Moor House School & College Curriculum Map

YEAR GROUP/PATHWAY: Year 10 GCSE			SUBJECT AREA: Maths
Autumn 1	**Topic 1**	**Topic 2**	**Topic 3**
Knowledge	**Basic Calculation Skills**	**Whole Number Theory**	**Algebraic Expressions**
Skills	- Use non-calculator methods to calculate the sum, difference, product and quotient of positive and negative whole numbers - Know the conventional order for performing calculations involving brackets, four rules and powers, roots and reciprocals - Know that addition and subtraction, multiplication and division, and powers and roots, are inverse operations and use this to simplify and check calculations, for example, in reversing arithmetic in "I'm thinking of a number" or "missing digit" problems. - Round numbers to the nearest whole number, ten, hundred, etc. or to a given number of significant figures (sf) or decimal places (dp). - Estimate or check, without a calculator, the result of a calculation by using suitable approximations. - Use inequality notation to write down an error interval for a number or measurement rounded or truncated to a given degree of accuracy.	- Understand and use the terms odd, even, prime, factor (divisor), multiple, common factor (divisor), common multiple, square, cube, root. Understand and use place value. - Identify prime numbers less than 20. Express a whole number as a product of its prime factors. e.g. 24 = 2x2x2x3 Understand that each number can be expressed as a product of prime factors in only one way. - Find the HCF and LCM of two whole numbers by listing.	- Understand and use the concepts and vocabulary of expressions, equations, formulae, inequalities, terms and factors - Simplify algebraic expressions by collecting like terms. e.g. 2+3+a+a=5a - Simplify algebraic products and quotients. - Simplify algebraic expressions by multiplying a single term over a bracket. - Expand products of two binomials. - Take out common factors. - Factorise quadratic expressions of the form x^2+bx+c

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Vocabulary	- Calculations - Order of operations, BIDMAS - Inverse operations - Rounding & Estimation - Limits of accuracy	- Prime numbers and prime factors - Multiples and Factors - Lowest common multiple & Highest common factor	- Algebraic notation - Simplifying expressions - Expanding Brackets - Factorising Expressions
Autumn 2	**Topic 1**	**Topic 2**	**Topic 3**
Knowledge	**Sequences**	**Equations**	**Angles**
Skills	- Generate a sequence by spotting a pattern or using a term-to-term rule given algebraically or in words. e.g. Continue the sequences 1, 4, 7, 10, … 1, 4, 9, 16, … - Find a position-to-term rule for simple arithmetic sequences, algebraically or in words. e.g. 2, 4, 6, … $2n$ 3, 4, 5, … $n + 2$ - Recognise sequences of triangular, square and cube numbers, and simple arithmetic progressions - Interpret, where appropriate, simple expressions as functions with inputs and outputs.	- Solve linear equations in one unknown algebraically. e.g. Solve $3x-1=5$ - Solve quadratic equations with coefficient of $x2$ equal to 1 by factorising. - Set up and solve two linear simultaneous equations in two variables algebraically. e.g. Solve simultaneously $x\ y\ 2318 + =$ and $y\ x\ 35 = -$	- Know the terms acute, obtuse, right and reflex angles. Use the standard conventions for labelling and referring to the sides and angles of triangles. e.g. AB, ABC+, angle ABC, a is the side opposite angle A - Know and use the sum of the angles at a point is 360^c. - Know that the sum of the angles at a point on a line is 180^c. - Know and use: vertically opposite angles are equal alternate angles on parallel lines are equal corresponding angles on parallel lines are equal. - Derive and use the sum of the interior angles of a triangle is 180^c. - Derive and use the sum of the exterior angles of a polygon is 036^c. - Find the sum of the interior angles of a polygon. - Find the interior angle of a regular polygon.
Vocabulary	- Sequences and patterns - Nth term - Functions	- Solving Linear equations - Quadratic equations - Simultaneous equations	- Angle facts - Parallel lines and angles - Angles in triangles

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		- Using graphs to solve equations	- Angles in polygons
Spring 1	**Topic 1**	**Topic 2**	**Topic 3**
Knowledge	**Constructions and loci**	**Fractions**	**Percentages**
Skills	- Use a ruler to construct and measure straight lines. - Use a protractor to construct and measure angles. - Use compasses to construct circles. - Construct the perpendicular bisector and midpoint of a line segment. - Construct the bisector of an angle formed from two lines. - Apply ruler and compass constructions to construct figures and identify the loci of points, to include real-world problems. - Understand the term 'equidistant'.	- Recognise and use equivalence between simple fractions and mixed numbers. - Add, subtract, multiply and divide simple fractions (proper and improper), including mixed numbers and negative fractions. - Calculate a fraction of a quantity. - Express a simple fraction as a terminating decimal or vice versa, without a calculator	- Understand percentage is 'number of parts per hundred'. - Convert between fractions, decimals and percentages. - Calculate a percentage of a quantity, and express one quantity as a percentage of another, with or without a calculator. - Increase or decrease a quantity by a simple percentage, including simple decimal or fractional multipliers. - Apply this to simple original value problems and simple interest.
Vocabulary	- Geometrical instruments - Bisectors and perpendiculars - loci	- Equivalent fractions - Operations with fractions - Fractions of quantities	- Percentage calculations - Percentage change

Spring 2	**Topic 1**	**Topic 2**	**Topic 3**
Knowledge	**Algebraic formula**	**Perimeter**	**Area**

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Skills	- Formulate simple formulae and expressions from real-world contexts. - Substitute numbers into simple expressions and formulae to find the value of the subject. - Rearrange formulae to change the subject,	- Calculate the perimeter of rectilinear shapes. - Know and apply the formula circumference to calculate the circumference of a circle. - Calculate the arc length of a sector of a circle given its angle and radius. - Apply perimeter formulae in calculations involving the perimeter of composite 2D shapes.	- Area of a triangle - Area of a parallelogram - Area of a trapezium - Know and apply the formula to calculate the area of a circle. - Calculate the area of a sector of a circle given its angle and radius. - Apply area formulae in calculations involving the area of composite 2D shapes.
Vocabulary	- Writing formulae - Substituting - Changing the subject	- Perimeter of simple and compound / composite shapes - Circumference of a circle - Arc length and sector	- Area of polygons - Area of circles and sectors - Area of compound shapes
Summer 1	**Topic 1**	**Topic 2**	**Topic 3**
Knowledge	**Units of measure**	**Properties of shapes and solids**	**Symmetry**
Skills	- Use and convert standard units of measurement for length, area, volume/capacity, mass, time and money. - Use and convert simple compound units (e.g. for speed, rates of pay, unit pricing). - Know and apply in simple cases: speed = distance ÷ time	- Know the basic properties of isosceles, equilateral and right-angled triangles. - Give geometrical reasons to justify these properties. - Know the basic properties of the square, rectangle, parallelogram, trapezium, kite and rhombus.	- Identify reflection and rotation symmetries of triangles, quadrilaterals and other polygons.

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	- Use the scale of a map, and work with bearings. - Construct and interpret scale drawings.	- Understand and use the terms centre, radius, chord, diameter and circumference.	
Vocabulary	- Metric units of measure - Standard units - Scale drawings - Bearings	- Types of shapes - Symmetry - Triangles - Quadrilaterals - Circles	
Summer 2	**Topic 1**	**Topic 2**	**Topic 3**
Knowledge	**Transformations**	**Three Dimensional Shapes**	**Volume and Surface area**
Skills	- Reflect a simple shape in a given mirror line, and identify the mirror line from a shape and its image. - Rotate a simple shape clockwise or anti-clockwise through a multiple of 90c about a given centre of rotation. - Use a column vector to describe a translation of a simple shape, and perform a specified translation. - Identify the centre and scale factor (including fractional scale factors) of an enlargement of a simple shape, and perform such an enlargement on a simple shape.	- Use the terms points, lines, line segments, vertices, edges, planes, parallel lines, perpendicular lines. - Recognise and know the properties of the cube, cuboid, prism, cylinder, pyramid, cone and sphere. - Interpret plans and elevations of simple 3D solids. - Construct plans and elevations of simple 3D solids, and representations (e.g. using isometric paper) of solids from plans and elevations.	- Calculate the surface area and volume of cuboids and other right prisms (including cylinders). - Calculate the surface area and volume of spheres, cones and simple composite solids (formulae will be given). - Calculate the surface area and volume of a pyramid

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Vocabulary	- Reflections - Translations - Rotations - Enlargement	- Properties of 3D shapes - Drawing 3D shapes - Plan and elevation views	- Prisms and cylinders - Cones and spheres - Pyramids