bar charts • Read and interpret pie charts • Pie charts with percentages • Drawing pie charts • Finding the mean	This will give them a strong understanding of the purpose of data collection and how to effectively read data.	PRIDE values Prepare for challenge. Developing skills for the future	**Sustainability**: self esteem and participation **Sustainability**: responsibility and creativity
Percentages		• Understand that ‘percentage’ means ‘number of parts per 100’ • Express a given number as a percentage of another number • Express a percentage as a fraction and as a decimal	• Understanding what percentage are	Moving onto worded questions linked to fractions, decimals and percentages.	PRIDE values Prepare for challenge.	**Sustainability**: self esteem and participation

		• Understand the multiplicative nature of percentages as operators • Solve simple percentage problems, including percentage increase and decrease • Use reverse percentages • Use compound interest and depreciation	• Converting fractions to percentages • Finding equivalent fractions, decimal and percentages; • Ordering fractions, decimals and percentages • Percentages of an amount • Percentages with missing values.		Developing skills for the future	**Sustainability**: responsibility and creativity
Perimeter and Area		• Find the perimeter of shapes made from triangles and rectangles • Find the area of simple shapes using the formulae for the areas of triangles and rectangles • Find the area of parallelograms and trapezia • Find the surface area of simple shapes using the area formulae for triangles and rectangles • Find the volume of prisms, including cuboids and cylinders, using an appropriate formula	• Shapes with the same area • Area and perimeter-counting squares • Area and perimeter - rectilinear shapes • Area of triangles • Area of parallelograms • Volume-counting cubes • Volume of a cuboid	Reading maps Similar shapes in context of 2D and 3D shapes.	PRIDE values Prepare for challenge. Developing skills for the future	**Sustainability**: self esteem and participation **Sustainability**: responsibility and creativity

Representing data		• Use different methods of presenting data • Use appropriate methods of tabulation to enable the construction of statistical diagrams • Interpret statistical diagrams	• Line graphs • Dual bar charts • Read and interpret pie charts • Pie charts with percentages • Drawing pie charts • Finding the mean	This will give them a strong understanding of the purpose of data collection and how to effectively read data.	PRIDE values Prepare for challenge. Developing skills for the future	**Sustainability**: self esteem and participation **Sustainability**: responsibility and creativity
Powers and roots		• Use index notation and index laws for multiplication and division of positive and negative integer powers including zero • Calculate with and interpret numbers in the form a × 10n where n is an integer and	• Comparing and ordering any integers • Powers of 10 • Substitution • Collecting like terms	Key skills can be applied to future topics including algebraic fractions, surds, quadratic formula etc	PRIDE values Prepare for challenge. Developing skills for the future	**Sustainability**: self esteem and participation **Sustainability**: responsibility and creativity
Expanding three brackets		• Multiplying two brackets:1 • Multiplying two brackets:2 • Expanding three brackets	• Expanding two brackets.	Key skills can be applied to future topics including binomial expansion.	PRIDE values Prepare for challenge. Developing skills for the future	**Sustainability**: self esteem and participation **Sustainability**: responsibility and creativity
Angles in polygons		• Recognise and give the names of polygons • Understand the term ‘regular polygon’ and calculate interior and exterior angles of regular polygons • Understand and use the angle sum of polygons	• Angles on a straight line. • Angles at a point • Angle pairs between parallel lines • Angles in a triangle • Angles in a quadrilateral	Key skills can be applied to solve word problems in algebra.	PRIDE values Prepare for challenge. Developing skills for the future	**Sustainability**: self esteem and participation **Sustainability**: responsibility and creativity

Ratio and rate		• Ratio • Increases and decreases using ratios • Speed • Rates	• Simplifying fractions • Converting between fractions and decimals • Units conversion.	Key skills can be applied in direct and inverse proportions.	PRIDE values Prepare for challenge. Developing skills for the future	**Sustainability**: self esteem and participation **Sustainability**: responsibility and creativity
Translations and reflections		• Translations • Reflections: 1 • Reflections: 2	• Translation on a grid • Reflection	Rotation Enlargement including fractional scale factors.	PRIDE values Prepare for challenge. Developing skills for the future	**Sustainability**: self esteem and participation **Sustainability**: responsibility and creativity
Graphs in practical situations		• Conversion graphs	• Reading coordinates • Plotting coordinates • Scaled drawings • Scale factors	Strong understanding of interpretation of real life graphs.	PRIDE values Prepare for challenge. Developing skills for the future	**Sustainability**: self esteem and participation **Sustainability**: responsibility and creativity
Inequalities		• Inequalities	• Understanding notations of inequalities • Integers definition	Key skills can be applied to future topics shading of required regions.	PRIDE values Prepare for challenge. Developing skills for the future	**Sustainability**: self esteem and participation **Sustainability**: responsibility and creativity
Solving inequalities		• Solving inequalities	• Solving equations	Key skills can be applied to future topics linear programming.	PRIDE values Prepare for challenge.	**Sustainability**: self esteem and participation **Sustainability**: responsibility and creativity

					Developing skills for the future	
Decimal calculations and rounding		• Rounding whole numbers • Rounding decimals • Rounding to significant figures • Upper and lower bounds • Upper and lower bounds for calculations	• Place value for decimals and whole numbers • Square numbers and cube numbers • Rounding any integer	This will give them a strong understanding of applying bounds to arithmetic operations.	PRIDE values Prepare for challenge. Developing skills for the future	**Sustainability**: self esteem and participation **Sustainability**: responsibility and creativity
Circumference and area of a circle		• Circumference and area of a circle	• Circles-radius, diameter, circumference • Drawing shapes accurately, • Nets of 3D shapes	This will give them a strong understanding of area and length of arc of sectors and mensuration of spheres.	PRIDE values Prepare for challenge. Developing skills for the future	**Sustainability**: self esteem and participation **Sustainability**: responsibility and creativity
Rearranging formulae		• Rearranging formulae	• Function machine • Combining like terms.	This will give them a strong understanding of rearranging formulae when subject appears twice on either side.	PRIDE values Prepare for challenge. Developing skills for the future	**Sustainability**: self esteem and participation **Sustainability**: responsibility and creativity
Standard Form		• 1.9A iInterpret numbers in the form a × 10n where n is an integer • Calculating with standard form	• Dividing and multiplying by Powers of 10	Doing arithmetic using standard form. Calculating in standard form using a calculator.	PRIDE values Prepare for challenge. Developing skills for the future	**Sustainability**: self esteem and participation **Sustainability**: responsibility and creativity

Pythagoras' theorem		• Pythagoras' theorem	• Properties of Right angle triangle. • Acute angles • Square roots	Key skills can be applied to future topics circle theorems, trigonometry, Pythagoras etc	PRIDE values Prepare for challenge. Developing skills for the future	**Sustainability**: self esteem and participation **Sustainability**: responsibility and creativity
Trigonometry (for right angle traingles)		• Trigonometric ratios • Calculating angles • Using sine, cosine and tangent functions • Which ratio to use	• Measuring and classifying angles • Calculating angles • Usage of calculators	Key skills can be applied to future topics to solve non right angle triangles.	PRIDE values Prepare for challenge. Developing skills for the future	**Sustainability**: self esteem and participation **Sustainability**: responsibility and creativity