Learn together, grow together
Progression in Maths

In Maths, pupils will learn to become confident, resilient and fluent with all aspects of numeracy. Fluency is at the heart of our curriculum and pupils will learn to automatically recall basic number skills before becoming fluent with written number problems. Pupils will learn to apply their skills to solve problems and reason with number. We want pupils to leave Medina as resilient and proficient mathematicians.

Reception		
Autumn	**Spring**	**Summer**
Mathematics: Number **40-60m** Recognise some numerals of personal significance Recognise numerals 1 to 5 Count up to 3 or 4 objects by saying one number name for each Count actions or objects which cannot be moved Count objects to 10 and beginning to count beyond 10 Count out up to 6 objects from a larger group Say the number that is one more than a given number Find one more and one less from a group of 5 and then 10 objects	**Mathematics: Number** **40-60m** Find the total number of items in two groups by counting all of them Estimate how many objects and check by counting them Find one more and one less from a group of 5 and then 10 objects **ELG** **Count reliably with numbers from 1 to 20 and place them in order** **Have a deep understanding of number to 10, including the composition of each number** **Subitise (recognise quantities without counting) up to 5**	**Mathematics: Number** **40-60m** Use the language of more and fewer to compare 2 groups of objects **ELG** **Children can say one more or one less than a given number.** **Add and subtract 2 single digit numbers and count on and back to find the answer.** **Solve problems by doubling, halving and sharing.** **Automatically recall (without reference to resources) number bonds to 5 (including subtraction facts) and some number bonds to 10, including double facts** **Compare sets of objects up to 10 in different contexts, considering size and difference** **Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally**
Mathematics: Space, Shape and Measures **40-60m** Begin to use: mathematical names for 'solid' 3D shapes and 'flat' 2D shapes and mathematical terms to describe shapes Begin to use everyday language related to money Order two or three items by length and height Use everyday language related to time Use familiar objects and common shapes to create and recreate patterns and build models	**Mathematics: Space, Shape and Measures** **40-60m** Use everyday language related to time Order and sequence familiar events Measure short periods of time in simple ways Orders two or three items by weight and capacity **ELG** **Use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects to solve problems**	**ELG** **Use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects to solve problems** **Recognise, create and describe patterns**

	Reception	Year 1	Year 2
Arithmetic	Fluency and arithmetic are practised daily by all children. Relevant skills are taken from this progression document. In addition pupils work towards completing a Maths challenge card. These are a progressive set of fluency and arithmetic questions.		
Place Value	- Have a deep understanding of the number 10, including the composition of each number - Recognise quantities without counting up to 5 - Count confidently beyond 20, recognising the pattern of the counting system - Compare sets of objects up to 10 in different contexts, considering size and difference - Explore and represent patterns within numbers up to10, including evens, odd, double facts and how quantities can be distributed equally	- Count to and across 100, forwards and backwards, beginning with 0 or 1 from any given number - Count read and write numbers to 100 in numerals; count in multiples of 2s, 5s and 10s - Identify and represent numbers using objects and pictorial representations including the number line & use the vocabulary: equal to, more than, less than (fewer), most, least - Read and write numbers to 1 to 20 in numerals and words - Read, write and interpret mathematical statements involving addition (+) subtractions (-) and equals (=) signs	- Count in steps of 2, 3 and 5 from 0, and in tens from any number forward and backward - Recognise the place value or each digit in a two digit number - Compare and order numbers from 0 up to 100; use <,> and = signs - Identify, represent and estimate numbers using different representations, including the number line - Read and write numbers to at least 100 in numerals and words - Use place value and number facts to solve problems
Addition & Subtraction	Automatically recall (without reference to rhymes, counting or other aides) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts	- Given a number, identify one more and one less - Represent and use number bonds and related subtraction facts within 20 - Add and subtract one digit and two digit numbers to 20 including zero - Solve one step problems that involve addition and subtraction using concrete objects and pictorial representations and missing number problems such as 7 = - ☐ 9	- Recall and use addition and subtraction facts to 20 fluently and derive and use related facts up to 100 - Add and subtract numbers using concrete objects, pictorial representations, and mentally, including a 2 digit number and ones, a 2 digit number and tens and 2 digit number add a 2 digit number and three 1 digit numbers. - Show that the addition of numbers can be done in any order (commutativity) and subtraction of one number from another cannot - Solve problems with addition and subtraction, using concrete and pictorial and abstract representations - Recognise and use the inverse relationship between addition and subtraction and use this to check and solve missing number problems

Multiplication & Division		• Solve one step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher	• Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers • Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) signs • Show that the multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot • Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in context
Fractions		• Recognise, find and name a half as one of two equal parts of an object, shape or quantity • Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity	• Recognise, find, name and write fractions 1/3, 1/4 , 2/4 and ¾ of a length, shape, set of objects or quantity • Write simple fractions for example, ½ of 6 = 3 and recognise the equivalence of 2/4 and 1/2
Measurement including time and money		• Recognise and know the value of different denominations of coins and notes • Sequence events in chronological order using language such as: before, after, next, first, today, yesterday, tomorrow etc.) • Recognise and use language relating to dates, including days of the week, weeks, months and years • Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times	• Choose and use appropriate standard units to estimate and measure length/height (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers scales, thermometers and measuring vessels • Compare and order lengths, mass, volume/capacity and record the results using <, > and = • Recognise and use the symbols for pounds (£) and pence (p); combine amounts to make a particular value • Find different combinations of coins that equal the same amounts of money • Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change • Compare and sequence different intervals of time • Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times • Know the number of minutes in an hour and the number of hours in a day
Geometry		• Recognise and name common 2 d shapes (e.g. square, circle, triangle) • Recognise and name common 3-d shapes (e.g. cubes, cuboids, pyramids and spheres) • Describe position, direction and movement, including whole, half quarter and three quarter turns	• Identify and describe the properties of 2D shapes, including the number of sides and line of symmetry in a vertical line • Identify, describe and sort the properties of 3d shapes including the number of edges, vertices and faces • Order and arrange combinations of mathematical objects in patterns and sequences • Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for a quarter, half and ¾ turns
Statistics			• Interpret and construct simple pictograms, tally charts, block diagrams and simple tables

			• Ask and answer simple questions by counting the number of objects and sorting categories by quantity • Ask and answer questions about totalling and comparing categorical data

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	Year 3	Year 4	Year 5	Year 6
Arithmetic	Fluency and arithmetic are practised daily by all children. Relevant skills are taken from this progression document. In addition pupils work towards completing a Maths challenge card. These are a progressive set of fluency and arithmetic questions.			
Place Value	• Count from 0 in multiples of 4, 8, 50 and 100 • Find 10 or 100 more or less than a given number • Compare and order numbers up to 1000 • Identify, represent and estimate numbers using different representations • Read and write numbers up to 1000 in numerals and words • Recognise the place value of each digit in a three digit number (hundreds, tens and ones) • Solve number problems and practical problems involving these ideas	• Count backwards through zero to include negative numbers • Count in multiples of 6, 7, 9, 25 and 1000 • Find 1000 more or less than a given number • Order and compare numbers beyond 1000 • Identify, represent and estimate numbers using different representations • Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value. • Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) • Round any number to the nearest 10, 100 or 1 000 • Solve number and practical problems that involve all of the above and with increasingly large positive numbers	• Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero • Count forwards or backwards in steps of powers of 10 for any given number up to 1000 000 • Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit • Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit • Read Roman numerals to 1000 (M) and recognise years written in Roman numerals • Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit • Round any number up to 1 000 000 to the nearest 10, 100, 1 000, 10 000 and 100 000 • Solve number problems and practical problems that involve all of the above	• Use negative numbers in context, and calculate intervals across zero • Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit • Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit • Round any whole number to a required degree of accuracy • Solve number and practical problems that involve all of the above
Addition & Subtraction	• Add and subtract numbers mentally including: - a three-digit number and ones - a three digit number and tens - a three digit number and hundreds • Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction (see calculation policy) • Estimate the answer to a calculation and use inverse operations to check answers • Solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction	• Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate • Estimate and use inverse operations to check answers to a calculation • Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	• Add and subtract numbers mentally with increasingly large numbers • Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) • Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy • Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	• Perform mental calculations, including with mixed operations and large numbers • Use their knowledge of the order of operations to carry out calculations involving the four operations • Use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy • Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why • Solve problems involving addition, subtraction, multiplication and division
Multiplication & Division	• Write and calculate mathematical statements for multiplication and division using the times tables that	• Count in multiples of 6, 7, 9, 25 and 1 000	• Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000	• Perform mental calculations, including with mixed operations and large numbers

they know, including for 2 digit numbers times one digit numbers, using mental and progressing to formal written methods • Solve problems, including missing number problems, involving multiplication and division including integer scaling	• Recall multiplication and division facts for multiplication tables up to 12 × 12 • Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers • Recognise and use factor pairs and commutativity in mental calculations • Multiply two-digit and three-digit numbers by a one-digit number using formal written layout • Recognise and use factor pairs and commutativity in mental calculations • Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects • Estimate and use inverse operations to check answers to a calculation	• Multiply and divide numbers mentally drawing upon known facts • Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 • Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers • Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context • Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. • Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers • Establish whether a number up to 100 is prime and recall prime numbers up to 19 • Recognise and use square numbers and cube numbers, and the notation for squared (^{2})and cubed (^{3}) • Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes • Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign • Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates	• Associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3 /8) • Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication • Divide numbers up to 4-digits by a two-digit whole number using the formal written method of short division where appropriate for the context divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context • Use written division methods in cases where the answer has up to two decimal places • Identify common factors, common multiples and prime numbers • Use their knowledge of the order of operations to carry out calculations involving the four operations • Use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy • Solve problems involving addition, subtraction, multiplication and division
Fractions	• Count up and down in tenths • Recognise the tenths arise from dividing an object into 10 equal parts and in dividing one digit numbers by 10	• Count up and down in hundredths • Recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten • Compare numbers with the same number of decimal places up to two decimal places	• recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents • Compare and order fractions whose denominators are all multiples of the same number	• Compare and order fractions, including fractions >1 • Identify the value of each digit in numbers given to three decimal places • Solve problems which require answers to be rounded to specified degrees of accuracy

	• Compare and order unit fractions, and fractions with the same denominator • Recognise and show using diagrams , equivalent fractions with small denominators • Recognise and find fractions of a discrete set of objects: unit fractions (e.g. 1/2, 1/10, 1/3) and non-unit fractions (e.g. 2/12, 7/8, 3/4) with small denominators • Add and subtract fractions with the same denominator within one whole (for example 5/7 +1/7 = 6/7 • Solve problems using fraction knowledge	•Round decimals with one decimal place to the nearest whole number • •Recognise and show, using diagrams, families of common equivalent fractions •Recognise and write decimal equivalents of any number of tenths or hundredths • Recognise and write decimal equivalents to 1/ 4 ; 1 / 2 ; 3 / 4 •add and subtract fractions with the same denominator •Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths •Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number •Solve simple measure and money problems involving fractions and decimals to two decimal places.	• Read, write, order and compare numbers with up to three decimal places • Round decimals with two decimal places to the nearest whole number and to one decimal place • Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths • Read and write decimal numbers as fractions (e.g. 0.71 = 71 / 100) • Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents • Recognise the per cent symbol (%) and understand that per cent relates to "number of parts per hundred", and write percentages as a fraction with denominator 100 as a decimal fraction • Add and subtract fractions with the same denominator and multiples of the same number • Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number (e.g. 2 / 5 + 4 / 5 = 6 / 5 = 1 1 / 5) • Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams • Solve problems involving numbers up to three decimal places • Solve problems which require knowing percentage and decimal equivalents of 1 / 2 , 1 / 4 , 1 / 5 , 2 / 5 , 4 / 5 and those with a denominator of a multiple of 10 or 25.	• Use common factors to simplify fractions; use common multiples to express fractions in the same denomination • Associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3 / 8) • Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts • Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions • Multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. 1 / 4 × 1 / 2 = 1 / 8) • Multiply one-digit numbers with up to two decimal places by whole numbers • divide proper fractions by whole numbers (e.g. 1 / 3 ÷ 2 = 1 / 6) • Multiply one-digit numbers with up to two decimal places by whole numbers • Multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places • Identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places • Associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3 /8) • Use written division methods in cases where the answer has up to two decimal places
Measurement Including time and money	• Measure, compare add and subtract: **lengths** (m/cm/mm); **mass** (kg/g); **volume/capacity** (l/ml) • Measure the perimeter of simple 2-d shapes	•Estimate, compare and calculate different measures, including money in pounds and pence •Estimate, compare and calculate different measures, including money in pounds and pence	• Calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes (also included in measuring)	• Calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm³) and cubic metres (m³), and extending to other units such as mm³ and km³ . • Solve problems involving the calculation and conversion of units of measure, using

	• Compare durations of events, for example the time taken by particular events • Know the number of seconds in a minute and number of days in each month, year and leap year • Estimate and read the time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours, use vocabulary such as clocks, am/pm, morning, afternoon, noon and midnight • Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12 hour and 24 hour clocks	• Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres • Find the area of rectilinear shapes by counting squares • Read, write and convert time between analogue and digital 12 and 24-hour clocks • Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days • Convert between different units of measure (e.g. kilometre to metre; hour to minute) • Read, write and convert time between analogue and digital 12 and 24-hour clocks • Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days	• Estimate volume (e.g. using 1 cm 3 blocks to build cubes and cuboids) and capacity (e.g. using water) • Use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling. • Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres • Solve problems involving converting between units of time • Convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) • Solve problems involving converting between units of time • Understand and use equivalences between metric units and common imperial units such as inches, pounds and pints	decimal notation up to three decimal places where appropriate • Recognise that shapes with the same areas can have different perimeters and vice versa • Calculate the area of parallelograms and triangles • Recognise when it is possible to use formulae for area and volume of shapes • Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa using decimal notation to up to three decimal places • Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate • Convert between miles and kilometres
Geometry	• Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them • Recognise angles as a property of shape or a description of a turn • Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle • Identify horizontal and vertical lines and pairs of perpendicular and parallel line	• Identify lines of symmetry in 2-D shapes presented in different orientations • Complete a simple symmetric figure with respect to a specific line of symmetry • Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes • Identify acute and obtuse angles and compare and order angles up to two right angles by size • Describe positions on a • 2-D grid as coordinates in the first quadrant • Describe movements between positions as translations of a given unit to the left/right and up/down • Plot specified points and draw sides to complete a given polygon	• Identify 3-D shapes, including cubes and other cuboids, from 2-D representations • Draw given angles, and measure them in degrees (°) • Use the properties of rectangles to deduce related facts and find missing lengths and angles distinguish between regular and irregular polygons based on reasoning about equal sides and angles • Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles identify: - angles at a point and one whole turn (total 360°) - angles at a point on a straight line and ½ a turn (total 180°) other multiples of 90° • Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed	• Recognise, describe and build simple 3-D shapes, including making nets • Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius • Draw 2-D shapes using given dimensions and angles • Recognise, describe and build simple 3-D shapes, including making nets • Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons • Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles • Describe positions on the full coordinate grid (all four quadrants) • Draw and translate simple shapes on the coordinate plane, and reflect them in the axes

			• Use the properties of rectangles to deduce related facts and find missing lengths and angles	
Algebra	• Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. • Solve problems, including missing number problems, involving multiplication and division, including integer scaling	• Know that perimeter can be expressed algebraically as 2(a + b) where a and b are the dimensions in the same unit.		• Express missing number problems algebraically • Find pairs of numbers that satisfy number sentences involving two unknowns • Enumerate all possibilities of combinations of two variables • Use simple formulae • Generate and describe linear number sequences
Ration & Proportion				• solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts • Solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison • Solve problems involving similar shapes where the scale factor is known or can be found • Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples
Statistics	• interpret and present data using bar charts, pictograms and tables • Create data and bar charts through the use of excel. • Solve one-step and twostep questions [e.g. 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.	• Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs • Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.	• complete, read and interpret information in tables, including timetables • Solve comparison, sum and difference problems using information presented in a line graph	• Interpret and construct pie charts and line graphs and use these to solve problems. Links to computing where children create these on Excel. • Calculate and interpret the mean as an average