Alverton Curriculum Progression in Maths

	EYFS Links	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

Alverton Curriculum Progression in Maths

Place Value and Number	I can:	I can:	I can:	I can:	I can:	I can:	I can:
	♣ build, count and compare numbers to 20 and beyond	♣ count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number ♣ count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens ♣ given a number, identify one more and one less ♣ identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least ♣ read and write numbers from 1 to 20 in numerals and words.	♣ count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward ♣ recognise the place value of each digit in a two-digit number (tens, ones) ♣ identify, represent and estimate numbers using different representations, including the number line ♣ compare and order numbers from 0 up to 100; use and = signs ♣ read and write numbers to at least 100 in numerals and in words ♣ use place value and number facts to solve problems	♣ count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number ♣ recognise the place value of each digit in a three-digit number (hundreds, tens, ones) ♣ 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 in words ♣ solve number problems and practical problems involving these ideas	♣ count in multiples of 6, 7, 9, 25 and 1000 ♣ find 1000 more or less than a given number ♣ count backwards through zero to include negative numbers ♣ recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) ♣ order and compare numbers beyond 1000 ♣ identify, represent and estimate numbers using different representations ♣ round any number to the nearest 10, 100 or 1000 ♣ solve number and practical problems that involve all of the	♣ read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit ♣ count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000 ♣ interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero ♣ round any number up to 1,000,000 to the nearest 10, 100, 1000, 10 000 and 100 000 ♣ solve number problems and practical problems that involve all of the above	♣ 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 ♣ use negative numbers in context, and calculate intervals across zero ♣ solve number and practical problems that involve all of the above.

					above and with increasingly large positive numbers ♣ 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	♣ read Roman numerals to 1000 (M) and recognise years written in Roman numerals.	

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Addition and Subtraction	I can:	I can:	I can:	I can:	I can:	I can:	I can:
	♣ combine groups ♣ find 1 more or 1 less ♣ represent and use number bonds to 10	♣ read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs ♣ 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.	♣ solve problems with addition and subtraction: ♣ using concrete objects and pictorial representations, including those involving numbers, quantities and measures ♣ applying their increasing knowledge of mental and written methods ♣ 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 two-digit number and ones	♣ 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 ♣ 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 whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) ♣ add and subtract numbers mentally with increasingly large numbers ♣ 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.	♣ 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 long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context ♣ divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders

| | | | ♣ a two-digit number and tens
♣ two two-digit numbers
♣ adding three one-digit numbers
♣ show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot
♣ recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. | | | | according to the context
♣ perform mental calculations, including with mixed operations and large numbers
♣ identify common factors, common multiples and prime numbers
♣ use their knowledge of the order of operations to carry out calculations involving the four operations
♣ 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
♣ use estimation to check answers to calculations and |
| **Multiplication and Division** | I can:
♣ make pairs | I can:
♣ solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the | I can:
♣ recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
♣ calculate mathematical | I can:
♣ recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
♣ write and calculate mathematical statements for | I can:
♣ recall multiplication and division facts for multiplication tables up to 12 × 12
♣ use place value, known and derived facts to multiply and divide | I can:
♣ identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers
♣ know and use the vocabulary of | |

| | | support of the teacher | statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs
♣ show that 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 contexts. | multiplication and division using the multiplication tables that they know, including for two-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 positive integer scaling problems and correspondence problems in which n objects are connected to m objects. | 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
♣ 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 | prime numbers, prime factors and composite (nonprime) numbers
♣ establish whether a number up to 100 is prime and recall prime numbers up to 19
♣ 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
♣ multiply and divide numbers mentally drawing upon known facts
♣ 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 | determine, in the context of a problem, an appropriate degree of accuracy. |

					♣ multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 ♣ 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.	
Fractions, Decimals and Percentages		I can: ♣ 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.	I can: ♣ recognise, find, name and write fractions 3 1 , 4 1 , 4 2 and 4 3 of a length, shape, set of objects or quantity ♣ write simple fractions for example, 2 1 of 6 = 3 and recognise the equivalence of 4 2 and 2 1 .	I can: ♣ count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 ♣ recognise, find and write fractions of a discrete set of objects: unit fractions and nonunit fractions with small denominators ♣ recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators	I can: ♣ recognise and show, using diagrams, families of common equivalent fractions ♣ count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. ♣ solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit	I can: ♣ compare and order fractions whose denominators are all multiples of the same number ♣ identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths ♣ recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for	I can: ♣ use common factors to simplify fractions; use common multiples to express fractions in the same denomination ♣ compare and order fractions, including fractions > 1 ♣ 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 [for

				♣ recognise and show, using diagrams, equivalent fractions with small denominators ♣ add and subtract fractions with the same denominator within one whole [for example, 7 5 + 7 1 = 7 6] ♣ compare and order unit fractions, and fractions with the same denominators ♣ solve problems that involve all of the above	fractions where the answer is a whole number ♣ add and subtract fractions with the same denominator ♣ recognise and write decimal equivalents of any number of tenths or hundredths ♣ recognise and write decimal equivalents to 4 1 , 2 1 , 4 3 ♣ 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 ♣ round decimals with one decimal place to the nearest whole number ♣ compare numbers with the same number of decimal places up	example, 5 2 + 5 4 = 5 6 = 1 5 1] ♣ add and subtract fractions with the same denominator and denominators that are multiples of the same number ♣ multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams ♣ read and write decimal numbers as fractions [for example, 0.71 = 100 71] ♣ recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents ♣ round decimals with two decimal places to the nearest whole number and to one decimal place	example, 4 1 × 2 1 = 8 1] ♣ divide proper fractions by whole numbers [for example, 3 1 ÷ 2 = 6 1] ♣ associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 8 3] ♣ identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places ♣ multiply one-digit numbers with up to two decimal places by whole numbers ♣ use written division methods in

| | | | | | to two decimal places
 ♣ 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
 ♣ solve problems involving number up to three decimal places
 ♣ 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, and as a decimal
 ♣ solve problems which require knowing percentage and decimal equivalents of 2 1 , 4 1 , 5 1 , 5 2 , 5 4 and those fractions with a denominator of a multiple of 10 or 25. | cases where the answer has up to two decimal places
 ♣ solve problems which require answers to be rounded to specified degrees of accuracy
 ♣ recall and use equivalences between simple fractions, decimals and percentages, including in different contexts |

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Measurements	I can: ♣ compare mass, capacity, height, length and time	I can: ♣ compare, describe and solve practical problems for: ♣ lengths and heights [for example, long/short, longer/shorter, tall/short, double/half] ♣ mass/weight [for example, heavy/light, heavier than, lighter than] ♣ capacity and volume [for example, full/empty, more than, less than, half, half full, quarter] ♣ time [for example, quicker, slower, earlier, later] ♣ measure and begin to record the following: ♣ lengths and heights ♣ mass/weight	I can: ♣ choose and use appropriate standard units to estimate and measure length/height in any direction (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 symbols for pounds (£) and pence (p); combine amounts to make a particular value ♣ find different combinations of coins that equal	I can: ♣ measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) ♣ measure the perimeter of simple 2-D shapes ♣ add and subtract amounts of money to give change, using both £ and p in practical contexts ♣ tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks ♣ estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock,	I can: ♣ Convert between different units of measure [for example, kilometre to metre; hour to minute] ♣ measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres ♣ find the area of rectilinear shapes by counting squares ♣ estimate, compare and calculate different measures, including money in pounds and pence ♣ read, write and convert time between analogue and digital 12- and 24-hour clocks ♣ solve problems involving converting from hours to minutes; minutes to	I can: ♣ convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) ♣ understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints ♣ measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres ♣ calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres	I can: ♣ solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate ♣ 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 ♣ convert between miles and kilometres ♣ recognise that shapes with the same areas can have different perimeters and vice versa

		♣ capacity and volume ♣ time (hours, minutes, seconds) ♣ recognise and know the value of different denominations of coins and notes ♣ sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening] ♣ 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	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 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.	a.m./p.m., morning, afternoon, noon and midnight ♣ know the number of seconds in a minute and the number of days in each month, year and leap year ♣ compare durations of events [for example to calculate the time taken by particular events or tasks	seconds; years to months; weeks to days	(cm2) and square metres (m2) and estimate the area of irregular shapes ♣ estimate volume [for example, using 1 cm3 blocks to build cuboids (including cubes)] and capacity [for example, using water] ♣ solve problems involving converting between units of time ♣ use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.	♣ recognise when it is possible to use formulae for area and volume of shapes ♣ calculate the area of parallelograms and triangles ♣ calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3), and extending to other units [for example, mm3 and km3].

Alverton Curriculum Progression in Maths

Geometry – Shape, Space and Position

I can:	I can:	I can:	I can:	I can:	I can:	I can:
♣ recognise triangles, circles, rectangles and squares ♣ recognise some 2D and 3D shapes ♣ explore position and patterns	♣ recognise and name common 2-D and 3-D shapes, including: ♣ 2-D shapes [for example, rectangles (including squares), circles and triangles] ♣ 3-D shapes [for example, cuboids (including cubes), pyramids and spheres]. ♣ describe position, direction and movement, including whole, half, quarter and threequarter turn	♣ identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line ♣ identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces ♣ identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid] ♣ compare and sort common 2-D and 3-D shapes and everyday objects ♣ order and arrange combinations of mathematical objects in patterns and sequences	♣ 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 lines	♣ 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 ♣ 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. ♣ 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	♣ identify 3-D shapes, including cubes and other cuboids, from 2-D representations ♣ know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles ♣ draw given angles, and measure them in degrees (o) ♣ identify: angles at a point and one whole turn (total 360o) angles at a point on a straight line and 2 1 a turn (total 180o) other multiples of 90o ♣ use the properties of rectangles to deduce related facts and find missing lengths and angles	♣ 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 ♣ illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius ♣ recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.

				♣ 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 quarter, half and three-quarter turns (clockwise and anti-clockwise).	left/right and up/down ♣ plot specified points and draw sides to complete a given polygon	♣ distinguish between regular and irregular polygons based on reasoning about equal sides and angles ♣ 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.	♣ 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.
Statistics				**I can:** ♣ interpret and construct simple pictograms, tally charts, block diagrams and simple tables ♣ ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity	**I can:** ♣ interpret and present data using bar charts, pictograms and tables ♣ solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and	**I can:** ♣ 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,	**I can:** ♣ solve comparison, sum and difference problems using information presented in a line graph ♣ complete, read and interpret information in tables, including timetables.	**I can:** ♣ interpret and construct pie charts and line graphs and use these to solve problems ♣ calculate and interpret the mean as an average.

			♣ ask and answer questions about totalling and comparing categorical data	pictograms and tables	tables and other graphs		
Ratio and Proportion							**I can:** ♣ 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.
Algebra							**I can:** ♣ use simple formulae ♣ generate and describe linear number sequences ♣ express missing number problems algebraically ♣ find pairs of numbers that satisfy an equation with two unknowns ♣ enumerate possibilities of combinations of two variables.