Lines of progression in the Primary Framework

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
1 Using and applying mathematics					
Solve problems involving counting, adding, subtracting, doubling or halving in the context of numbers, measures or money, for example to 'pay' and 'give change'	Solve problems involving addition, subtraction, multiplication or division in contexts of numbers, measures or pounds and pence	Solve one-step and two-step problems involving numbers, money or measures, including time, choosing and carrying out appropriate calculations	Solve one-step and two-step problems involving numbers, money or measures, including time; choose and carry out appropriate calculations, using calculator methods where appropriate	Solve one-step and two-step problems involving whole numbers and decimals and all four operations, choosing and using appropriate calculation strategies, including calculator use	Solve multi-step problems, and problems involving fractions, decimals and percentages; choose and use appropriate calculation strategies at each stage, including calculator use
Describe a puzzle or problem using numbers, practical materials and diagrams; use these to solve the problem and set the solution in the original context	Identify and record the information or calculation needed to solve a puzzle or problem; carry out the steps or calculations and check the solution in the context of the problem	Represent the information in a puzzle or problem using numbers, images or diagrams; use these to find a solution and present it in context, where appropriate using £.p notation or units of measure	Represent a puzzle or problem using number sentences, statements or diagrams; use these to solve the problem; present and interpret the solution in the context of the problem	Represent a puzzle or problem by identifying and recording the information or calculations needed to solve it; find possible solutions and confirm them in the context of the problem	Tabulate systematically the information in a problem or puzzle; identify and record the steps or calculations needed to solve it, using symbols where appropriate; interpret solutions in the original context and check their accuracy
Answer a question by selecting and using suitable equipment, and sorting information, shapes or objects; display results using tables and pictures	Follow a line of enquiry; answer questions by choosing and using suitable equipment and selecting, organising and presenting information in lists, tables and simple diagrams	Follow a line of enquiry by deciding what information is important; make and use lists, tables and graphs to organise and interpret the information	Suggest a line of enquiry and the strategy needed to follow it; collect, organise and interpret selected information to find answers	Plan and pursue an enquiry; present evidence by collecting, organising and interpreting information; suggest extensions to the enquiry	Suggest, plan and develop lines of enquiry; collect, organise and represent information, interpret results and review methods; identify and answer related questions
Describe simple patterns and relationships involving numbers or shapes; decide whether examples satisfy given conditions	Describe patterns and relationships involving numbers or shapes, make predictions and test these with examples	Identify patterns and relationships involving numbers or shapes, and use these to solve problems	Identify and use patterns, relationships and properties of numbers or shapes; investigate a statement involving numbers and test it with examples	Explore patterns, properties and relationships and propose a general statement involving numbers or shapes; identify examples for which the statement is true or false	Represent and interpret sequences, patterns and relationships involving numbers and shapes; suggest and test hypotheses; construct and use simple expressions and formulae in words then symbols (e.g. the cost of c pens at 15 pence each is 15c pence)
Describe ways of solving puzzles and problems, explaining choices and decisions orally or using pictures	Present solutions to puzzles and problems in an organised way; explain decisions, methods and results in pictorial, spoken or written form, using mathematical language and number sentences	Describe and explain methods, choices and solutions to puzzles and problems, orally and in writing, using pictures and diagrams	Report solutions to puzzles and problems, giving explanations and reasoning orally and in writing, using diagrams and symbols	Explain reasoning using diagrams, graphs and text; refine ways of recording using images and symbols	Explain reasoning and conclusions, using words, symbols or diagrams as appropriate

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2 Counting and understanding number					
Read and write numerals from 0 to 20, then beyond; use knowledge of place value to position these numbers on a number track and number line	Read and write two-digit and three-digit numbers in figures and words; describe and extend number sequences and recognise odd and even numbers	Read, write and order whole numbers to at least 1000 and position them on a number line; count on from and back to zero in single-digit steps or multiples of 10	Recognise and continue number sequences formed by counting on or back in steps of constant size	Count from any given number in whole-number and decimal steps, extending beyond zero when counting backwards; relate the numbers to their position on a number line	Find the difference between a positive and a negative integer, or two negative integers, in context
Compare and order numbers, using the related vocabulary; use the equals (=) sign	Order two-digit numbers and position them on a number line; use the greater than (>) and less than (<) signs		Use positive and negative numbers in context and position them on a number line; state inequalities using the symbols < and > (e.g. -3 > -5, -1 < +1)		
Say the number that is 1 more or less than any given number, and 10 more or less for multiples of 10	Count up to 100 objects by grouping them and counting in tens, fives or twos; explain what each digit in a two-digit number represents, including numbers where 0 is a place holder; partition two-digit numbers in different ways, including into multiples of 10 and 1	Partition three-digit numbers into multiples of 100, 10 and 1 in different ways	Partition, round and order four-digit whole numbers	Explain what each digit represents in whole numbers and decimals with up to two places, and partition, round and order these numbers	Use decimal notation for tenths, hundredths and thousandths; partition, round and order decimals with up to three places, and position them on the number line
Count reliably at least 20 objects, recognising that when rearranged the number of objects stays the same; estimate a number of objects that can be checked by counting	Estimate a number of objects; round two-digit numbers to the nearest 10	Round two-digit or three-digit numbers to the nearest 10 or 100 and give estimates for their sums and differences	Use decimal notation for tenths and hundredths and partition decimals; relate the notation to money and measurement; position one-place and two-place decimals on a number line		
Use the vocabulary of halves and quarters in context	Find one half, one quarter and three quarters of shapes and sets of objects	Read and write proper fractions (e.g. $^3/_7$, $^9/_{10}$), interpreting the denominator as the parts of a whole and the numerator as the number of parts; identify and estimate fractions of shapes; use diagrams to compare fractions and establish equivalents	Use diagrams to identify equivalent fractions (e.g. $^6/_8$ and $^3/_4$, or $^{70}/_{100}$ and $^7/_{10}$); interpret mixed numbers and position them on a number line (e.g. 3 $^1/_2$)	Express a smaller whole number as a fraction of a larger one (e.g. recognise that 5 out of 8 is $^5/_8$); find equivalent fractions (e.g. $^7/_{10}$ = $^{14}/_{20}$, or $^{19}/_{10}$ = 1$^9/_{10}$); relate fractions to their decimal representations	Express a larger whole number as a fraction of a smaller one (e.g. recognise that 8 slices of a 5-slice pizza represents $^8/_5$ or 1$^3/_5$ pizzas); simplify fractions by cancelling common factors; order a set of fractions by converting them to fractions with a common denominator
			Recognise the equivalence between decimal and fraction	Understand percentage as the number of parts in every 100	Express one quantity as a percentage of another (e.g.

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			forms of one half, quarters, tenths and hundredths	and express tenths and hundredths as percentages	express £400 as a percentage of £1000); find equivalent percentages, decimals and fractions
			Use the vocabulary of ratio and proportion to describe the relationship between two quantities (e.g. 'There are 2 red beads to every 3 blue beads, or 2 beads in every 5 beads are red'); estimate a proportion (e.g. 'About one quarter of the apples in the box are green')	Use sequences to scale numbers up or down; solve problems involving proportions of quantities (e.g. decrease quantities in a recipe designed to feed six people)	Solve simple problems involving direct proportion by scaling quantities up or down

3 Knowing and using number facts

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Derive and recall all pairs of numbers with a total of 10 and addition facts for totals to at least 5; work out the corresponding subtraction facts	Derive and recall all addition and subtraction facts for each number to at least 10, all pairs with totals to 20 and all pairs of multiples of 10 with totals up to 100	Derive and recall all addition and subtraction facts for each number to 20, sums and differences of multiples of 10 and number pairs that total 100	Use knowledge of addition and subtraction facts and place value to derive sums and differences of pairs of multiples of 10, 100 or 1000	Use knowledge of place value and addition and subtraction of two-digit numbers to derive sums and differences and doubles and halves of decimals (e.g. 6.5 ± 2.7, half of 5.6, double 0.34)	Use knowledge of place value and multiplication facts to 10 × 10 to derive related multiplication and division facts involving decimals (e.g. 0.8 × 7, 4.8 ÷ 6)
Count on or back in ones, twos, fives and tens and use this knowledge to derive the multiples of 2, 5 and 10 to the tenth multiple	Derive and recall multiplication facts for the 2, 5 and 10 times-tables and the related division facts; recognise multiples of 2, 5 and 10	Derive and recall multiplication facts for the 2, 3, 4, 5, 6 and 10 times-tables and the corresponding division facts; recognise multiples of 2, 5 or 10 up to 1000	Derive and recall multiplication facts up to 10 × 10, the corresponding division facts and multiples of numbers to 10 up to the tenth multiple	Recall quickly multiplication facts up to 10 × 10 and use them to multiply pairs of multiples of 10 and 100; derive quickly corresponding division facts	Use knowledge of multiplication facts to derive quickly squares of numbers to 12 × 12 and the corresponding squares of multiples of 10
Recall the doubles of all numbers to at least 10	Understand that halving is the inverse of doubling and derive and recall doubles of all numbers to 20, and the corresponding halves	Use knowledge of number operations and corresponding inverses, including doubling and halving, to estimate and check calculations	Identify the doubles of two-digit numbers; use these to calculate doubles of multiples of 10 and 100 and derive the corresponding halves	Identify pairs of factors of two-digit whole numbers and find common multiples (e.g. for 6 and 9)	Recognise that prime numbers have only two factors and identify prime numbers less than 100; find the prime factors of two-digit numbers
	Use knowledge of number facts and operations to estimate and check answers to calculations		Use knowledge of rounding, number operations and inverses to estimate and check calculations	Use knowledge of rounding, place value, number facts and inverse operations to estimate and check calculations	Use approximations, inverse operations and tests of divisibility to estimate and check results
			Identify pairs of fractions that total 1		

4 Calculating

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Relate addition to counting on;	Add or subtract mentally a	Add or subtract mentally	Add or subtract mentally pairs	Extend mental-methods for	Calculate mentally with

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recognise that addition can be done in any order; use practical and informal written methods to support the addition of a one-digit number or a multiple of 10 to a one-digit or two-digit number	one-digit number or a multiple of 10 to or from any two-digit number; use practical and informal written methods to add and subtract two-digit numbers	combinations of one-digit and two-digit numbers	of two-digit whole numbers (e.g. 47 + 58, 91 - 35)	whole-number calculations, for example to multiply a two-digit by a one-digit number (e.g. 12 × 9), to multiply by 25 (e.g. 16 × 25), to subtract one near-multiple of 1000 from another (e.g. 6070 - 4097)	integers and decimals: U.t ± U.t, TU × U, TU ÷ U, U.t × U, U.t ÷ U
Understand subtraction as 'take away' and find a 'difference' by counting up; use practical and informal written methods to support the subtraction of a one-digit number from a one digit or two-digit number and a multiple of 10 from a two-digit number	Understand that subtraction is the inverse of addition and vice versa; use this to derive and record related addition and subtraction number sentences	Develop and use written methods to record, support or explain addition and subtraction of two-digit and three-digit numbers	Refine and use efficient written methods to add and subtract two-digit and three-digit whole numbers and £.p	Use efficient written methods to add and subtract whole numbers and decimals with up to two places	Use efficient written methods to add and subtract integers and decimals, to multiply and divide integers and decimals by a one-digit integer, and to multiply two-digit and three-digit integers by a two-digit integer
Solve practical problems that involve combining groups of 2, 5 or 10, or sharing into equal groups	Represent repeated addition and arrays as multiplication, and sharing and repeated subtraction (grouping) as division; use practical and informal written methods and related vocabulary to support multiplication and division, including calculations with remainders	Use practical and informal written methods to multiply and divide two-digit numbers (e.g. 13 × 3, 50 ÷ 4); round remainders up or down, depending on the context	Develop and use written methods to record, support and explain multiplication and division of two-digit numbers by a one-digit number, including division with remainders (e.g. 15 × 9, 98 ÷ 6)	Refine and use efficient written methods to multiply and divide HTU × U, TU × TU, U.t × U and HTU ÷ U	
Use the vocabulary related to addition and subtraction and symbols to describe and record addition and subtraction number sentences	Use the symbols +, -, ×, ÷ and = to record and interpret number sentences involving all four operations; calculate the value of an unknown in a number sentence (e.g. □ ÷ 2 = 6, 30 - □ = 24)	Understand that division is the inverse of multiplication and vice versa; use this to derive and record related multiplication and division number sentences			
		Multiply one-digit and two-digit numbers by 10 or 100, and describe the effect	Multiply and divide numbers to 1000 by 10 and then 100 (whole-number answers), understanding the effect; relate to scaling up or down	Use understanding of place value to multiply and divide whole numbers and decimals by 10, 100 or 1000	
		Find unit fractions of numbers and quantities (e.g. ¹/₂, ¹/₃, ¹/₄	Find fractions of numbers, quantities or shapes (e.g. ¹/₅ of	Find fractions using division (e.g. ¹/₁₀₀ of 5 kg), and	Relate fractions to multiplication and division (e.g.

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		and $\frac{1}{6}$ of 12 litres)	30 plums, $\frac{3}{8}$ of a 6 by 4 rectangle)	percentages of numbers and quantities (e.g. 10%, 5% and 15% of £80)	$6 \div 2 = \frac{1}{2}$ of $6 = 6 \times \frac{1}{2}$); express a quotient as a fraction or decimal (e.g. 67 ÷ 5 = 13.4 or $13\frac{2}{5}$); find fractions and percentages of whole-number quantities (e.g. $\frac{5}{8}$ of 96, 65% of £260)
			Use a calculator to carry out one-step and two-step calculations involving all four operations; recognise negative numbers in the display, correct mistaken entries and interpret the display correctly in the context of money	Use a calculator to solve problems, including those involving decimals or fractions (e.g. find $\frac{3}{4}$ of 150 g); interpret the display correctly in the context of measurement	Use a calculator to solve problems involving multi-step calculations
5 Understanding shape					
Visualise and name common 2-D shapes and 3-D solids and describe their features; use them to make patterns, pictures and models	Visualise common 2-D shapes and 3-D solids; identify shapes from pictures of them in different positions and orientations; sort, make and describe shapes, referring to their properties	Relate 2-D shapes and 3-D solids to drawings of them; describe, visualise, classify, draw and make the shapes	Visualise 3-D objects from 2-D drawings; make nets of common solids	Identify, visualise and describe properties of rectangles, triangles, regular polygons and 3-D solids; use knowledge of properties to draw 2-D shapes, and to identify and draw nets of 3-D shapes	Describe, identify and visualise parallel and perpendicular edges or faces; use these properties to classify 2-D shapes and 3-D solids
	Identify reflective symmetry in patterns and 2-D shapes and draw lines of symmetry in shapes	Draw and complete shapes with reflective symmetry; draw the reflection of a shape in a mirror line along one side	Draw polygons and classify them by identifying their properties, including their line symmetry	Recognise parallel and perpendicular lines in grids and shapes; use a set-square and ruler to draw shapes with perpendicular or parallel sides	Make and draw shapes with increasing accuracy and apply knowledge of their properties
Visualise and use everyday language to describe the position of objects and direction and distance when moving them, for example when placing or moving objects on a game board	Follow and give instructions involving position, direction and movement	Read and record the vocabulary of position, direction and movement, using the four compass directions to describe movement about a grid	Recognise horizontal and vertical lines; use the eight compass points to describe direction; describe and identify the position of a square on a grid of squares	Complete patterns with up to two lines of symmetry; draw the position of a shape after a reflection or translation	Visualise and draw on grids of different types where a shape will be after reflection, after translations, or after rotation through 90° or 180° about its centre or one of its vertices
				Read and plot coordinates in the first quadrant	Use coordinates in the first quadrant to draw, locate and complete shapes that meet given properties
Identify objects that turn	Recognise and use whole, half	Use a set-square to draw right	Know that angles are	Estimate, draw and measure	Estimate angles, and use a

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about a point (e.g. scissors) or about a line (e.g. a door); recognise and make whole, half and quarter turns	and quarter turns, both clockwise and anticlockwise; know that a right angle represents a quarter turn	angles and to identify right angles in 2-D shapes; compare angles with a right angle; recognise that a straight line is equivalent to two right angles	measured in degrees and that one whole turn is 360°; compare and order angles less than 180°	acute and obtuse angles using an angle measurer or protractor to a suitable degree of accuracy; calculate angles in a straight line	protractor to measure and draw them, on their own and in shapes; calculate angles in a triangle or around a point
6 Measuring					
Estimate, measure, weigh and compare objects, choosing and using suitable uniform non-standard or standard units and measuring instruments (e.g. a lever balance, metre stick or measuring jug)	Estimate, compare and measure lengths, weights and capacities, choosing and using standard units (m, cm, kg, litre) and suitable measuring instruments	Know the relationships between kilometres and metres, metres and centimetres, kilograms and grams, litres and millilitres; choose and use appropriate units to estimate, measure and record measurements	Choose and use standard metric units and their abbreviations when estimating, measuring and recording length, weight and capacity; know the meaning of 'kilo', 'centi' and 'milli' and, where appropriate, use decimal notation to record measurements (e.g. 1.3 m or 0.6 kg)	Read, choose, use and record standard metric units to estimate and measure length, weight and capacity to a suitable degree of accuracy (e.g. the nearest centimetre); convert larger to smaller units using decimals to one place (e.g. change 2.6 kg to 2600 g)	Select and use standard metric units of measure and convert between units using decimals to two places (e.g. change 2.75 litres to 2750 ml, or vice versa)
	Read the numbered divisions on a scale, and interpret the divisions between them (e.g. on a scale from 0 to 25 with intervals of 1 shown but only the divisions 0, 5, 10, 15 and 20 numbered); use a ruler to draw and measure lines to the nearest centimetre	Read, to the nearest division and half-division, scales that are numbered or partially numbered; use the information to measure and draw to a suitable degree of accuracy	Interpret intervals and divisions on partially numbered scales and record readings accurately, where appropriate to the nearest tenth of a unit	Interpret a reading that lies between two unnumbered divisions on a scale	Read and interpret scales on a range of measuring instruments, recognising that the measurement made is approximate and recording results to a required degree of accuracy; compare readings on different scales, for example when using different instruments
Use vocabulary related to time; order days of the week and months; read the time to the hour and half hour	Use units of time (seconds, minutes, hours, days) and know the relationships between them; read the time to the quarter hour; identify time intervals, including those that cross the hour	Read the time on a 12-hour digital clock and to the nearest 5 minutes on an analogue clock; calculate time intervals and find start or end times for a given time interval	Read time to the nearest minute; use am, pm and 12-hour clock notation; choose units of time to measure time intervals; calculate time intervals from clocks and timetables	Read timetables and time using 24-hour clock notation; use a calendar to calculate time intervals	
			Draw rectangles and measure and calculate their perimeters; find the area of rectilinear shapes drawn on a square grid by counting squares	Draw and measure lines to the nearest millimetre; measure and calculate the perimeter of regular and irregular polygons; use the formula for the area of a rectangle to calculate the rectangle's area	Calculate the perimeter and area of rectilinear shapes; estimate the area of an irregular shape by counting squares

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7 Handling data					
Answer a question by recording information in lists and tables; present outcomes using practical resources, pictures, block graphs or pictograms	Answer a question by collecting and recording data in lists and tables; represent the data as block graphs or pictograms to show results; use ICT to organise and present data	Answer a question by collecting, organising and interpreting data; use tally charts, frequency tables, pictograms and bar charts to represent results and illustrate observations; use ICT to create a simple bar chart	Answer a question by identifying what data to collect; organise, present, analyse and interpret the data in tables, diagrams, tally charts, pictograms and bar charts, using ICT where appropriate	Answer a set of related questions by collecting, selecting and organising relevant data; draw conclusions, using ICT to present features, and identify further questions to ask	Solve problems by collecting, selecting, processing, presenting and interpreting data, using ICT where appropriate; draw conclusions and identify further questions to ask
Use diagrams to sort objects into groups according to a given criterion; suggest a different criterion for grouping the same objects	Use lists, tables and diagrams to sort objects; explain choices using appropriate language, including 'not'	Use Venn diagrams or Carroll diagrams to sort data and objects using more than one criterion	Compare the impact of representations where scales have intervals of differing step size	Construct frequency tables, pictograms and bar and line graphs to represent the frequencies of events and changes over time	Construct and interpret frequency tables, bar charts with grouped discrete data, and line graphs; interpret pie charts
				Find and interpret the mode of a set of data	Describe and interpret results and solutions to problems using the mode, range, median and mean
				Describe the occurrence of familiar events using the language of chance or likelihood	Describe and predict outcomes from data using the language of chance or likelihood