Maths

Fulfen Primary School adopts best practice from a range of research, resources and educational thinking to improve outcomes for all our children.

At Fulfen, Maths is one of the subjects that underpins our learning across the curriculum. We work from the Power Maths scheme of work but adapt it to suit the needs of our children. It has been developed to ensure coverage of the National Curriculum and engage, support and challenge our learners efficiently. The children at Fulfen are provided with 'real-life' scenarios so that they can see the value and relevance of learning an efficient method for calculating. Methods will also be practised regularly to ensure confidence and accuracy in application. This will help children to both value their learning and become more confident as independent mathematicians. Children will not progress to the next efficient method until they have demonstrated accuracy of method in using and applying and contextual problem solving

Our passionate and critical-thinking mathematician will acquire the skills to:

- Be Brave when tackling problems.
- Have Confidence in each and every lesson and in everything that you do.
- Be Curious about the structures and representations involved within mathematics.
- Be an Inquisitive learner and challenge the thinking of others.
- Explore all possible solutions and be resolute in doing so.
- Have Flexible thinking and approaches towards all aspects of maths.
- Have a Determined mind set and approach – Maths with a determined, 'Can Do' attitude.
- Be Methodical in their thinking, reasoning and problem solving.

Pupils demonstrate their progress by completing tasks or answering questions of increasing depth. Tasks will be completed through a variety of mediums including written work and multimedia presentations.

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CURRICULUM MAP

	Autumn	Spring	Summer
Year 1 Topics & NC strands	Numbers to 10 Part-whole within 10 Addition and subtraction within 10 Addition and subtraction within 10 2D and 3D shapes	Numbers to 20 Addition within 20 Subtraction within 20 Numbers to 50 Introducing length and height Introducing weight and volume	Multiplication Division Halves and quarters Position and direction Numbers to 100 Time Money
Year 2 Topics & NC strands	Numbers to 100 Addition and subtraction Addition and Subtraction Money Multiplication and division	Multiplication and division Statistics Length and height Properties of shapes Fractions	Position and direction Problem solving and efficient methods Time Weight, volume and temperature
Year 3 Topics & NC strands	Place value within 1,000 Addition and subtraction Addition and subtraction Multiplication and division	Multiplication and division Money Statistics Length Fractions	Fractions Time Angles and properties of shapes Mass Capacity
Year 4 Topics & NC strands	Place value – 4-digit numbers Place value – 4-digit numbers Addition and subtraction Measure – perimeter Multiplication and division	Multiplication and division Measure – area Fractions Decimals	Decimals Money Time Statistics Geometry – angles and 2D shapes

			Geometry – position and direction
Year 5 Topics & NC strands	Place value within 100,000 Place value within 1,000,000 Addition and Subtraction Graphs and tables Multiplication and division Measure – area and perimeter	Multiplication and division Fractions Fractions Fractions Decimals and percentages	Decimals Geometry – properties of shapes Geometry – properties of shapes Geometry – position and direction Measure – converting units Measure – volume and capacity
Year 6 Topics & NC strands	Place value within 10,000,000 Four operations Four operations Fractions Fractions Geometry – position and direction	Decimals Percentages Algebra Measure – imperial and metric Measure – perimeter, area and volume Ratio and proportion	Geometry – properties of shapes Problem Solving Statistics

PROGRESSION DOCUMENTS

Place Value Progression Document KS1

Year	Counting	Comparing numbers	Identifying, representing and estimating numbers	Reading and writing numbers (inc Roman Numerals)	Understanding Place Value	Rounding	Problem Solving	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 1	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	use the language of: equal to, more than, less than (fewer), most, least	identify and represent numbers using objects and pictorial representations including the number line	read and write numbers from 1 to 20 in numerals and words.				***Can you represent this in a different way? Prove this.*** ***What is similar and different about ____?*** What is ___ more/less? How do you know? Is your answer going to be bigger or smaller than your starting number? Explain why. Are there more/fewer __ or more/fewer __? What happens if you lose count? Is there a way to make sure you can start again easily?	Place value, compare, more, less, count, digit, ones, tens, hundreds, thousands etc, rounding, less than, greater than, estimate, Forwards, backwards, negative,

Year	Counting	Comparing numbers	Identifying, representing and estimating numbers	Reading and writing numbers (inc Roman Numerals)	Understanding Place Value	Rounding	Problem Solving	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 2	count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward	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 in words	recognise the place value of each digit in a two-digit number (tens, ones)		use place value and number facts to solve problems	***Can you represent this in a different way? Prove this.*** ***What is similar and different about ____?*** ***True and False? Explain how you know.*** ***What is 102? What is 102? What isn't 102?*** ***Is this a multiple of __? How do you know?*** ***Why can that answer not be correct? Use estimation to support your answer.*** What is the difference between __ and __? Questions using part whole model. If 17 + 15 = 32, what does 18 + 15 equal? How can you use this to help you? What happens if you lose count? Is there a way to make sure you can start again easily?	

Place Value Progression Document LKS2

Year	Counting	Comparing numbers	Identifying, representing and estimating numbers	Reading and writing numbers (inc Roman Numerals)	Understanding Place Value	Rounding	Problem Solving	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 3	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 1 000	identify, represent and estimate numbers using different representations	read and write numbers up to 1 000 in numerals and in words tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks (copied from Measurement)	recognise the place value of each digit in a three-digit number (hundreds, tens, ones)		solve number problems and practical problems involving these ideas.	***What is similar and different about ____?*** ***True and False? Explain how you know.*** ***Why can that answer not be correct? Use estimation to support your answer.*** If we were counting in 100's, would we say 10 hundred? Explain your thoughts. Can ___ be partitioned in just one way? Explain. Can you represent this in a different way? Prove this. What happens if you lose count? Is there a way to make sure you can start again easily? Is this a multiple of __? How do you know?	

Year	Counting	Comparing numbers	Identifying, representing and estimating numbers	Reading and writing numbers (inc Roman Numerals)	Understanding Place Value	Rounding	Problem Solving	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 4	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 compare numbers with the same number of decimal places up to two decimal places (copied from Fractions)	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) 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 units, tenths and hundredths (copied from Fractions)	round any number to the nearest 10, 100 or 1 000 round decimals with one decimal place to the nearest whole number (copied from Fractions)	solve number and practical problems that involve all of the above and with increasingly large positive numbers	How do you know that the numbers are ordered correctly? Prove your reasoning. Prove your thinking by using resources. Is this a multiple of __? How do you know? ***What is similar and different about ____?*** ***True and False? Explain how you know.*** ***Why can that answer not be correct? Use estimation to support your answer*** ***How would you teach someone to ___?*** ***Can you create a rule for ____?***	

Place Value Progression Document UKS2

Year	Counting	Comparing numbers	Identifying, representing and estimating numbers	Reading and writing numbers (inc Roman Numerals)	Understanding Place Value	Rounding	Problem Solving	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 5	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 (appears also in Reading and Writing Numbers)		read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Comparing Numbers) 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 (appears also in Reading and Writing Numbers) recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents (copied from Fractions)	round any number up to 1 000 000 to the nearest 10, 100, 1 000, 10 000 and 100 000 round decimals with two decimal places to the nearest whole number and to one decimal place (copied from Fractions)	solve number problems and practical problems that involve all of the above	Why does ___ round to ___? Explain your thinking. Where would you expect to see negative numbers? Why is this? Why can that answer not be correct? Use estimation to support your answer ***How would you teach someone to ___?*** ***Can you create a rule for ____?*** ***What is similar and different about ____?*** ***True and False? Explain how you know.***	

Year	Counting	Comparing numbers	Identifying, representing and estimating numbers	Reading and writing numbers (inc Roman Numerals)	Understanding Place Value	Rounding	Problem Solving	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 6	use negative numbers in context, and calculate intervals across zero	read, write, order and compare numbers up to 10 000000 and determine the value of each digit (appears also in Reading and Writing Numbers)		read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Understanding Place Value)	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers) 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 (copied from Fractions)	round any whole number to a required degree of accuracy solve problems which require answers to be rounded to specified degrees of accuracy (copied from Fractions)	solve number and practical problems that involve all of the above	Explain and prove why when this number is rounded is cannot be ___. ***Replace the numbers in this question with symbols so that it still has the same value. How do you know you have found a solution? Can there be more than one?*** ***Prove how you know that you have found all of the possible solutions.***	

Addition and Subtraction Progression Document KS1

Year	Number bonds	Mental calculation	Written methods	Inverse operations, estimating and checking	Problem solving	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 1	represent and use number bonds and related subtraction facts within 20	add and subtract one-digit and two-digit numbers to 20, including zero read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Mental Calculation)	read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Mental Calculation)		solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = □ - 9	What is this sign and what does it mean? What are number bonds and ***why are they important?*** Can you show me ___ number bond using equipment? What is the number bond for 3 to 10? What is the number bond for 3 to 20? ***Why? Explain? Prove it using resources?*** __ + 4 = 20 – What can we use to help us? 20 – 7 = ? Use a part whole method to show what is happening. 10 + 10 = What would you use to solve this? How could you use 1 + 1 = ?	Add, subtract, less than, more than, counting backwards, more, more than, operation, sum, inverse
Year 2	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 * 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.	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 *solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change* (copied from Measurement)	When I add together these two numbers, can I put them in any order? Explore this using resources. ***Drawing pictures, can you prove what __ - __ is?*** What is the sum of this question? What is a sum? How could you solve __ + __ using a mental method? ***Is that the most efficient method?***	

Addition and Subtraction Progression Document LKS2

Year	Number bonds	Mental calculation	Written methods	Inverse operations, estimating and checking	Problem solving	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 3		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	When adding/subtracting ____, would it be more efficient to use a written or mental method? ***Why?*** What mistake has ___ made in this question? ***How can you prove your thoughts?*** If I add 450 and 296 – could my answer be 750? ***Explain why this is a sensible/or not estimate.*** If I know 20 + 100 = 120, What is the missing number in; 20 + __ = 220. How can 567 be partitioned? ***Is there more than one way? Prove your reasoning.***	
Year 4			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	Can I use this calculation _____, to check if my answer is correct for _____? (Links to inverse). ***Why? Why not?*** Have you approached this question in a systematic way? ***Explain your thoughts.*** What mistake has ___ made in this question? ***How can you prove your thoughts?*** When adding/subtracting ____, would it be more efficient to use a written or mental method? ***Why?***	

Addition and Subtraction Progression Document UKS2

Year	Number bonds	Mental calculation	Written methods	Inverse operations, estimating and checking	Problem solving	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 5		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	What mental method would be appropriate for solving _____? Why wouldn't you use this method to solve it? How could rounding help you to answer this question? Why is estimation through rounding an efficient method to use when checking answers? How can you be sure what operation to use when solving this multi-step problem? ***Prove your thinking.***	
Year 6		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	***Which problem solving skill have you used to answer ____? Could you have used a different one? Why/Why not?*** A = 7614 and B = 12900. What does C equal if B is half way between A and C? ***Prove your reasoning.*** ***Use a bar model to prove your answer for _____.***	

Multiplication and Division Progression Document KS1

Year	Multiplication & division facts	Mental calculation	Written calculation	Properties of numbers: multiples, factors, primes, square and cube numbers	Order of operation	Inverse operations, estimating and checking answers	Problem solving	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 1	*count in multiples of twos, fives and tens* (copied from Number and Place Value)						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	***What is the most efficient method to solve this problem? Why?*** What resources could you use to answer ___? ***Do you think we could use ____ to solve it? Why/Why not?*** What question does this array show us? ***Prove how you know.***	Dividend, divisor, quotient, multiplier, multiplicand, product, pattern, factor, prime, square, cube numbers, BODMAS, share, group, ratio proportion
Year 2	*count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward* (copied from Number and Place Value) recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers	show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot	calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs				solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	***What is the most efficient method to solve this problem? Why?*** ***Is 64 a multiple of 5? Prove your understanding.*** Write a mathematical sentence for what this array shows. Use the correct symbols in your work. ***Explore whether it matters if I switch around the numbers in my multiplication sentence. What have you discovered?*** What is ***similar and different*** about what you have found out when _____?	

Multiplication and Division Progression Document LKS2

Year	Multiplication & division facts	Mental calculation	Written calculation	Properties of numbers: multiples, factors, primes, square and cube numbers	Order of operation	Inverse operations, estimating and checking answers	Problem solving	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 3	*count from 0 in multiples of 4, 8, 50 and 100* (copied from Number and Place Value) recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	write and calculate mathematical statements for 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 (appears also in Written Methods)	write and calculate mathematical statements for 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 (appears also in Mental Methods)			*estimate the answer to a calculation and use inverse operations to check answers* (copied from Addition and Subtraction)	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	***What is the most efficient method to solve this problem? Why?*** What is similar and different about the calculations? Is 54 a multiple of 3? ***Explain how you can use your number facts to help you work this out.*** Do you need to use a written method to solve ____? ***Explain and prove your thoughts.***	
Year 4	*count in multiples of 6, 7, 9, 25 and 1 000* (copied from Number and Place Value) 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 (appears also in Properties of Numbers)	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 (repeated)		*estimate and use inverse operations to check answers to a calculation* (copied from Addition and Subtraction)	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	***What is the most efficient method to solve this problem? Why?*** What is similar and different about the calculations? What other facts do I know if 3 x 2 = 6? When multiplying together 4 x 5 x 6, what strategy would you use ***and why?*** How can factor pairs aid your mental maths? Are factors and the word 'commutivity' linked? ***Explain and prove using resources.*** Explain how you would use the distributive law when attempting this question _____?	

Multiplication and Division Progression Document UKS2

Year	Multiplication & division facts	Mental calculation	Written calculation	Properties of numbers: multiples, factors, primes, square and cube numbers	Order of operation	Inverse operations, estimating and checking answers	Problem solving	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 5	*count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000* (copied from Number and Place Value)	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	***What is the most efficient method to solve this problem? Why?*** When finding the factors of a number, how can you be sure that you have found them all? Prove your thinking. ***What is similar and different about a factor and multiple? Prove your reasoning.*** What is a common factor? ***Is this different to a LCM? Explain.*** How are prime numbers different to composite ones? When multiplying 400 x 57, is the most efficient method long multiplication? Prove your reasoning. Why when I divide can I express a remainder as a fraction or decimal?	

Year	Multiplication & division facts	Mental calculation	Written calculation	Properties of numbers: multiples, factors, primes, square and cube numbers	Order of operation	Inverse operations, estimating and checking answers	Problem solving	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 6		perform mental calculations, including with mixed operations and large numbers *associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $^3/_8$)* (copied from Fractions)	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* (copied from Fractions (including decimals))	identify common factors, common multiples and prime numbers *use common factors to simplify fractions; use common multiples to express fractions in the same denomination* (copied from Fractions) *calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3* (copied from Measures)	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 *solve problems involving similar shapes where the scale factor is known or can be found* (copied from Ratio and Proportion)	***What is the most efficient method to solve this problem? Why?*** ***Why in BODMAS are division and multiplication before A & S?*** How can factors help find equivalent fractions? ***Prove what you think.***	

Fractions, Decimals and Percentages Progression Map KS1

Year	Counti-ng in fractional strips	Recognising fractions	Equivalence (including fractions, decimals and percentages)	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 1		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		What is a fraction? How many equal parts has the whole been divided into? If my whole has been divided into 4 equal parts, what is one of those parts called? ***What about if my parts weren't equal? Would it still be one quarter?*** What is the part? What is the whole? ***What is it, what is it, what isn't it?*** Answer. ***Prove. Explain*** _____ thinks she has shaded a 1/4. ***Explain why ____ is incorrect.*** Show me a _____	Numerator, denominator, whole, part, equal, equivalent, tenth, hundredth etc, unit, non-unit fraction, dividing
Year 2	*Pupils should count in fractions up to 10, starting from any number and using the1/2 and 2/4 equivalence on the number line (Non Statutory Guidance)*	recognise, find, name and write fractions $^{1}/_{3}$, $^{1}/_{4}$, $^{2}/_{4}$ and $^{3}/_{4}$ of a length, shape, set of objects or quantity	write simple fractions e.g. $^{1}/_{2}$ of 6 = 3 and recognise the equivalence of $^{2}/_{4}$ and $^{1}/_{2}$.	What is the part? What is the whole? ***What is it, what is it, what isn't it?*** Answer. ***Prove. Explain*** _____ thinks she has shaded a 1/4. ***Explain why ____ is incorrect.*** Show me a _____ ***Using a bar model, prove why ½ of 6 = 3.*** Compare these fraction…. Which is bigger? ***Prove how you know.*** Are fraction limited to shapes? What else could I find ¼, ½ or ¾ of?	

Fractions, Decimals and Percentages Progression Map LKS2

Year	Counti-ng in fractional strips	Recognising fractions	Comparing fractions	Equivalence (including fractions, decimals and percentages)	Addition and subtraction of fractions	Problem solving	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 3	count up and down in tenths	recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators recognise that tenths arise from dividing an object into 10 equal parts and in dividing one – digit numbers or quantities by 10. recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators	compare and order unit fractions, and fractions with the same denominators	recognise and show, using diagrams, equivalent fractions with small denominators	add and subtract fractions with the same denominator within one whole (e.g. $^{5}/_{7} + {}^{1}/_{7} = {}^{6}/_{7}$)	solve problems that involve all of the above	If my whole has been divided into 10 equal parts, what is each part worth? What is 5/10 + 4/10? ***Explain how you got to your answer.*** How can tenths be related to x and div by 10? ***What is similar and different about a unit and non-unit fraction?*** Show this fraction using a diagram. Compare these fraction…. Which is bigger? ***Prove how you know.***	

Year	Counti-ng in fractional strips	Recognising fractions	Comparing decimals	Rounding Including decimals	Equivalence (including fractions, decimals and percentages)	Addition and subtraction of fractions	Multiplication and division of decimals	Problem solving	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 4	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	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.	***Prove using a bar model how you know that these fraction are equivalent.*** How are tenths and hundredths similar? ***How are they different? How can they be linked to other areas of maths?*** ***Can you create a rule for adding and subtracting fraction with the same denominator?*** When rounding to the nearest whole number, what PV column am I using and why? ***How are decimals and fractions linked? Prove your understanding.***	

Fractions, Decimals and Percentages Progression Map UKS2

Year	Recognising fractions	Comparing fractions	Comparing decimals	Rounding Including decimals	Equivalence (including fractions, decimals and percentages)	Addition and subtraction of fractions	Multiplication of fractions	Problem solving	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 5	recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents (appears also in Equivalence)	compare and order fractions whose denominators are all multiples of the same number	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.	How can I order these fractions if the denominators are different? Is the mixed number equivalent to this improper fraction? ***Prove your reasoning.*** ***Draw diagrams to show what*** happens when we multiply these proper fractions. Which decimal matches with the fraction? Explain why you think they should be paired together.	

Year	Comparing fractions	Comparing decimals	Rounding Including decimals	Equivalence (including fractions, decimals and percentages)	Addition and subtraction of fractions	Multiplication of fractions	Multiplication and division of decimals	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 6	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	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. $^{1}/_{4} \times {}^{1}/_{2} = {}^{1}/_{8}$) multiply one-digit numbers with up to two decimal places by whole numbers divide proper fractions by whole numbers (e.g. $^{1}/_{3} \div 2 = {}^{1}/_{6}$)	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	***Can you create a rule for dividing fractions by a whole number?*** How can you use common factors to simplify fractions? ***Prove your reasoning.*** ***Explore*** what happens to a number up to two decimal places that is multiplied by a one/two digit number.	

Ratio and Proportion Progression Map

Year	Ratio and Proportion				Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 1						
Year 2						
Year 3						
Year 4					***Prove why 15% of 360 is 54.***	
Year 5					How can scale factor be related to real life?	
Year 6	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.	In what circumstances might you need to use the scale factor skill? ***Prove*** how you know that Michael will get ___ items when the total is shared in the ratio ____.	Ratio, scale factor, groups, equal and unequal, shape facts and knowledge, fraction and multiples knowledge.

Measurement Progression Map KS1

Year	COMPARING AND ESTIMATING	MEASURING AND CALCULATING	TELLING THE TIME	CONVERTING	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 1	compare, describe and solve practical problems for: * lengths and heights [e.g. long/short, longer/shorter, tall/short, double/half] * mass/weight [e.g. heavy/light, heavier than, lighter than] * capacity and volume [e.g. full/empty, more than, less than, half, half full, quarter] time [e.g. quicker, slower, earlier, later] sequence events in chronological order using language [e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]	measure and begin to record the following: * **lengths and heights** * **mass/weight** * **capacity and volume** * **time** (hours, minutes, seconds**)** recognise and know the value of different denominations of **coins and notes**	tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. recognise and use language relating to dates, including days of the week, weeks, months and years		***Can you represent this in a different way? Prove this.*** Compare the height of __ and ___. What is longer/shorter __ or __. ***If __ is 2cm and I have one which is double the height, what is the height of the one I have?*** What do you think will be heavier? ***Why?*** What will be quicker? ***Why?*** I do ____, what could I do later? What coin is this? What day is it tomorrow? What time is it? How do you know?	compare, describe, length, height, volume, long, short, mass, weight, capacity, hour, half, face, seconds, minutes, hours, full, empty, quicker, slower, duration, estimate, perimeter

Year	COMPARING AND ESTIMATING	MEASURING AND CALCULATING	TELLING THE TIME	CONVERTING	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 2	compare and order lengths, mass, volume/capacity and record the results using >, < and = compare and sequence intervals of time	**solve simple problems** in a practical context involving addition and subtraction of money of the same unit, including giving change	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. (appears also in Converting)	know the number of minutes in an hour and the number of hours in a day. (appears also in Telling the Time)	***What is similar and different about ____?*** Why can that answer not be correct? Use estimation to support your answer. Can you ***prove*** that … ***What is it, what is it, what isn't it?*** Show me ___ on a clock. How many ¼'s make a clock? ***Why when the minutes hand points to 15 do we say quarter past?*** How many minutes in 1 hour? How do I use a ruler? What unit would you use to measure ___ - ***why?***	

Measurement Progression Map LKS2

Year	COMPARING AND ESTIMATING	MEASURING AND CALCULATING	TELLING THE TIME	CONVERTING	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 3	compare durations of events, for example to calculate the time taken by particular events or tasks estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight (appears also in Telling the Time)	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, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight (appears also in Comparing and Estimating)	know the number of seconds in a minute and the number of days in each month, year and leap year	Estimate the length/ height of ___. Why did you estimate this? What is the perimeter of -----? How do you know? ***What is similar and different about ____?*** Why can that answer not be correct? Use estimation to support your answer. Can you ***prove*** that … ***What is it, what is it, what isn't it?*** ***Because the clocks have different ways of showing the time, does that mean they are never the same?*** What unit of measure would you use to compare __ and ___? ***Prove why you think this.***	

Year	COMPARING AND ESTIMATING	MEASURING AND CALCULATING	TELLING THE TIME	CONVERTING	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 4	estimate, compare and calculate different measures, including money in pounds and pence (also included in Measuring)	estimate, compare and calculate **different measures,** including **money in pounds and pence** (appears also in Comparing) 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 (appears also in Converting) solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days (appears also in Converting)	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 (appears also in Converting) solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days (appears also in Telling the Time)	What is the perimeter of -----? How do you know? What is the perimeter of -----? How do you know? ***What is similar and different about ____?*** Why can that answer not be correct? Use estimation to support your answer. Can you ***prove*** that … ***What is it, what is it, what isn't it?*** Is there a more efficient way of finding the area of a shape than ___ ? ***Prove your thinking.*** Reason why ____ is an equivalent/non-equivalent time to ____.	

Measurement Progression Map UKS2

Year	COMPARING AND ESTIMATING	MEASURING AND CALCULATING	TELLING THE TIME	CONVERTING	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 5	calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes (also included in measuring) 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 calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes *recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})* (copied from Multiplication and Division)	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	Why do we have imperial and metric units of measure? When can it be useful to convert between the two types of measure? ***True or false – to find the area of an irregular shape I must ___ ?*** How is volume different to ____? Do you think your estimation of ___ volume is correct? Explain why. ***What is similar and different about ____?*** ***What is it, what is it, what isn't it?*** Using >< signs, express these amounts of money as you see fit. ***Prove your reasoning.***	

Year	COMPARING AND ESTIMATING	MEASURING AND CALCULATING	TELLING THE TIME	CONVERTING	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 6	calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3.	solve problems involving the calculation and conversion of **units of measure**, using decimal notation up to three decimal places where appropriate (appears also in Converting) recognise that shapes with the same areas can have different **perimeters** and vice versa calculate the area of parallelograms and triangles calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3), and extending to other units [e.g. mm^3 and km^3]. 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 (appears also in Measuring and Calculating) convert between miles and kilometres	Why do we have imperial and metric units of measure? When can it be useful to convert between the two types of measure? ***True or false – to find the area of an irregular shape I must ___ ?*** How is volume different to ____? Do you think your estimation of ___ volume is correct? Explain why. ***What is similar and different about ____?*** ***What is it, what is it, what isn't it?*** Using >< signs, express these amounts of money as you see fit. ***Prove your reasoning.***	

Geometry – Properties of Shapes Progression Map KS1

Year	IDENTIFYING SHAPES AND THEIR PROPERTIES	DRAWING AND CONSTRUCTING	COMPARING AND CLASSIFYING	ANGLES	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 1	recognise and name common 2-D and 3-D shapes, including: * 2-D shapes [e.g. rectangles (including squares), circles and triangles] * 3-D shapes [e.g. cuboids (including cubes), pyramids and spheres].				What is a 2d shape? What is a 3d shape? What is this shape called? ***What are the properties of a ____*** ***I have _____*** ***What am I?*** Is this a ___ ***Prove it.***	2d, 3d, shape, rectangle, square, circle, triangle, pentagon, hexagon, octagon cuboid, sphere, prism, pyramid, properties, vertex, face, angle, parallel, perpendicular, vertical, horizontal, turn, degrees, right angle, acute, obtuse, reflex, compare, order, construct, classify
Year 2	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		What are the properties of a ____ I have _____ What am I? Is this a ___ ***Prove it.*** What is different about an edge and vertices? ***What is it, what is it, what isn't it?*** If I cut this shape with a vertical/horizontal line, what will it look like? ***How can I relate fractions?***	

Geometry – Properties of Shapes Progression Map LKS2

Year	IDENTIFYING SHAPES AND THEIR PROPERTIES	DRAWING AND CONSTRUCTING	COMPARING AND CLASSIFYING	ANGLES	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 3		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	***Explain to someone how to construct a __*** Why am I an irregular shape? How many degrees have I ____? What is ____ in comparison to ___. Prove. Explain What is it, what is it, what isn't it? How are perpendicular and parallel lines similar and different? ***A ____ has perpendicular/parallel lines. Evidence your thoughts using ____.***	
Year 4	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	What makes a quadrilateral a quadrilateral? ***Order these shapes by the largest area. Where will you start?*** Create a rule for obtuse and acute angles. ***What type of lines meet when you have a right angle?*** Are these shapes the same even though they appear in a different rotation? ***Prove how you know.*** ***Prove how you know your reflection is symmetrical.***	

Geometry – Properties of Shapes Progression Map UKS2

Year	IDENTIFYING SHAPES AND THEIR PROPERTIES	DRAWING AND CONSTRUCTING	COMPARING AND CLASSIFYING	ANGLES	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 5	identify 3-D shapes, including cubes and other cuboids, from 2-D representations	draw given angles, and measure them in degrees (^{o})	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^{o}) * angles at a point on a straight line and ½ a turn (total 180^{o}) * other multiples of 90^{o}	Estimating this angle, reason what type of angle it could be and why. Why is it important to measure degrees accurately? Link fractions to degrees. ***Draw to prove your thoughts.*** What strategies can you use to find this missing angle? Prove why _____ would not be good to use.	
Year 6	recognise, describe and build simple 3-D shapes, including making nets (appears also in Drawing and Constructing) 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 (appears also in Identifying Shapes and Their Properties	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	***Explain to someone how to construct a _____*** ***What is it, what is it, what isn't it?*** Based on these properties _____; how would you categorise them and why? If I know the radius is ____, can I work out the circumference? Explain why?	

Geometry – Position, Direction and Movement Progression Map KS1

Year	POSITION, DIRECTION AND MOVEMENT	PATTERN	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 1	Describe position, direction and movement, including half, quarter and three-quarter turns.		If I start here and I turn to here (Model moving) how far have I turned? Relate this to a whole turn, half a turn and three quarters of a turn. Show this pictorially and ask the same question – can they move from concrete to pictorial? Show someone doing a somersault etc. How could you write this as a fraction? Explain your thinking.	Position, direction, movement, half, quarter, full. Three-quarter, straight line, rotation, clockwise, anti-clockwise, left, right, up , down, grid, quadrant, plot, co-ordinate, horizontal, vertical, translate
Year 2	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)	order and arrange combinations of mathematical objects in patterns and sequences	How would you sequence _____ What is a straight line? How is a straight line different to a turn? ***What happens when we turn? What is created? Prove it.*** How far do I have to turn to show a right angle? ***If I was to start at 12 o'clock and turn anticlockwise 3/4 of a turn what hour would I be facing?***	

Geometry – Position, Direction and Movement Progression Map LKS2

Year	POSITION, DIRECTION AND MOVEMENT	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 3			
Year 4	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	What is a quadrant and why are they called quadrants? How do I write co- ordinates? If I have the co-ordinate (4,2) What do I need to do? ***What is the same and what is difference between translation and co-ordinates?*** If I have to translate a square what information would I need to be given? Translate ____ from _____ to _____. I have plotted a square and one vertex is on (2,3). The length between each vertex is 3 points. Plot the square. ***Explain to someone else how you would do this.***	

Geometry – Position, Direction and Movement Progression Map UKS2

Year	POSITION, DIRECTION AND MOVEMENT	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 5	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	What is a reflection? How do we use reflections in Maths? ***If I have to reflect this shape, is it possible to do it without a mirror.*** ***Prove and explain.*** What is the same and what is the difference between reflections and translations? ***Can a shape change its properties when it is reflected or translated? Explain.*** How has this shape been translated? What Is my mistake? (Show a wrong reflection and a wrong translation.	
Year 6	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.	What is a quadrant and why do we call them quadrants? What quadrants will you find negative numbers in? Why? Plot ___ co- ordinate. ***Can a shape change its properties when it is reflected or translated? Explain.*** When I have translated a shape is it possible to then reflect the shape? Prove and explain. How has this shape been translated? What Is my mistake? (Show a wrong reflection and a wrong translation). How can I use the properties of shapes to help me plot a shape with missing vertices on a grid? How can I use the properties of shapes to help me reflect a shape that has missing sides?	

Statistics Progression Map KS1

Year	INTERPRETING, CONSTRUCTING AND PRESENTING DATA	Solving problems	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 1				Interpret, construct, present, pictogram, tally, tally chart, diagram, table, sort, category, total, compare, bar chart, time graph, pie charts, line graphs, mean, average, set, data.
Year 2	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 ask and answer questions about totalling and comparing categorical data		How many ____ does this pictogram show? ***Prove how you know.*** ***Write three questions you could ask about this ____*** ***What is the same*** ***What is different*** ***The diagram shows _____*** ***What is the total amount of ___ and _____*** What is a _____ and why do we use them? Which has the most? How do you know?	

Statistics Progression Map KS2

Year	INTERPRETING, CONSTRUCTING AND PRESENTING DATA	Solving problems	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 3	interpret and present data using bar charts, pictograms and tables	solve one-step and two-step questions [e.g. 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.	How many ____ does this _____show? ***Prove how you know.*** What is the difference between these 2 _____? ***Write three questions you could ask about this ____*** ***What is the same?*** ***What is different?*** The diagram shows _____ What is the total amount of ___ and _____ The data shows _____. How many more is needed to show ____. *Prove your reasoning using _____.*	
Year 4	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.	What is discrete data? What is continuous data? Which graph would you use to show ____. ***Why? Why wouldn't you use _____?*** The pictogram shows ___, the bar chart shows ____. What is the same, what is different? What is the sum of _____ and _____? Find the difference between ____ and ____.	
Year 5	complete, read and interpret information in tables, including timetables	solve comparison, sum and difference problems using information presented in a line graph	What type of information would best suit a line graph? ***Why?*** Construct your line graph using this data. ***What trends do you notice?*** Why do we use timetables? Where would you see a timetable? If I need to be at ____ at 1pm, what time do I need to leave?	
Year 6	interpret and construct pie charts and line graphs and use these to solve problems	calculate and interpret the mean as an average	What is the mean of ____ Represent this data using a _____ How can fractions aid you with solving this pie chart? ***Reason and prove.*** Why do we need to be secure with degrees when looking at pie charts?	

Algebra Progression Map KS1

Year/Skills & Knowledge/ Concepts	EQUATIONS	FORMULAE	SEQUENCES	Key Questions ***Please note that GD questions are in bold.***	Vocabulary
Year 1	solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and **missing number problems** such as 7 = □ - 9 *(copied from Addition and Subtraction)* represent and use number bonds and related subtraction facts within 20 *(copied from Addition and Subtraction)*		sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening *(copied from Measurement)*		Missing number, algebra, add, subtract, multiply, divide, sequence, formulae equation, balance, equal, rule, express, linear.
Year 2	recognise and use the inverse relationship between addition and subtraction and use this to check calculations and **missing number** problems. *(copied from Addition and Subtraction)* recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 *(copied from Addition and Subtraction)*		compare and sequence intervals of time *(copied from Measurement)* order and arrange combinations of mathematical objects in patterns *(copied from Geometry: position and direction)*		

Algebra Progression Map KS2

Year/Skills & Knowledge/ Concepts	EQUATIONS	FORMULAE	SEQUENCES	Key Questions *Please note that GD questions are in bold.*	Vocabulary
Year 3	solve problems, *including* ***missing number*** *problems, using number facts, place value, and more complex addition and subtraction. (copied from Addition and Subtraction)* *solve problems, including* ***missing number*** *problems, involving multiplication and division, including integer scaling (copied from Multiplication and Division)*				
Year 4		*Perimeter can be expressed algebraically as 2(a + b) where a and b are the dimensions in the same unit.* *(*Copied from NSG measurement)			
Year 5	*use the properties of rectangles to deduce related facts and find* ***missing lengths and angles*** *(copied from Geometry: Properties of Shapes)*				
Year 6	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 *recognise when it is possible to use* ***formulae*** *for area and volume of shapes* (copied from Measurement)	generate and describe linear number sequences	How can you ***prove*** that a = ____. Explain why 7 + ? = 14 ***?+ 9 = 19*** ***Explain why ? can not be 12.*** What is the inverse of ____ Use the inverse to check and prove the following _____ ***Express the perimeter of this shape using an algebraic equation.*** If a = 3 what is the answer to the following: 3a + 34 = ***What is it, what is it, what isn't it?*** ***Explain why.*** ***What is the mistake?***	