Moor House School & College Curriculum Map

YEAR GROUP/PATHWAY: A			*SUBJECT AREA: Maths*
Autumn 1	**Topic 1**	**Topic 2**	**Topic 3**
Knowledge	**Number**	**Angles**	**Sequences**
Skills	• understand and use place value for decimals, measures and integers of any size • order positive and negative integers, decimals and fractions; use the number line as a model for ordering of the real numbers; use the symbols =, ≠, ≤, ≥ • use the four operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative • recognise and use relationships between operations including inverse operations • round numbers and measures to an appropriate degree of accuracy [for example, to a number of decimal places or significant figures] • use approximation through rounding to estimate answers and calculate possible resulting errors expressed using inequality notation	• apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles • understand and use the relationship between parallel lines and alternate and corresponding angles • derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon, and to derive properties of regular polygons • apply angle facts, triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides, including Pythagoras' Theorem, and use known results to obtain simple proofs	• generate terms of a sequence from either a term-to-term or a position-to-term rule • recognise arithmetic sequences and find the nth term • recognise geometric sequences and appreciate other sequences that arise.
Vocabulary	• Place Value • Ordering numbers • Rounding Numbers • Addition and Subtraction	• Angle types • Measuring and drawing angles • Angles on a line • Angles in a triangle	• Number machines • Inverses • Number sequences • Finding a rule

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	• Positive and Negative Numbers	• Angles between parallel lines	
Autumn 2	**Topic 1**	**Topic 2**	**Topic 3**
Knowledge	**Multiplication and Division**	**Algebra**	**Formula and Equations**
Skills	• use the concepts and vocabulary of factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, including using product notation and the unique factorisation property • use the concepts and vocabulary of prime numbers and prime factorisation • use the four operations, including formal written methods, applied to integers, both positive and negative • recognise and use relationships between operations including inverse operations • use integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5 and distinguish between exact representations of roots and their decimal approximations	• use and interpret algebraic notation, • understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors • simplify and manipulate algebraic expressions to maintain equivalence by: • collecting like terms • multiplying a single term over a bracket • taking out common factors • expanding products of two or more binomials	• use conventional notation for the priority of operations, including brackets, powers, roots and reciprocals • substitute numerical values into formulae and expressions, including scientific formulae • understand and use standard mathematical formulae; rearrange formulae to change the subject • model situations or procedures by translating them into algebraic expressions or formulae and by using graphs • use algebraic methods to solve linear equations in one variable (including all forms that require rearrangement)
Vocabulary	• Multiples and factors • Prime numbers • Multiplying and dividing by 10, 100, 1000 • Multiplication using written methods • Division using written methods	• Using letters • Collecting like terms • Simplifying expressions • Multiplying terms together • Brackets in algebra • Powers	• Order of operations • Substituting into formulae • Solving equations • Writing your own equations

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Spring 1	Topic 1	Topic 2	Topic 3
Knowledge	**Fractions and Ratio**	**Decimal**	**Percentages**
Skills	• use the four operations, including formal written methods, applied to proper and improper fractions, and mixed numbers, • express one quantity as a fraction of another, where the fraction is less than 1 and greater than 1 • use ratio notation, including reduction to simplest form • divide a given quantity into two parts in a given part:part or part:whole ratio; express the division of a quantity into two parts as a ratio • understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction • relate the language of ratios and the associated calculations to the arithmetic of fractions and to linear functions	• use the four operations, including formal written methods, applied to integers, decimals, all both positive and negative • order positive and negative integers, decimals; use the number line as a model for ordering of the real numbers; use the symbols =, ≠, ≤, ≥	• work interchangeably with terminating decimals and their corresponding fractions • define percentage as 'number of parts per hundred', • interpret percentages and percentage changes as a fraction or a decimal, interpret these multiplicatively, express one quantity as a percentage of another, • compare two quantities using percentages, and work with percentages greater than 100% • interpret fractions and percentages as operators
Vocabulary	• Mixed numbers and improper fractions • Equivalent fractions • Ordering fractions • Adding and subtracting • Multiplying and dividing • Ratio • Proportion • Calculating with ratios	• Ordering • Adding and Subtracting • Rounding • Multiplying and Dividing	• Percentages, fractions and decimals • Percentage of an amount • Increasing and decreasing by percentage

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Spring 2	Topic 1	Topic 2	Topic 3
Knowledge	**Graphs**	**Shape Space and Measure**	
Skills	• work with coordinates in all four quadrants • recognise, sketch and produce graphs of linear and quadratic functions of one variable with appropriate scaling, using equations in x and y and the Cartesian plane • interpret mathematical relationships both algebraically and graphically • reduce a given linear equation in two variables to the standard form y = mx + c; calculate and interpret gradients and intercepts of graphs of such linear equations numerically, graphically and algebraically • use linear and quadratic graphs to estimate values of y for given values of x and vice versa and to find approximate solutions of simultaneous linear equations	• derive and illustrate properties of triangles, quadrilaterals, circles, and other plane figures [for example, equal lengths and angles] using appropriate language and technologies • describe, sketch and draw using conventional terms and notations: points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are reflectively and rotationally symmetric • draw and measure line segments and angles in geometric figures, including interpreting scale drawings • derive and use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/at a given point, bisecting a given angle); • identify properties of, and describe the results of, translations, rotations and reflections applied to given figures • identify and construct congruent triangles, and construct similar shapes by enlargement, with and without coordinate grids	

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		• use standard units of mass, length, time, money and other measures, including with decimal quantities	
Vocabulary	• Coordinates • Lines on graphs • Equations of sloping lines • Drawing sloping lines • Information graphs	• Points, lines and shapes • Solids and nets • Tessellations • Transformations • Metric and imperial measure	
Summer 1	**Topic 1**	**Topic 2**	**Topic 3**
Knowledge	**Perimeter, area and volume**	**Averages**	
Skills	• derive and apply formulae to calculate and solve problems involving: ○ perimeter and area of triangles, parallelograms, trapezia, ○ volume of cuboids (including cubes) and other prisms (including cylinders) • calculate and solve problems involving: perimeters of 2-D shapes (including circles), areas of circles and composite shapes	• Describe, interpret and compare observed distributions of a single variable through: appropriate graphical representation involving: ○ discrete, continuous and grouped data; ○ appropriate measures of central tendency (mean, mode, median) ○ spread (range, consideration of outliers)	
Vocabulary	• Perimeter and area of rectangles • Area of triangles • Composite shapes • Circles • Volume and surface area	• Mean • Median • Mode • Range • Averages from frequency tables	
Summer 2	**Topic 1**	**Topic 2**	**Topic 3**
Knowledge	**Data Handling**	**Probability**	

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Skills	• construct and interpret appropriate tables, charts, and diagrams, including:
	  ○ frequency tables,
	  ○ bar charts,
	  ○ pie charts, and
	  ○ pictograms
	for categorical data, and vertical line (or bar) charts for ungrouped and grouped numerical data
	
	• describe simple mathematical relationships between two variables in observational and experimental contexts and illustrate using scatter graphs.
		• record, describe and analyse the frequency of outcomes of simple probability experiments involving:
		  ○ randomness,
		  ○ fairness,
		  ○ equally and unequally likely outcomes,
		  ○ using appropriate language,
		  ○ the 0-1 probability scale
		
		• understand that the probabilities of all possible outcomes sum to 1
		
		• enumerate sets and unions/intersections of sets systematically, using tables, grids and Venn diagrams
		
		• generate theoretical sample spaces for single and combined events with equally likely, mutually exclusive outcomes and use these to calculate theoretical probabilities.	

Vocabulary	• Questionnaires • Sorting and presenting data • Bar charts • Histograms • Pie Charts • Scatter Graphs	• The probability scale • Events by outcome • Calculating probabilities • Combined events	