Kate Ratcliffe

Maths Progression

Reasoning

Head Start

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Number and place value	• Count to and across 100, forwards • Count to and across 100, backwards • Read and write numbers from 1 to 20 in numerals and words • Count in multiples of two • Count to and across 100, forwards and backwards • Compare and order numbers up to 20 • Compare and order numbers up to 100 • Count in multiples of five • Identify one more or less than a given number up to 20 • Identify one more or less than a given number up to 100 • Solve mixed problems involving number and place value • Count in multiples of five • Identify 10 more or less than a given number up to 100 • Count in multiples of two, five and ten	▪ Recognise the place value of each digit in a two-digit number (tens, ones) ▪ Read and write numbers to at least 100 in numerals and in words ▪ Compare and order numbers from 0 up to 100 ▪ Use <, > and = signs ▪ Count in tens from any number, forwards and backwards ▪ Identify, represent and estimate numbers using different representations, including the number line ▪ Use place value and number facts to solve problems ▪ Use place value and number facts to solve problems (money) ▪ Solve mixed problems involving number and place value	▪ Recognise the place value of each digit in a three-digit number (hundreds, tens and ones) ▪ Identify, represent and estimate numbers using different representations ▪ Read and write numbers up to 1000 in numerals and words ▪ Compare and order numbers up to 1000 ▪ Count from 0 in multiples of 4, ▪ Count from 0 in multiples of 8, ▪ Count from 0 in multiples of 50 and 100 ▪ Count in and use multiples of 2, 3, 4, 5, 50 and 100 ▪ Find 10 or 100 more or less than a given number ▪ Solve problems involving number and place value (money)	▪ Find 1000 more than a given number ▪ Find 1000 less than a given number ▪ Read Roman numerals to 100 (I to C) ▪ Round any number to the nearest 10, 100 or 1000 ▪ Solve mixed problems involving number and place value	▪ Read and write numbers to at least 1,000,000 ▪ Order and compare numbers to at least 1,000,000 ▪ Determine the value of each digit in numbers up to 1,000,000 ▪ Count forwards in steps of powers of 10 (100 or 1000) ▪ Count forwards in steps of powers of 10 (10,000 or 100,000) ▪ Count backwards in steps of powers of 10 (100 or 1000) ▪ Count backwards in steps of powers of 10 (10,000 or 100,000) ▪ Count forwards or backwards in steps of powers of 10 (mixed) ▪ Interpret negative numbers in context ▪ Count forwards and backwards with positive and negative whole numbers through zero	▪ Read and write numbers to at least 10,000,000 ▪ Order and compare numbers to at least 10,000,000 ▪ Round any whole number to a required degree of accuracy ▪ Use negative numbers in context and calculate intervals across zero ▪ Solve problems involving number and place value ▪ Identify common factors, common multiples and prime numbers ▪ Solve addition and subtraction multi-step problems in context

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	• Count in multiples of two, five and ten • Use number bonds to 10 • Use number bonds to and within 10 • Use number bonds to 20 • Use number bonds to and within 20 • Use the language of equal to, more than and less than (fewer) • Use the language of equal to, more than, less than, most and least	▪ Count in steps of 2 from 0 ▪ Count in steps of 5 from ▪ 0 ▪ Count in steps of 3 from 0 ▪ Count in steps of 2, 3 and 5 from 0	▪ Solve problems involving number and place value (distance and capacity) ▪ Solve mixed problems involving number and place value ▪ Solve mixed problems involving number and place value		▪ Round any number up to 1,000,000 to the nearest 10 and 100 ▪ Round any number up to 1,000,000 to the nearest 1000, 10,000 and 100,000 ▪ Read Roman numerals to 1000 (M) and recognise years written in Roman numerals	
Addition, subtraction,	▪ Read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs ▪ Add one-digit and two-digit numbers to 20, including zero ▪ Subtract one-digit and two-digit numbers to 20, including zero ▪ Add and subtract one-digit and two-digit numbers to 20, including zero ▪ Solve one-step problems involving addition ▪ Solve one-step problems involving addition	▪ Use addition facts to 20 to help add related facts up to 100 ▪ Solve problems involving adding a two-digit number and ones ▪ Solve problems involving adding a two-digit number and tens ▪ Solve problems involving adding two two-digit numbers ▪ Solve problems involving adding three one-digit numbers ▪ Solve problems involving subtracting a two-digit number and ones ▪ Solve problems involving	▪ Add a three-digit number and ones (mentally) ▪ Add a three-digit number and tens (mentally) ▪ Add a three-digit number and hundreds (mentally) ▪ Add numbers with up to three digits using a formal written method ▪ Subtract a three-digit number and ones (mentally) ▪ Subtract a three-digit number and tens (mentally) ▪ Subtract numbers with up to three digits	▪ Add numbers with up to four digits using formal written methods where appropriate ▪ Solve addition two-step problems ▪ Subtract numbers with up to four digits using formal written methods where appropriate ▪ Solve subtraction two-step problems ▪ Estimate to check answers to a calculation ▪ Use inverse operations to check answers to a calculation ▪ Add and subtract numbers with up to four digits using formal written methods where appropriate	▪ Add whole numbers with more than 4 digits using a formal written method where appropriate ▪ Add numbers mentally with increasingly large numbers ▪ Use rounding to check answers to calculations ▪ Subtract whole numbers with more than 4 digits using a formal written method where appropriate ▪ Subtract numbers mentally with increasingly large numbers ▪ Use rounding to check answers to calculations	

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	▪ Solve one-step problems involving subtraction ▪ Solve one-step problems involving addition and subtraction ▪ Solve one-step problems involving addition (money) ▪ Solve one-step problems involving subtraction (money) ▪ Solve one-step problems involving addition and subtraction (money)	subtracting a two-digit number and tens ▪ Solve problems involving subtracting two two-digit numbers ▪ Use subtraction facts to 20 to help subtract related facts up to 100 ▪ Solve problems involving subtracting three one-digit numbers ▪ Solve problems involving addition and subtraction ▪ Understand that addition is commutative but subtraction is not ▪ Use the inverse relationship between addition and subtraction to check calculations and missing number problems	using a formal written method ▪ Add and subtract numbers with up to three digits using a formal written method	▪ Add and subtract numbers with up to four digits using formal written methods where appropriate ▪ Solve addition and subtraction two-step problems (money) ▪ Solve addition and subtraction two-step problems (money)		
Multiplication and division	▪ Double numbers and quantities ▪ Double and halve numbers and quantities ▪ Use arrays to solve one-step multiplication problems	▪ Recall and use multiplication facts for the 2 times table ▪ Recall and use division facts for the 2 times table ▪ Recall and use multiplication facts for the 5 times table	▪ Recall and use multiplication facts for the 3 times table ▪ Recall and use multiplication facts for the 4 times table ▪ Recall and use multiplication	▪ Recall and use multiplication and division facts for the 6, 7, 9, 11 and 12 times tables ▪ Use place value to multiply mentally ▪ Use known and derived facts to multiply and divide mentally	▪ Identify multiples ▪ Identify factors, including factor pairs of a number and common factors of 2 numbers ▪ Know and use the vocabulary of prime numbers, composite (non-prime)	▪ 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

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	▪ Solve problems involving grouping or sharing ▪ Solve problems involving grouping or sharing (money) ▪ Make connections between number patterns and counting in twos, fives and tens ▪ Solve mixed one-step problems involving multiplication and division	▪ Recall and use division facts for the 5 times table ▪ Recall and use multiplication facts for the 10 times table ▪ Recall and use division facts for the 10 times table ▪ Recall and use multiplication facts for the 2, 5 and 10 times tables ▪ Recall and use division facts for the 2, 5 and 10 times tables ▪ Solve problems involving multiplication and division	facts for the 8 times table ▪ Recall and use multiplication facts for the 3, 4 and 8 times tables ▪ Recall and use division facts for the 3 times table ▪ Recall and use division facts for the 4 times table ▪ Recall and use division facts for the 8 times table ▪ Recall and use division facts for the 3, 4 and 8 times tables ▪ Recall and use multiplication and division facts for the 3, 4 and 8 times tables ▪ Solve problems involving doubling and connecting the 2, 4 and 8 times tables ▪ Solve problems involving multiplication of a two-digit number by a one-digit number, using a mental method ▪ Solve problems involving division of a two-digit number by a one-digit number, using a mental method	▪ Multiply three numbers together ▪ Multiply 2 two-digit number by a one-digit number using a formal written method ▪ Multiply a three-digit number by a one-digit number using a formal written method ▪ Solve problems involving multiplying and adding, using the distributive law ▪ Solve multiplication problems, including scaling and correspondence problems	numbers and identify prime and composite numbers ▪ Know and use the vocabulary of prime factors ▪ Multiply numbers up to 4 digits by a one-digit number, using a formal written method ▪ Multiply numbers up to 4 digits by a one-digit number, using a formal written method ▪ Recognise and use square numbers ▪ Recognise and use cube numbers ▪ Divide numbers up to 4 digits by a one-digit number using the formal written method of short division ▪ Divide numbers up to 4 digits by a one-digit number and interpret the remainder appropriately for the context ▪ Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 ▪ Solve problems involving multiplication and division, including scaling simple fractions and	number using the formal written method of long division ▪ Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division and interpret the remainder as a whole number

			▪ Solve problems involving multiplication using a formal written method ▪ Solve problems involving division using a formal written method ▪ Solve multiplication problems, including scaling and correspondence problems		problems involving simple rates	
Properties of shapes / Position and direction	▪ Recognise common 2D shapes and compare them to everyday objects ▪ Recognise, name and compare common 2D shapes ▪ Recognise common 3D shapes and compare them to everyday objects ▪ Recognise, name and compare common 3D shapes ▪ Solve problems involving 2D and 3D shapes ▪ Describe position, direction and movement	▪ Identify and describe the properties of 2D shapes, including the number of sides and symmetry in a vertical line ▪ Identify and describe the properties of 3D shapes, including the ▪ number of edges, vertices and faces ▪ Identify 2D shapes on the surface of 3D shapes ▪ Compare and sort common 2D and 3D shapes and ▪ everyday objects	▪ Describe and classify 2D and 3D shapes ▪ Recognise angles as a property of shape and connect right angles and amount of turn ▪ Identify horizontal and vertical lines and pairs of perpendicular and parallel lines	▪ Classify and compare quadrilaterals and triangles based on their properties and sizes ▪ Identify acute and obtuse angles ▪ Order angles by size ▪ Solve problems involving 2D and 3D shapes	▪ Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles; identify angles ▪ 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 ▪ Describe the features of shapes ▪ Understand the language of reflection and translation	
Fractions (including	▪ Find a half of an object, shape or quantity	▪ Recognise the fractions 1/2, 1/3	▪ Recognise, find and write unit fractions of a	▪ Count up and down in hundredths; recognise that	▪ Recognise mixed numbers and improper fractions	▪ Use common factors to simplify fractions

decimals and percentages)	▪ Find a half or a quarter of an amount of money ▪ Find a half or a quarter of an object, shape or quantity ▪ Find a quarter of an object, shape or quantity	, 1/4 , 2/4 and 3/4 ▪ Find 1/2 ▪ Find 1/3 ▪ Find 1/4 ▪ Find 2/4 ▪ Find 3/4 ▪ Recognise, find, name and write fractions ▪ Recognise, find, name and write fractions (money) ▪ Count in fractions, starting from any number	discrete set of objects ▪ Understand equivalence in unit and non-unit fractions ▪ Add fractions with the same denominator within one whole ▪ Subtract fractions with the same denominator within one whole ▪ Compare and order unit fractions and non–unit fractions with the same denominator ▪ Recognise that tenths arise from dividing an object into 10 equal parts ▪ Solve problems involving fractions	hundredths arise when dividing tenths by ten ▪ Recognise that hundredths arise when dividing tenths by ten ▪ Add and subtract fractions with the same denominator ▪ Find a unit fraction of a whole number ▪ Find a non-unit fraction of a whole number ▪ Divide (multiply) a one or two-digit number by 10 and identify the value of the digits in the answer ▪ Divide (multiply) a one or two-digit number by 100 and identify the value of the digits in the answer ▪ Round decimals with one decimal place to the nearest whole number ▪ Compare numbers with up to two decimal places (money) ▪ Solve problems involving fractions and decimals	and convert from one form to the other ▪ Add fractions with the same denominator ▪ Subtract fractions with the same denominator ▪ Subtract fractions with denominators that are multiples of the same number ▪ Compare and order fractions whose denominators are all multiples of the same number ▪ Read and write decimal numbers as fractions ▪ Multiply proper fractions andmixed numbers by whole numbers ▪ Solve problems involving fractions ▪ 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 one decimal place ▪ Read, write and order numbers with up to three decimal places	▪ Compare and order fractions, including fractions greater than 1 ▪ Add fractions with different denominators, using the concept of equivalent fractions ▪ Subtract fractions with different denominators, using the concept of equivalent fractions ▪ Add or subtract fractions with different denominators, using the concept of equivalent fractions ▪ Add or subtract mixed numbers, using the concept of equivalent fractions ▪ Multiply simple pairs of proper fractions, writing the answer in its simplest form ▪ Divide proper fractions by whole numbers ▪ Identify the value of each digit in numbers to three decimal places ▪ Divide numbers by 10 giving

					▪ Solve problems involving numbers with up to three decimal places ▪ Recognise the percent symbol and solve percentage problems ▪ Write percentages as a fraction with the denominator hundred, and as a decimal ▪ Solve problems which require knowing percentage and decimal equivalents	answers up to 3 decimal places ▪ Divide numbers by 100 giving answers up to 3 decimal places ▪ Divide numbers by 1000 giving answers up to 3 decimal places ▪ Multiply one-digit numbers with up to two decimal places by whole numbers ▪ Use written division methods in cases where the answer has up to two decimal places ▪ Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts ▪ Solve problems involving percentages ▪ Solve problems involving fractions ▪ Solve problems involving fractions, decimals and percentages

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Measurement	▪ Choose appropriate measuring tools ▪ Solve problems involving knowing the value of different denominations of coins and notes ▪ Compare lengths and heights ▪ Solve problems involving lengths and heights ▪ Compare mass or weight ▪ Solve problems involving mass or weight ▪ Compare capacity and volume ▪ Solve problems involving capacity and volume ▪ Compare time ▪ Solve problems involving time ▪ Sequence events in chronological order ▪ Solve problems involving time to the hour and half past the hour ▪ Recognise and use language relating to dates ▪ Recognise and use language relating to days of the week ▪ Recognise and use language relating to weeks, months and years	▪ Solve problems involving length/height (m/cm) ▪ Compare and order lengths ▪ Solve problems involving mass (kg/g) ▪ Compare and order mass ▪ Solve problems involving temperature (oC) ▪ Solve problems involving capacity (l/ml) ▪ Compare and order volume/capacity ▪ Solve problems involving capacity, length, mass and temperature	▪ Solve problems involving comparing lengths ▪ Solve problems involving adding and subtracting lengths ▪ Solve problems involving comparing mass (weight) ▪ Solve problems involving adding and subtracting mass (weight) ▪ Solve problems involving comparing capacity ▪ Solve problems involving adding and subtracting capacity ▪ Solve problems involving comparing length, mass and capacity ▪ Solve problems involving adding and subtracting length, mass and capacity ▪ Add amounts of money and work out change ▪ Subtract amounts of money and work out change ▪ Add and subtract money to give amounts of change	▪ Convert between kilometres and metres ▪ Convert between kilograms and grams ▪ Convert between litres and millilitres ▪ Convert between pounds and pence ▪ Convert between units of measure (mixed) ▪ Estimate, compare and calculate different measures ▪ Calculate the perimeter of rectilinear figures (including squares) ▪ Estimate, compare and calculate different amounts of money in pounds and pence ▪ Convert between hours/minutes and seconds/minutes ▪ Convert times between analogue and digital, 12 and 24 hour clocks ▪ Solve problems involving converting between hours and minutes ▪ Solve problems involving converting between minutes and seconds ▪ Solve problems involving converting between weeks and days, years and months	▪ Convert between centimetre and metre ▪ Convert between kilometre and metre ▪ Convert between centimetre and millimetre ▪ Convert between gram and kilogram ▪ Convert between litre and millilitre ▪ Convert between units of measure (mixed) ▪ Understand and use equivalences between inches and centimetres ▪ Understand and use equivalences between pounds and kilograms ▪ Understand and use equivalences between pints and litres ▪ Calculate the perimeter of rectangles ▪ Calculate the areas of rectangles (including squares) ▪ Solve problems converting between the 12 and 24 hour clock ▪ Solve problems converting between units of time	▪ Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places ▪ Solve problems involving converting measurements of length ▪ Solve problems involving converting measurements of mass ▪ Solve problems involving converting measurements of volume ▪ Solve problems involving converting measurements of time ▪ Solve problems converting between miles and kilometres

			▪ Know the number of seconds in a minute ▪ Know the number of days in each month ▪ Know the number of days in a year and a leap year ▪ Calculate the time taken by particular events ▪ Record and compare time in terms of seconds, minutes and hours and o'clock ▪ Use vocabulary such as am/pm, morning, afternoon, evening, noon and midnight ▪ Compare the duration of events			
Statistics			▪ Interpret data and solve problems from a tally chart ▪ Interpret data and solve problems from a bar chart ▪ Interpret data and solve problems from a pictogram ▪ Interpret data and solve problems from a table	▪ Interpret data in tables ▪ Interpret data in tally charts ▪ Interpret data in pictograms ▪ Interpret data in bar charts ▪ Interpret data in line graphs	▪ Solve comparison, sum and difference problems using information presented in a line graph ▪ Complete, read and interpret information in tables, including timetables	▪

Ratio and proportion						▪ Solve problems involving the relative size of quantities using division and multiplication ▪ Solve problems involving the calculation of percentages ▪ Solve problems involving the comparison of percentages ▪ Solve problems linking percentages, angles and pie charts ▪ Solve problems involving scaling by multiplication ▪ Solve problems involving scaling by division ▪ Solve problems involving scaling by multiplication and division. ▪ Solve problems involving scaling of shapes ▪ Solve problems involving unequal groupings using knowledge of fractions and multiples ▪ Solve problems involving unequal quantities
Algebra						▪ Solve problems involving finding missing numbers

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						using simple formulae ▪ Solve problems with linear number sequences ▪ Express missing number problems algebraically ▪ Express missing number problems algebraically ▪ Solve problems involving equations with two unknown numbers ▪ Enumerate possibilities of combinations of two variables