DENTON CP CHOOL MATHS MAP

Autumn 1

Baseline

Subitising
Introducing numbers 1,2,3
Subitising within 3

Counting, Cardinality and ordinality.
Consolidate numbers 1,2,3.
Counting songs and sequential counting to 5.
Being able to count 1-1 correspondence.

Composition
Composition of numbers to 3.
Knowing that 1 and another 1 is 2. And so on…

Subitising
Subitise groups of 2,3,4.
Introduce number 4.
Make patterns and arrangements of 4.

Comparison
Comparing 2 sets of objects and say which is more than or fewer than.

Autumn 2

Counting, Cardinality and ordinality.
 Practice counting 1-1 correspondence and introduce the number 5. Make 5 in many ways and fill 5 frames. Patterns of 5.
5 and 5 make 10 altogether.

Comparison
 Compare groups of up to 3 objects and say when they are equal or more/fewer. Revisit this concept. Build towers and to compare amounts.

Composition
 Understand what a 'whole' is and explore different concepts of this. Compose sets of 2 and 3 and use language of 'whole' to explore this.

Composition
 Compose and decompose sets of 3,4,5.
Parts that make a whole.

Counting, Cardinality and ordinality.
 Counting in sequence to 10 and recognising numbers to 5 (some 10)
Represent 5 in different ways.

Repeating patterns
 Explore an AB repeating pattern.

Match and compare size.
Shape
 Big, small, tall long, short…
 Properties of square and rectangle.

DENTON CP CHOOL MATHS MAP

Spring 1

Subitising
Subitise up to 5 and recognise different arrangements. Recognise 6 on a die. Be able to match numerals to quantity.

Counting, Cardinality and ordinality.
Recognise and order numbers to 5. Know 1 more than using the staircase effect. Create the staircase effect.

Composition
Ways to partition and make 5. 4 and 1, 3 and 2...
Work out the hidden number.

Composition
Introduce number 6. Represent 4 in different ways on a dice frame. See that 5 and 1 more is 6. See that 6 and 1 more is 7. Show these arrangements using a 2 dice frames. 1 more than.

Comparison
Use more or fewer than to compare sets of objects. Use language of equal to.

Spatial reasoning.
Understanding shapes and their properties. How we can create larger shapes using smaller shapes.

Spring 2

Counting, Cardinality and ordinality.
Counting in sequence to 10. Recognise the 5 and a bit structure of numbers to 10. 5 and 1 more is 6. 5 and 2 more is 7. 1 less than 5 is 4. 6 is 1 more than 5...

Comparison
Order numberblocks to 10 and use reasoning to explain which numbers are more than and less than.

Composition
Introduce number 7 and 8. Compose 7 using the part part whole method.

Composition
Double patterns up to 5. Seeing them as equal parts.

Composition
Be able to sort objects by colour, shape etc. Name the whole of a number with 2 equal parts. Revisit doubles and sort the odds and evens.

Repeating patterns
Make an AB and ABB repeating pattern.

DENTON CP CHOOL MATHS MAP

Summer 1

Counting, Cardinality and ordinality.
Measure
Practise counting larger groups and counting strategies.
Measuring using cubes.

Subitising
Subitise up to 6 and make arrangements of 6. Subitise double on a tens frame.

Composition
Compose and represent 5.
Represent numbers 6-9. Using 5 and … make

Composition
Recap making 5 and then go on to compose ways of making 10.

Comparison
Compare numbers on a number track and talk bout their position. Be able to count backwards. Identify if numbers are before or after 5.

Summer 2

Revisit and ELG Focus
Composing 5 and then 10.
Double facts and odds and evens
Compare groups of objects.
Subitise up to 10.

Consolidation
Shape
Measure
1 less than

	Duration	Units	Learning Outcomes
Number and Place Value	Unit 1—7 weeks	Previous Reception experiences and counting within 100	Count within 100 in different ways
	Unit 2—3 weeks	Comparison of quantities and part-whole relationships	Explain that items can be compared using length and height
			Explain that items can be compared using weight/mass and volume/capacity
			Count a set of objects
			Compare sets of objects
			Use equality and inequality symbols to compare sets of objects
			Use equality and inequality symbols to compare expressions
			Explain what a whole is
			Explain that a whole can be split into parts
			Explain that a whole can represent a group of objects
			Identify a part of a whole group
			Explain what a part-whole model is
			Use a part-whole model to represent a whole partitioned into two parts
			Use a part-whole model to represent a whole partitioned into more than two parts
Addition and Subtraction	Unit 3—2 weeks	Numbers 0-5	Explain that numbers can represent how many objects there are in a set
			Explain that ordinal numbers show a position and not a set of objects
			Partition numbers one to five in different ways
			Partition the numbers one to five in a systematic way
			Find a missing part when one part and the whole is known
			Show one more and one less than a number using representations. Pupils describe this accurately.
			Show one more and one less than a number using representations. Pupils describe this accurately.
			Use a bar model to represent a whole partitioned into two parts
Geometry	Unit 4—1 week	Recognise, compose, decompose and manipulate 2D and 3D shapes	Compose pattern block images
			Copy, extend and develop repeating and radiating pattern block patterns
			Compose tangram images
			Investigate tetromino and pentomino arrangements

	Duration	Units	Learning Outcomes
Geometry	Unit 4—2 weeks	Recognise, compose, decompose and manipulate 2D and 3D shapes	Investigate ways that four cubes can be composed into different 3D models Explore, discuss and compare 3D shapes Identify 2D shapes within 3D shapes Explore, discuss and compare 2D shapes Explore, discuss and identify circles and shapes that are not circles from shape cut-outs Explore, discuss and identify triangles and shapes that are not triangles from shape cut-outs Explore, discuss and identify rectangles (including squares) from shape cut-outs
Number and Place Value	Unit 5— 3 weeks	Numbers 0-10	Count a set of objects and match the spoken number to the written numeral and number name Represent the numbers 6 to 10 using a five and a bit structure Identify the whole and parts of the numbers 6 to 10 using the five and a bit structure Explore the numbers 6 to 10 using the part whole model and the five and a bit structure Explain where 6, 7, 8 and 9 lie on a number line Explain what odd and even numbers are and the difference between them Explain how even and odd numbers can be partitioned Partition numbers 6 to 10 in different ways Partition the numbers 6 to 10 in a systematic way Identify a missing part when a whole is partitioned into two parts
Addition and Subtraction	Unit 6—4 weeks	Additive Structures	Combine two or more parts to make a whole Pupils explain that addends can be represented in any order. This is called the commutative law Explain that the = sign can be used to show that the whole and the sum of the parts are equal (1) Add parts to find the value of the whole and write the equation Find the missing addend in an equation Partition a whole into two parts and express this with a subtraction equation Addition and subtraction stories and write equations to match Represent 'first, then, now' stories with addition equations Represent 'first, then, now' stories with subtraction equations Represent different types of stories with subtraction calculations Make addition and subtraction stories, writing equations to match Work out the missing part of an addition story and equation if the other two parts are known Work out the missing part of a subtraction story and equation if the other two parts are known Explain that addition and subtraction are inverse operations Use additive structures to think about addition and subtraction equations in different ways
	Unit 7—3 weeks	Addition and Subtraction facts within 10	Addition is commutative Find pairs of numbers to 10 (1) Add and subtract 1 from any number Explain what the difference is between consecutive numbers Explain what happens when 2 is added to or subtracted from odd and even numbers Explain what the difference is between consecutive odd and even numbers Explain what happens when zero is added to or subtracted from a number Explain what happens when a number is added to or subtracted from itself Double numbers and explain what doubling means/ Halve numbers and explain what halving means Use knowledge of doubles and halves to calculate near doubles and halves Represent different types of stories with subtraction calculations

	Duration	Units	Learning Outcomes
Number and Place Value	Unit 8—4 weeks	Numbers 0-20	Explain that the digits in the numbers 11 to 19 express quantity Explain that the digits in the numbers 11 to 19 express position on a number line Identify the quantity shown in a representation of numbers 11 to 19 Use knowledge of '10 and a bit' to solve problems Use knowledge of '10 and a bit' to solve problems Explore odd and even numbers within 20 Double the numbers 6 to 9 and halve the result, explaining what doubling and halving is Use knowledge of addition facts within 10 to add within 20 Use knowledge of subtraction facts within 10 to subtract within 20 Use knowledge of addition and subtraction facts within 10 to add and subtract within 20 Measure one object with different non-standard measures and record outcomes Measure items using individual cm cubes (Dienes) Measure length from zero cm using a ruler Estimate length in cm Estimate length, measure length and record these values in a table
Number Facts	Unit 9—5 weeks	Unitising and coin recognition	Count efficiently in groups of two, ten, five Explain the value of a 1p coin in pence Recognise and explain the value of 2p, 5p and 10p coins Explain that a single coin can be worth several pennies Use knowledge of the value of coins to solve problems Calculate the total value of the coins in a set of 2p coins, 5p coins and 10p coins Compare sets of 2p, 5p and 10p coins Relate what they have learnt to a real-life context Work out how many coins are needed to make a value of 10p Work out how many coins are needed to make a total value of 20p Use knowledge of the value of coins to solve problems
Geometry	Unit 10—1 week	Position and direction	describe position, direction and movement, including whole, half, quarter and three-quarter turns.
Measure	Unit 11—2 weeks	Time	sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening] recognise and use language relating to dates, including days of the week, weeks, months and years tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.

Year 1 Overview—skills progression and coverage

Number and Place Value

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.

Addition and Subtraction

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 (mental and written)

solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = * - 9

Multiplication and Division

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

Fractions (including decimals and percentages)

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

Measurement

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

Geometry—properties of shapes

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].

Geometry—position and direction

describe position, direction and movement, including half, quarter and three-quarter turns.

Algebra

*solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and <u>missing number problems</u> 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)

Year 2 — DENTON CP SCHOOL MATHS MAP — Autumn

	Duration	Units	Outcomes
Number and Place Value	Unit 1—4 weeks	Numbers 10 to 100	explain that one ten is equivalent to ten ones represent multiples of ten using their numerals, names and in an expression or an equation estimate the position of multiples of ten on a 0-100 number line explain what happens when you add and subtract ten to a multiple of ten use knowledge of facts and unitising to add and subtract multiples of ten explore the counting sequence for counting to 100 and beyond count a large group of objects by counting groups of tens and the extra ones and by using knowledge of unitising by counting tens and ones represent a number from 20-99 in different ways explain and mark the position of numbers 20-99 on a number line explain that numbers 20-99 can be represented as a length compare two, two-digit numbers partition a two-digit number into tens and ones add two, two-digit numbers by partitioning into tens and ones
Addition and Subtraction	Unit 2—3 weeks	Calculations within 20	add three addends including by finding two addends that total 10 use a 'First... Then... Now" story to add 3 addends explain that addends can be added in any order add and subtract two numbers that bridge through 10 compare numbers and describe how many more or less there are in each set calculate the difference use knowledge of subtraction to solve problems in a range of contexts explain what the difference is between consecutive numbers calculate difference when information is presented in a pictogram or a bar chart
Number facts	Unit 3—1 week	Fluently add and subtract within 10	demonstrate their fluency of addition and subtraction within ten practise addition and subtraction strategies as required

	Dura-tion	Units	Outcomes
Addition and Sub-traction	Unit 4—2 weeks	Addition and subtraction of two-digit numbers	add and subtract one to and from a two-digit number including crossing tens boundary use number facts to add and subtract a single-digit number to a two-digit number use a part-part-whole model to represent addition and subtraction use number bonds to ten to add and subtract a single-digit number to a two-digit number use knowledge of 'make ten' to add and subtract a multiple of ten or one-digit number to a two-digit number solve problems using knowledge of addition and subtraction add and subtract ten to/from a two-digit number explain the patterns when adding and subtracting ten use number facts to add and subtract a multiple of ten to a two-digit number partition a two-digit number into parts in different ways (two and three parts)
Multipli-cation and Division	Unit 5—3 (of 7) weeks	Introduction to multiplication	explain that objects can be grouped in different ways describe how objects have been grouped represent equal groups as repeated addition and multiplication explain and represent multiplication when a group contains zero or one items identify and explain each part of a multiplication equation use knowledge of multiplication to calculate the product represent the two times table in different ways use knowledge of the two times table to solve problems explain the relationship between adjacent multiples of two explain that factor pairs can be written in any order represent counting in tens as the ten times table represent the ten times table in different ways

	<u>Dura-tion</u>	<u>Units</u>	<u>Outcomes</u>
<u>**Multipli-cation and division**</u>	Unit 5—4 weeks	Introduction to multiplication (continued from Autumn Term)	represent counting in fives as the five times table represent the five times table in different ways explain the relationship between adjacent multiples of five explain how groups of five and ten are related explain the relationship between multiples of five and ten use knowledge of the relationships between the five and ten times tables to solve problems explain how a factor of zero or one affect the product represent multiplication equations in different ways use knowledge of the two, five and ten times tables to solve problems explain what each factor represents in a multiplication story including when one of the factors is one explain how a multiplication equation with two as a factor is related to doubling double two-digit numbers multiply efficiently when one of the factors is two explain how halving and doubling are related explain the relationship between factors and products halve two-digit numbers use knowledge of doubling, halving and the two times table to solve problems
<u>**Multipli-cation and Division**</u>	Unit 6—2 weeks	Introduction to division structure	explain that objects can be grouped equally identify and explain when objects cannot be grouped equally explain the relationship between division expressions and division stories calculate the number of equal groups in a division story use their knowledge of skip counting and division to solve problems relating to measure skip count using the divisor to find the quotient use their knowledge of division to solve problems explain that objects can be shared equally use skip counting to solve a sharing problem solve a variety of division problems, explaining their understanding

	Dura-tion	Units	Outcomes
Geometry	Unit 7—2 weeks	Shape	learn that a polygon is a 2D shape with straight sides that meet at vertices
			describe polygons and find different ways to sort them
			learn that polygons can be sorted and named according to the number of sides and vertices
			discuss, and compare by direct comparison, the shape and size of polygons
			discuss, and compare by direct comparison, the vertices of polygons
			investigate how polygons can be joined and folded to form 3-dimensional shapes
			describe 3-dimensional shapes and find different ways to sort them
			discuss, and compare by direct comparison, the shape and size of 3-dimensional shapes
Addition and Sub-traction	Unit 8—4 weeks	Addition and subtraction of two-digit numbers	explain strategies used to add
			add a two-digit number to a two-digit number including crossing ten
			explain strategies used to subtract
			subtract a two-digit number from a two-digit number
			partition the subtrahend to help with subtraction
			subtract a two-digit number from a two-digit number including crossing ten
			subtract efficiently using knowledge of two-digit numbers

	Dura-tion	Units	Outcomes
Measure	Unit 9—1 week	Money	recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value find different combinations of coins that equal the same amounts of money solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.
Fractions	Unit 10—2 weeks	Fractions	identify whether something has or has not been split into equal parts name the fraction 'one-half', 'one-quarter' and 'one-third' in relation to a fraction of a length, shape or set of objects read and write the fraction notation ½, ⅓ and ¼ and relate this to a fraction of a length, shape or set of objects find half of numbers find ⅓ or ¼ of a number find ¼ and ¾ of an object, shape, set of objects, length or quantity recognise the equivalence of 2⁄4 and ½
Measure	Unit 11—1 week	Time	compare and sequence intervals of time tell and write the time to five minutes, including quarter past/to the hour draw the hands on a clock face to show these times know the number of minutes in an hour and the number of hours in a day.
Geometry	Unit 12—1 week	Position and Direction	order and arrange combinations of mathematical objects in patterns and sequences use mathematical vocabulary to describe position, direction and movement, including movement in a straight line distinguish between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise)
Multipli-cation and Division	Unit 13—3 weeks	Multiplication and division— doubling, halving, quotative and partitive division	identify and explain the patterns and relationships between the 5 and 10 times tables use their knowledge of the 5 and 10 times tables to solve problems explain how times table facts can help to find the quotient (10 , 5, 2 times table) explain how a division equation with 2 as a divisor is related to halving explain each part of a division equation and know how they can be interchanged use knowledge of divisibility rules when the divisor is 2, 10, 5 to solve problems explain how a dividend of zero affects the quotient explain how the quotient is affected when the divisor is equal to the dividend explain how a divisor of one affects the quotient
Measure	Unit 14—2 weeks	Sense of Measure—capacity, volume, mass	choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels compare and order lengths, mass, volume/capacity and record the results using >, < and =

Year 2 Overview—skills progression and coverage

Number and Place Value

Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward

Compare and order numbers from 0 up to 100; use < > = signs

Identify, represent and estimate numbers using the 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

Addition and Subtraction

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

Multiplication and Division

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

Fractions (including decimals and percentages)

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.

Year 2 Overview—skills progression and coverage

Measurement

compare and order lengths, mass, volume/capacity and record the results using >, < and =

compare and sequence intervals of time

choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels

recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value

find different combinations of coins that equal the same amounts of money

solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change

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.

Algebra

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)

Geometry—properties of shapes

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

Geometry—position and direction

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

Statistics

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

	Duration	Units	Outcomes
Addition and Subtraction **Number Facts**	Unit 1—2 weeks	Adding and subtracting across 10	add 3 addends use a 'First.. Then… Now" story to add 3 addends explain that addends can be added in any order add 3 addends efficiently add 3 addends efficiently by finding two addends that total 10 add two numbers that bridge through 10 subtract two numbers that bridge through 10
Number and Place Value **Addition and Subtraction** **Number Facts**	Unit 2—10 weeks	Numbers to 1000	explain that 100 is composed of ten tens and one hundred ones and is composed of 50s 25s and 20s use known facts to find multiples of ten that compose 100 will use known facts to find a two-digit number and a one- or two-digit number that compose 100 use known facts to find complements to 100 accurately and efficiently represent a three-digit number which is a multiple of ten using their numerals and names use place value knowledge to write addition and subtraction equations bridge 100 by adding or subtracting in multiples of ten use knowledge of addition and subtraction of multiples of ten bridging the hundreds boundary to solve problems count across and on from 100 represent a three-digit number up to 199 in different ways and then to 1000 bridge 100 by adding or subtracting a single-digit number find ten more or ten less than a given number cross the hundreds boundary when adding and subtracting any two-digit multiple of ten become familiar with a metre ruler (marked and unmarked intervals, 1 x 1m, 10 x 10cm, 100 x 1cm), 1cm = 10mm) measure length and height from zero using whole metres, cm and mm convert between m and cm (include whole m to cm, cm to whole m and cm and vice versa); cm and mm estimate a length/height, measure a length/height and record in a table use knowledge of place value to represent a three-digit number in different ways use knowledge of the additive relationship to solve problems count in hundreds and tens on a number line identify the previous, next and nearest multiple of 100 on a number line for a three-digit multiples of ten position three-digit numbers on number lines and estimate the position of three-digit numbers on unmarked number lines compare one-, two- and three-digit numbers order sets of three-digit numbers use known facts to add or subtract multiples of 100 within 1000 write a three-digit multiple of 10 as a multiplication equation partition three-digit numbers in different ways and solve problems involving partitioning use known facts to add or subtract to/from multiples of 100 in tens and ones add/subtract multiples of ten bridging 100 add/subtract to/from a three-digit number in ones bridging 100 find 10 more or less across any hundreds boundary use knowledge of adding or subtracting to/from three-digit numbers to solve problems count forwards and backwards in multiples of 2, 20, 5, 50 and 25 and use this knowledge to solve problems become familiar with the tools to measure mass, up to 1kg (intervals of 100g, 200g, 250g and 500g), volume and capacity up to 1 litre (intervals of 100ml, 200ml, 250ml and 500ml) measure mass from zero up to 1kg and above using grams and whole kg

	Duration	Units	Outcomes
Geometry	Unit 3—2 weeks	Right angles	rotate two lines around a fixed point to make different sized angles draw triangles and quadrilaterals and identify vertices learn that a right angle is a 'square corner' and identify them in the environment learn that a rectangle is a 4-sided polygon with four right angles learn that a square is a rectangle in which the four sides are equal length cut rectangles and squares on the diagonal and investigate the shapes they make join four right angles at a point using different right-angled polygons investigate and draw other polygons with right angles
Addition and Subtraction	Unit 4—4 weeks	Manipulating the additive relationship and securing mental calculation	add two 3-digit numbers using partitioning add two 3-digit numbers using adjusting add a pair of 2- or 3-digit numbers using redistribution subtract a pair of 2- or 3-digit numbers, bridging a multiple of 10, using partitioning subtract a pair of 2-digit numbers, crossing a ten or hundreds boundary, by finding the difference between them subtract a pair of three-digit multiples of 10 within 1000 by finding the difference between them evaluate the efficiency of strategies for subtracting from a 3-digit number explain why the order of addition and subtraction steps in a multi-step problem can be chosen accurately and efficiently solve multi-step addition and subtraction problems understand and can explain that both addition and subtraction equations can be used to describe the same additive relationship (2-digit numbers) understand and can explain that both addition and subtraction equations can be used to describe the same additive relationship (3-digit numbers) use knowledge of the additive relationship to rearrange equations, before solving, identify what is known and what is unknown in an equation
Addition and Subtraction	Unit 5—2 weeks	Column addition	identify the addends and the sum in column addition use their knowledge of place value to correctly lay out column addition add a pair of 2-digit numbers using column addition add using column addition use their knowledge of column addition to solve problems add a pair of 2-digit numbers using column addition with regrouping in the ones column add a pair of 2-digit numbers using column addition with regrouping in the tens column add using column addition with regrouping use known facts and strategies to accurately and efficiently calculate and check column addition use their knowledge of column addition to solve problems

	Dura-tion	Units	Outcomes
Number facts **Multipli-cation and Division**	Unit 6—3 weeks	2, 4, 8 times tables	represent counting in fours as the 4 times table use knowledge of the 4 times table to solve problems explain the relationship between adjacent multiples of four explain the relationship between multiples of 2 and multiples of 4 use knowledge of the relationships between the 2 and 4 times tables to solve problems represent counting in eights as the 8 times table explain the relationship between adjacent multiples of eight explain the relationship between multiples of 4 and multiples of 8 use knowledge of the relationships between the 4 and 8 times tables to solve problems explain the relationship between multiples of 2, 4 and multiples of 8 use knowledge of the relationships between the 2, 4 and 8 times tables to solve problems use knowledge of the divisibility rules for divisors of 2 and 4 to solve problems use knowledge of the divisibility rules for divisors of 8 to solve problems scale known multiplication facts by 10 scale division derived from multiplication facts by 10
Addition and Sub-traction	Unit 7—1 week	Column subtraction	identify the minuend and the subtrahend in column subtraction explain the column subtraction algorithm subtract from a 2-digit number using column subtraction with exchanging from tens to ones subtract from a 3-digit number using column subtraction with exchanging from hundreds to tens (1) subtract from a 3-digit number using column subtraction with exchanging from hundreds to tens (2) evaluate the efficiency of strategies for subtraction

	Dura-tion	**Units**	**Outcomes**
Fractions	Unit 8—5 weeks	Unit fractions	identify a whole and the parts that make it up
			explain why a part can only be defined when in relation to a whole
			identify the number of equal or unequal parts in a whole
			identify equal parts when they do not look the same
			explain the size of the part in relation to the whole
			construct a whole when given a part and the number of parts
			identify how many equal parts a whole has been divided into
			use fraction notation to describe an equal part of the whole
			represent a unit fractions in different ways
			identify parts and wholes in different contexts (i)
			compare and order unit fractions by looking at the denominator
			identify when unit fractions cannot be compared
			construct a whole when given one part and the fraction that it represents
			use knowledge of the relationship between parts and wholes in unit fractions to solve problems
			identify the whole, the number of equal parts and the size of each part as a unit fraction
			quantify the number of items in each part and connect to the unit fraction operator
			calculate the value of a part by connecting knowledge of division and division facts with finding a fraction of a quantity
			find fractions of quantities using knowledge of division facts with increasing fluency
Fractions	Unit 9—4 weeks	Non-unit fractions	explain that non-unit fractions are composed of more than one unit fraction
			identify non-unit fractions
			identify the number of equal or unequal parts in a whole
			use knowledge of non-unit fractions to solve problems
			use knowledge of unit fractions to find one whole
			place fractions between 0 and 1 on a numberline
			use repeated addition of a unit fraction to form a non-unit fraction and to form 1
			compare using knowledge of non-unit fractions equivalent to one
			compare non-unit fractions with the same denominator
			compare unit fractions and fractions with the same numerator
			add up and add on fractions with the same denominator
			add and subtract fractions with the same denominator using a generalised rule
			identify the whole, the number of equal parts and the size of each part as a unit fraction
			explain that addition and subtraction of fractions are inverse operations
			subtract fractions from a whole by converting the whole to a fraction
			a whole as a fraction in different ways and use this to solve problems involving subtraction

	Dura-tion	Units	
Geometry	Unit 10—2 weeks	Parallel and perpendicular sides in polygons	make compound shapes by joining two polygons in different ways (same parts, different whole) investigate different ways of composing and decomposing a polygon (same whole, different parts) draw polygons on isometric paper use geostrips to investigate quadrilaterals with and without parallel and perpendicular sides make and draw compound shapes with and without parallel and perpendicular sides learn to extend lines and sides to identify parallel and perpendicular lines make and draw triangles on circular geoboards make and draw quadrilaterals on circular geoboards draw shapes with given properties on a range of geometric grids
Measure	Unit 11—1 week	Time	tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight know the number of seconds in a minute and the number of days in each month, year and leap year compare durations of events [for example to calculate the time taken by particular events or tasks]. use both analogue and digital 12-hour clocks and record their times

Year 3 Overview—skills progression and coverage

Number and Place Value

count from 0 in multiples of 4, 8, 50 and 100;

find 10 or 100 more or less than a given number

compare and order numbers up to 1000

identify, represent and estimate numbers using different representations

read and write numbers up to 1000 in numerals and in words

recognise the place value of each digit in a three-digit number (hundreds, tens, ones)

solve number problems and practical problems involving these ideas.

Addition and Subtraction

add and subtract numbers mentally, including: a three-digit number and ones ; a three-digit number and tens; a three-digit number and hundreds

add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction

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

Multiplication and Division

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

estimate the answer to a calculation and use inverse operations to check answers

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

Fractions (including decimals and percentages)

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

Year 3 Overview—skills progression and coverage

Measurement

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

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

know the number of seconds in a minute and the number of days in each month, year and leap year

Geometry—properties of shapes

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

Statistics

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.

Algebra

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 — DENTON CP SCHOOL MATHS MAP — Autumn

	Duration	Units	Outcomes
Addition and Subtraction	3 weeks	Review of column addition and subtraction	identify the addends and the sum in column addition use their knowledge of place value to correctly lay out column addition 4add using column addition use their knowledge of column addition to solve problems add a pair of 2-digit numbers using column addition with regrouping in the ones and/or tens column add using column addition with regrouping use known facts and strategies to accurately and efficiently calculate and check column addition identify the minuend and the subtrahend in column subtraction subtract using column subtraction subtract from a 2-digit number using column subtraction with exchanging from tens to ones/hundreds to tens evaluate the efficiency of strategies for subtraction
Number and place value **Number facts**	5 weeks	Numbers to 10,000	explain how many tens, hundreds and ones 1,000 is composed of use knowledge of 1,000 to explain common measure conversions use knowledge of 1,000 to solve problems use different strategies to add and subtract multiples of 100 use knowledge of calculation and common measure conversions to solve problems compose and decompose four-digit numbers in different ways use strategies to make solving calculations more efficient compare and order four-digit numbers calculate efficiently by using knowledge of place value, addition and subtraction explain what rounding is round a four-digit number to the nearest thousand, hundred and ten add up to 3 four-digit numbers using a column addition subtract four-digit numbers using a column subtraction use strategies to make solving calculations more efficient explain how many '100s' and '200s', 1,000 is composed of explain how many '500s' and '250s', 1,000 is composed of

	Dura-tion	Units	Outcomes
Geometry	2 weeks	Perimeter	explain that a regular polygon has sides that are all the same length and interior angles that are all equal in size
			explain that perimeter is the distance around the edge of a two-dimensional shape
			recognise that different shapes can have the same perimeter
			measure perimeter in units of length and by counting units
			calculate the perimeter by adding together the side lengths of a 2D shape
			calculate the perimeter of a rectangle using addition and multiplication
			calculate unknown side lengths from the perimeter and known side lengths
			calculate the perimeter of a regular polygon using multiplication
			calculate the side length of a regular polygon using division where the perimeter is known
Number facts	3 weeks	3, 6, 9 times tables (continues into Spring term)	represent counting in threes as the three times table
			explain the relationship between adjacent multiples of three
			use knowledge of the three times table to solve problems
			represent counting in sixes as the six times table
			explain the relationship between adjacent multiples of six
			use knowledge of the six times table to solve problems
			use known facts from the five times table to solve problems involving the six times table
			explain the relationship between multiples of three and multiples of six
			use knowledge of the relationships between the three and six times tables to solve problems
			represent counting in nines as the nine times table
			explain the relationship between adjacent multiples of nine
			use known facts from the ten times table to solve problems involving the nine times table
			explain the relationship between multiples of three and multiples of nine
			explain the relationship between pairs of three and nine times table facts that have the same product

DENTON CP SCHOOL MATHS MAP

Year 4 **Spring**

	Dura-tion	Units	Outcomes
Number facts	1 week	3, 6, 9 times tables (continued)	use the divisibility rules for divisors of three use the divisibility rules for divisors of six
Number facts	2 weeks	7 times tables and patterns	represent counting in sevens as the 7 times table explain the relationship between adjacent multiples of seven use their knowledge of the 7 times table to solve problems identify patterns of odd and even numbers in the times tables represent a square number use knowledge of divisibility rules to solve problems
Multipli-cation and Division **Number facts**	5 weeks	Understanding and manipu-lating multiplicative relation-ships	explain what each factor represents in a multiplication equation explain how each part of a multiplication and division equation relates to a story explain where zero can be part of a multiplication or division expression and the impact it has partition one of the factors in a multiplication equation in different ways using representations explain which is the most efficient factor to partition to solve a multiplication problem use knowledge of distributive law to solve two part addition and subtraction problems, efficiently use knowledge of distributive law to calculate products beyond known times tables facts explain the relationship between multiplying a number by 10 and multiples of 10 explain why a zero can be placed after the final digit of a single-digit number /two-digit number when we multiply it by 10 explain why the final digit zero can be removed from a two-digit multiple of 10,/three-digit multiple of 10 when we divide by 10 explain the relationship between multiplying a number by 100 and multiples of 100 explain why two zeros can be placed after the final digit of a single-digit /two-digit number when we multiply it by 100 explain why the last two zeros can be removed from a three-digit multiple of 100 /four-digit multiple of 100 when we divide it by 100 use knowledge of the composition of 100 to multiply and divide by 100 in different ways explain how making a factor 10 times/100 times the size affects the product explain how making the dividend 10 /100 times the size affects the quotient scale known multiplication facts by 100 scale division derived from multiplication facts by 100
Geometry	2 weeks	Coordinates	give directions from one position to another on a grid move objects including polygons on a grid according to directions, and mark the new position describe translations of polygons drawn on a square grid draw polygons specified by translations mark points specified as a translation from the origin mark the position of points specified by coordinates in the first quadrant of a coordinate grid, and write coordinates for already-marked points draw polygons specified by coordinates in the first quadrant translate polygons in the first quadrant

	Dura-tion	Units	Outcomes
Fractions	1 week	Review of fractions	identify a whole and the parts that make it up
			explain why a part can only be defined when in relation to a whole
			identify the number of equal or unequal parts in a whole
			identify equal parts when they do not look the same
			explain the size of the part in relation to the whole
			construct a whole when given a part and the number of parts
Fractions	5 weeks	Fractions greater than 1	explain how to express quantities made up of both whole numbers and a fractional part
			explain how a quantity made up of whole numbers and a fractional part is composed
			compose and decompose quantities made of whole numbers and fractional parts
			accurately label a range of number lines and explain the meaning of each part
			identify numbers on marked but unlabelled number lines
			estimate the position of numbers on a number line using fraction sense
			compare and order mixed numbers using fraction sense
			compare and order mixed numbers when the whole number is the same
			compare and order mixed numbers when the whole number and the numerator of the fractional part is the same
			make efficient choices about the order they solve an addition or subtraction problem in
			express a quantity as a mixed number and an improper fraction (quarters)
			convert a quantity from an improper fraction to a mixed number (quarters)
			express and convert a quantity from an improper fraction to a mixed number (fifths)
			explain how an improper fraction is converted into a mixed number (any unit)
			explain how a mixed number is converted into an improper fraction
			add mixed numbers
			subtract a proper fraction from a mixed number (converting to an improper fraction first)
			subtract a mixed number from a mixed number and explain which strategy is most efficient
			use knowledge of subtraction to choose correct and efficient approaches when subtracting mixed numbers

DENTON CP SCHOOL MATHS MAP

	Dura-tion	Units	Outcomes
Geometry	2 weeks	Symmetry in 2D shapes	complete a symmetrical pattern compose symmetrical shapes from two congruent shapes investigate lines of symmetry in 2D shapes by folding paper shape cut-outs find lines of symmetry in 2D shapes using a mirror reflect polygons in a line of symmetry reflect polygons that are dissected by a line of symmetry
Measure	1 week	Time	read, write and convert time between analogue and digital 12- and 24-hour clocks solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.
Number facts	2 weeks	Division with remainders	interpret a division story when there is a remainder and represent it with an equation explain how the remainder relates to the divisor in a division equation explain when there will and will not be a remainder in a division equation use knowledge of division equations and remainders to solve problems interpret the answer to a division calculation to solve a problem

Year 4 Overview—skills progression and coverage

Number and Place Value

count backwards through zero to include negative numbers

count in multiples of 6, 7, 9, 25 and 1000

find 1000 more or less than a given number

order and compare numbers beyond 1000

identify, represent and estimate numbers using different representations

read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value

recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)

round any number to the nearest 10, 100 or 1 000

solve number and practical problems that involve all of the above and with increasingly large positive numbers

Fractions (including decimals and percentages)

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.

Addition and Subtraction

add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate

estimate and use inverse operations to check answers to a calculation

solve addition and subtraction two-step problems in contexts, deciding which operations and meth-

Multiplication and Division

recall multiplication and division facts for multiplication tables up to 12 × 12

use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers

recognise and use factor pairs and commutativity in mental calculations

multiply two-digit and three-digit numbers by a one-digit number using formal written layout

estimate and use inverse operations to check answers to a calculation

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

Year 4 Overview—skills progression and coverage

Measurement

estimate, compare and calculate different measures, including money in pounds and pence

measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres

find the area of rectilinear shapes by counting squares

read, write and convert time between analogue and digital 12 and 24-hour clocks

solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days

convert between different units of measure (e.g. kilometre to metre; hour to minute)

Algebra

Perimeter can be expressed algebraically as 2(a + b) where a and b are the dimensions in the same unit. (Copied from NSG measurement)

Geometry—properties of shapes

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

Geometry—position and direction

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

Statistics

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.

	Dura-tion	Units	Outcomes
Number and place value **Number facts** **Measure**	Unit 1—5 weeks	Decimal fractions	identify tenths as part of a whole describe and represent tenths as a decimal fraction count in tenths in different ways describe and write decimal numbers with tenths in different ways compare and order decimal numbers with tenths explain that decimal numbers with tenths can be composed additively and multiplicatively use their knowledge to calculate with decimal numbers within and across one whole use their knowledge to calculate with decimal numbers using mental methods use their knowledge to calculate with decimal numbers using column addition and subtraction use representations to round a decimal number with tenths to the nearest whole number identify hundredths as part of a whole describe and represent hundredths as a decimal fraction describe and write decimals numbers with hundredths in different ways compare and order decimal numbers with hundredths explain that decimal numbers with hundredths can be partitioned in different ways use their knowledge of decimal place value to convert between and compare metres and centimetres explain that different lengths can be composed additively and multiplicatively use their knowledge of decimal place value to solve problems in different contexts use their knowledge to calculate with decimal numbers up to and bridging one tenth round a decimal number with hundredths to the nearest tenth round a decimal number with hundredths to the nearest whole number read and write numbers with up to 3 decimal places compare and order numbers with up to 3 decimal places
Number and place value	Unit 2—2 weeks	Money	explain and represent whole pounds and pence as a quantity of money explain how to compare amounts of money convert quantities of money between pounds and pence use their knowledge of addition to efficiently add commonly used prices use their knowledge of subtraction to calculate the change due when paying whole pounds or notes use and explain the most efficient strategies when adding and subtracting quantities of money find the change when purchasing several items use the most efficient and reliable strategy to find the change when purchasing several items

	Dura-tion	Units	Outcomes
Number and place value **Measure** **Statistics**	Unit 3—2 weeks	Negative numbers	represent a change story using addition and subtraction symbols interpret numbers greater than and less than zero in different contexts read and write negative numbers explain how the value of a number relates to its position from zero identify and place negative numbers on a number line interpret sets of negative and positive numbers in a range of contexts use their knowledge of positive and negative numbers to calculate intervals explain how negative numbers are used on a coordinate grid use their knowledge of positive and negative numbers to interpret graphs
Number facts **Multipli-cation and Division**	Unit 4—6 weeks	Short multiplication and short division	multiply a two-digit number by a single-digit number using partitioning and representations (no regroups/one regroup/two regroups) multiply a two-digit number by a single-digit number using partitioning multiply a two-digit number by a single-digit number using expanded multiplication (no regroups)/regrouping ones to tens/ regrouping tens to hundreds/two regroups multiply a two-digit number by a single-digit number using short multiplication (no regroups/regrouping ones to tens/regrouping tens to hundreds) multiply a three-digit number by a single-digit number using partitioning and representations multiply a three-digit number by a single-digit number using expanded and short multiplication (no regroups/ one regroup/ multiple regroups) use estimation to support accurate calculation divide a two-digit number by a single-digit number using partitioning and representations (no remainders, no exchanging/with exchanging/ with exchanging and remainders) divide a two-digit number by a single-digit number using short division (no exchanging, no remainders)/ with exchanging/with exchanging and remainders) divide a three-digit number by a single-digit number using partitioning and representations (no exchanging, no remainders/ one exchange, no remainders/ with exchanging and remainders) divide a three-digit number by a single-digit number using short division inc. with exchanging and remainders solve short division problems accurately when the hundreds digit is smaller than the divisor will use efficient strategies of division to solve problems

	Duration	Units	Outcomes
Geometry	Unit 5—5 weeks	Area and scaling	explain what area is and can measure using counting as a strategy explain how to make different shapes with the same area explain how to compare the area of different shapes measure the area of flat shapes area using square centimetres and square metres calculate the area of a rectangle using multiplication calculate the area of rectilinear shapes use their knowledge of area to solve problems compare and describe lengths by using their knowledge of multiplication and division use their knowledge of multiplication and division to solve comparison and change problems compare and describe measurements by using their knowledge of multiplication and division (mass/capacity/time) describe the changes in measurements using their knowledge of multiplication and division
Multiplication and Division	Unit 6—3 weeks	Calculating with decimal fractions	explain the effect of multiplying and dividing a number by 10, 100 and 1,000 explain how to multiply and divide a number by 10, 100 and 1,000 (first 'number' two or more non-zero digits) use their knowledge of multiplication and division by 10/100/1,000 to convert between units of measure (length, mass and capacity) explain how to use known multiplication facts and unitising to multiply decimal fractions by whole numbers (tenths/hundredths) use their knowledge of multiplying decimal fractions by whole numbers to solve measures problems explain the relationship between multiplying by 0.1 dividing by 10 explain the relationship between multiplying by 0.01 dividing by 100 explain how to use multiplying by 10 or 100 to multiply one-digit numbers by decimal fractions explain how to use the size of the multiplier to predict the size of the product compared to the multiplicand explain how to use multiplying by 10 or 100 to divide decimal fractions by one-digit numbers
Multiplication and Division **Measure**	Unit 7—4 weeks	Factors, multiples and primes	explain what 'volume' is using a range of contexts describe the units used to measure volume explain how to calculate the volume of a cuboid explain what a cube number is use their knowledge of calculating volume to solve problems in a range of contexts how to calculate the volume of compound shapes explain the use of the commutative and distributive laws when multiplying three or more numbers explain the reasons for changing two-factor multiplication calculations to three-factor multiplications explain what a factor is and how to use arrays and multiplication/division facts to find them explain how to systematically find all factors of a number and how they know when they have found them all use a complete list of factors to explain when a number is a square number explain how to identify a prime number or a composite number explain how to identify a common factor or a prime factor of a number explain how to identify a multiple or common multiple of a number use knowledge of properties of number to solve problems in a range of contexts explain how to use the factor pairs of '100' to solve calculations efficiently

	Dura-tion	Units	Outcomes
Number and place value **Fractions**	Unit 8—7 weeks	Fractions	explain the relationship between repeated addition of a proper fraction and multiplication of fractions (unit fractions/non-unit fractions) multiply a proper fraction by a whole number (within a whole/greater than a whole) multiply an improper fraction by a whole number multiply a mixed number by a whole number (product is within a whole/greater than a whole) find a unit fraction of a quantity explain the relationship between finding a fraction of a quantity and multiplying a whole number by a unit fraction explain the relationship between dividing by a whole number and multiplying a whole number by a unit fraction use their knowledge of multiplying a whole number by a unit fraction to solve problems find a non-unit fraction of a quantity (mental calculation/written calculation) multiply a whole number by a proper fraction explain when a calculation represents scaling down and when it represents repeated addition find the whole when the size of a unit fraction is known find a unit fraction when the size of a non-unit fraction is known use representations to describe and compare two fractions (1/4 and 3/12; 1/5 and 5/10; pouring context)) correctly use the language of equivalent fractions explain the vertical relationship between numerators and denominators within equivalent fractions (1/5, 1/3 and equivalent) use their knowledge of the vertical relationship to solve equivalent fractions problems explain the horizontal relationship between numerators and denominators across equivalent fractions (1/5, 1/3 and equivalent) explain the relationship within families of equivalent fractions use their knowledge of equivalent fractions to solve problems explain and represent how to divide 1 into different amounts of equal parts identify and describe patterns within the number system use their knowledge of common equivalents to compare fractions with decimals practise recalling common fraction-decimal equivalents
Number and place value **Measure**	Unit 9—2 weeks	Converting units	apply memorised unit conversions to convert between units of measure (larger to smaller units and vice versa- whole number conversions) convert from and to fraction and decimal fraction quantities of larger units derive common conversions over 1 carry out conversions that correspond to 100 parts solve measures problems involving different units understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints convert between miles and kilometres solve problems involving converting between units of time
Geometry	Unit 10—3 weeks	Angles	compare the size of angles where there is a clear visual difference use the terms acute, obtuse and reflex when describing the size of angles or amount of rotation with relation to right angles use a unit called degrees (°) as a standard unit to measure angles estimate the size of angles in degrees using angle sets measure the size of angles accurately using a protractor

Year 5 Overview—skills progression and coverage

Number and Place Value

interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero

count forwards or backwards in steps of powers of 10 for any given number up to 1000 000

read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit

read Roman numerals to 1000 (M) and recognise years written in Roman numerals

round any number up to 1 000 000 to the nearest 10, 100, 1 000, 10 000 and 100 000

solve number problems and practical problems that involve all of the above

Addition and Subtraction

add and subtract numbers mentally with increasingly large numbers

add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)

use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy

solve addition and subtraction multi-step problems in contexts, deciding which operations and meth-

Multiplication and Division

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

Fractions (including decimals and percentages)

recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents

compare and order fractions whose denominators are all multiples of the same number

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 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 = 11/5)

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.

Year 5 Overview—skills progression and coverage

Measurement

calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes (also included in measuring)

estimate volume (e.g. using 1 cm3 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 (cm2) and square metres (m2) and estimate the area of irregular shapes

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

Geometry—properties of shapes

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 360o)

angles at a point on a straight line and ½ a turn (total 180o)

other multiples of 90o

Geometry—position and direction

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

Algebra

use the properties of rectangles to deduce related facts and find missing lengths and angles (copied from Geometry: Properties of Shapes)

Statistics

complete, read and interpret information in tables, including timetables

solve comparison, sum and difference problems using information presented in a line graph

	Dura-tion	Units	Outcomes
Addition and Sub-traction Multiplica-tion and Di-vision	Unit 1—6 weeks	Calculating and using knowledge of structures (1)	explain how a combination of different parts can be equivalent to the same whole and can represent this in an expression
			identify structures within stories and use their knowledge of structures to create stories
			identify the missing part using their knowledge of part whole relationships and structures
			interpret and represent a part-whole problem with 3 addends using a model
			create stories to correctly match a structure presented in a model
			use their knowledge of additive structures to solve problems
			calculate the value of a missing part
			correctly represent an equation in a part-whole model
			explain how adjusting both addends affects the sum (2 digit numbers; decimal fractions)
			use the 'same sum' rule to balance equations including with an unknown
			explain how adjusting one addend affects the sum
			solve addition calculations mentally by using known facts
			solve calculations with missing addends
			explain how adjusting both the minuend and subtrahend by the same amount affects the difference
			explain how using the 'same difference' rule can make mental calculation easier
			use the 'same difference' rule to balance equations
			explain how increasing or decreasing the minuend affects the difference
			solve subtraction calculations mentally by using known facts
			explain how adjusting the minuend can make mental calculation easier
			explain how adjusting the subtrahend affects the difference
			explain how increasing or decreasing the subtrahend affects the difference
			calculate the difference using their knowledge of an adjusted subtrahend
Number and place value	Unit 2—2 weeks	Multiples of 1000	explain how ten thousand can be composed
			explain how one hundred thousand can be composed
			read and write numbers up to one million
			identify and place the position of five-digit multiple of one thousand numbers, on a marked, but unlabelled number line
			identify and place the position of six-digit multiple of one thousand numbers, on a marked, but unlabelled number line
			count forwards and backwards in steps of powers of 10, from any multiple of 1,000
			explain that 10,000 is composed of 5,000s 2,500s and 2,000s
			explain that 100,000 is composed of 50,000s 25,000s and 20,000s
			read scales in graphing and measures contexts, by using their knowledge of the composition of 10,000 and 100,000

	Dura-tion	Units	Outcomes
Number and place value	Unit 3—4 weeks	Numbers up to 10 000 000	use representations to identify and explain patterns in powers of 10 compose seven or eight-digit numbers using common intervals use their knowledge of the composition of up to eight-digit numbers to solve problems explain how to read numbers with up to seven digits efficiently recognise and create numbers that contain place-holding zeroes determine the value of digits in numbers up to tens of millions explain how to compare up to eight-digit numbers use their knowledge of the composition of seven-digit numbers to solve problems add and subtract mentally without bridging a boundary (only one and more than one digit changes) add numbers whilst crossing the millions boundary subtract numbers whilst crossing the millions boundary (multiples of 100,000 and different powers of 10) explain how a seven-digit number can be composed and decomposed into parts identify and explain a pattern in a counting sequence identify numbers with up to seven digits on marked number lines estimate the value and position of numbers on unmarked or partially marked number lines explain why we round and how to round seven-digit numbers to the nearest million explain how to round seven-digit numbers to the nearest hundred thousand explain how to round up to seven-digit numbers to any power of 10 in context identify and explain the most efficient way to solve a calculation add and subtract numbers with up to seven digits using column addition and subtraction explore and explain different written and mental strategies to solving addition and subtraction problems solve addition and subtraction problems and explain whether a mental or written strategy would be most efficient
Geometry	Unit 4—2 weeks	Draw, compose and decompose shapes	use knowledge of shape properties to draw, sketch and identify shapes explain that the same 3D shape can be composed from different 2D nets explain that when a 2D shape is decomposed and the parts rearranged, the area remains the same. The area of a compound shape is therefore equal to the total of the areas of the constituent parts explain that parallelogram can be decomposed and the parts rearranged to form a rectangular parallelogram explain that congruent triangles can be composed to form a parallelogram explore shapes with the same area but different perimeters and shapes with the same perimeters but different areas use the relationship between area and side length, and perimeter and side length, to reason about measurements of shapes, including com-pound shapes

	Dura-tion	Units	Outcomes
Addition and sub-traction **Multipli-cation and Division**	Unit 5—4 weeks	Multiplication and Division	explain why the product stays the same when one factor is doubled and the other is halved
			explain the effect on the product when scaling the factors by the same amount
			use their knowledge of equivalence when scaling factors to solve problems
			explain the effect on the quotient when scaling the dividend and divisor by 10; by the same amount
			explain how to multiply a three-digit by a two-digit number
			7explain how to accurately use the method of long multiplication to multiply two, two-digit numbers (no regrouping of ones to tens; with re-grouping of ones to tens; with regrouping of ones to tens & tens to hundreds)
			explain how to accurately use the method of long multiplication to multiply a three-digit by a two-digit number; four-digit by a two-digit number
			explain how to use the associative law to multiply efficiently
			explain when it is more efficient to use long multiplication or factorising to multiply by two-digit numbers
			explain how to use accurately the methods of short and long division (two and three-digit number by multiples of 10)
			explain how to use accurately the method of long division with and without remainders (two-digit by two-digit numbers)
			use knowledge of long division to solve problems in a range of contexts (with and without remainders)
			explain how to use a ratio chart to solve efficiently: short division; long division
			explain how to use accurately the method of long division with and without remainders (three-digit by two-digit, four-digit by two-digit num-bers)
			use long division with decimal remainders (1 decimal place); fraction remainders; decimal remainders (2 decimal places)
			use knowledge of the best way to interpret and represent remainders from a range of division contexts
			explain how and why a product changes when a factor changes multiplicatively
			use their knowledge of multiplicative change to solve problems efficiently (multiplication)
			explain how and why a quotient changes when a dividend changes multiplicatively (increase or decrease)
			explain how and why a quotient changes when a divisor changes multiplicatively
			identify and explain the relationship between divisors and quotients
Geometry	Unit 6—2 weeks	Area, perimeter, position and direction	explain how to calculate the area of a parallelogram
			explain how to calculate the area of a triangle
			explain why shapes can have the same perimeters but different areas
			explain why shapes can have the same areas but different perimeters
			describe the relationship between scale factors and side lengths of two shapes
			describe the relationship between scale factors and perimeters of two shapes
			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

	Dura-tion	Units	Outcomes
Fractions	Unit 7—6 weeks	Fractions and percentages	explain how to write a fraction in its simplest form
			reason and apply their knowledge of how to write a fraction in its simplest form
			use their knowledge of how to write a fraction in its simplest form when solving addition and subtraction problems
			use their knowledge of how to write a fraction in its simplest form when solving multiplication problems
			explain, using an image, how to add related fractions (unit fractions)
			explain what is meant by 'related fractions'
			explain, without using an image, how to add related fractions
			use their knowledge of adding related fractions to solve problems in a range of contexts
			explain, with and without using an image, how to subtract related fractions (unit fractions)
			use their knowledge of adding and subtracting related fractions to solve problems in a range of contexts
			explain, with and without using an image, how to add and subtract related fractions (non-unit fractions; non-unit fractions that bridge the whole)
			use their fraction sense to fraction addition, subtraction and comparison
			explain how to add or subtract non-related fractions with different denominators
			their knowledge of adding or subtracting non-related fractions with different denominators to solve problems in a range of contexts (non related fractions)
			explain how to compare pairs of non-related fractions (converting to common denominators; using fraction sense; using common numerators)
			explain which method for comparing non-related fractions is most efficient
			explain how to multiply two unit fractions
			explain how to multiply two non-unit fractions
			explain how to divide a unit fraction by a whole number
			explain how to divide a non-unit fraction by a whole number
			explain when and how to divide efficiently a fraction by a whole number
			explain what percent means
			explain how to represent a percentage in different ways
			how to convert percentages to decimals and fractions (with a denominator of 100)
			explain how to convert a percentage to a fraction (without denominator of 100)
			use their knowledge of fraction-decimal-percentage conversions to solve conversion problems in a range of contexts
			use their knowledge of calculating 50%, 10% and 1% of a number to solve problems in a range of contexts
			use their knowledge of calculating percentage of a number to solve problems in a range of contexts
			explain how to solve problems where the percentage part and the size of the part is known and the whole is unknown
			explain how to solve problems where the known percentage part and the size of the part changes the whole

	Dura-tion	Units	Outcomes
Statistics	Unit 8—1 week	Statistics	interpret and construct pie charts and line graphs and use these to solve problems
			calculate and interpret the mean as an average.
			connect their work on angles, fractions and percentages to the interpretation of pie charts
			encounter and draw graphs relating two variables
			know when it is appropriate to find the mean of a data set
Addition and subtraction	Unit 9—2 weeks	Ratio and proportion	describe the relationship between two factors (in a ratio context)
			explain how to use multiplication and division to calculate unknown values (two variables; three variables)
			explain how to use a ratio grid to calculate unknown values
Multiplication and Division			explain how to use multiplication to solve correspondence problems
			explain how and why scaling is used to make and interpret maps
			will use their knowledge of multiplication and division to solve scaling problems in a range of contexts
			identify and describe the relationship between two shapes using scale factors and ratios (squares, regular polygons, irregular polygons)
Addition and subtraction	Unit 10—1 week	Calculating and using knowledge of structures (2)	explain how to balance equations with addition expressions
			explain how to balance equations with subtraction expressions
			explain how to balance equations with addition or subtraction expressions
Multiplication and Division			explain how to balance equations with addition and subtraction expressions
			use their knowledge of balancing equations to solve problems
	8 weeks	KS2 SATS test revision/ preparation	

	Dura-tion	Units	Outcomes
Addition and subtraction **Multiplication and Division**	Unit 11—2 weeks	Solving problems with two un-knowns	compare the structure of problems with one or two unknowns
			represent the structure of contextual problems with two unknowns
			represent a problem with two unknowns using a bar model
			explain why sometimes there is only one solution to a sum and difference problem; sum and multiple problem
			explain the values a part-whole model could represent
			use a bar model to visualise how to solve a problem with two unknowns
			use diagrams to explain how to solve a spatial problem
			explain how to represent an equation with a bar model
			solve problems with two unknowns in a range of contexts
			systematically solve problems with two unknowns using 'trial and improvement' (one and several solutions)
			explain how I know I have found all possible solutions to problems with two unknowns
			explain how to balance an equation with two unknowns
			systematically solve problems with two unknowns using 'trial and improvement' (one, several and infinite solutions)
	Unit 12—1 week	Order of operation	explain how addition and subtraction can help to solve multiplication problems efficiently (
			explain how the distributive law applies to multiplication expressions with a common factor (addition)
			use their knowledge of the distributive law to solve equations including multiplication, addition and subtraction
			explain how addition and subtraction can help to solve division problems efficiently
			explain how the distributive law applies to division expressions with a common divisor (addition)
			explain how the distributive law applies to division expressions with a common divisor (subtraction)
			use their knowledge of the distributive law to solve equations including division, addition and subtraction
Statistics	Unit 13—1 week	Mean average	explain the relationship between the mean and sharing equally
			explain how to calculate the mean of a set of data
			explain how the mean changes when the total quantity or number of values changes
			explain how to calculate the mean when one of the values in the data set is zero or missing
			explain how to use the mean to make comparisons between two sets of information
			explain when the mean is not an appropriate representation of a set of data

Year 6 Overview—skills progression and coverage

Number and Place Value

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

round any whole number to a required degree of accuracy

Addition and Subtraction

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

Multiplication and Division

perform mental calculations, including with mixed operations and large numbers

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

identify common factors, common multiples and prime numbers

use their knowledge of the order of operations to carry out calculations involving the four operations

use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy

solve problems involving addition, subtraction, multiplication and division

Fractions (including decimals and percentages)

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 × 1/2 = 1/8)

multiply one-digit numbers with up to two decimal places by whole numbers

divide proper fractions by whole numbers (e.g. 1/3 ÷ 2 = 1/6)

multiply one-digit numbers with up to two decimal places by whole numbers

multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places

identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places

associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3/8)

use written division methods in cases where the answer has up to two decimal places

Ratio and Proportion

solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts

solve problems involving the calculation of percentages [for example,   of measures, and such as 15% of 360] and the use of percentages for comparison

solve problems involving similar shapes where the scale factor is known or can be found

solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

Year 6 Overview—skills progression and coverage

Measurement

calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm3) and cubic metres (m3), and extending to other units such as mm3 and km3.

solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate

recognise that shapes with the same areas can have different perimeters and vice versa

calculate the area of parallelograms and triangles

calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3), and extending to other units [e.g. mm3 and km3].

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

convert between miles and kilometres

Geometry—properties of shapes

recognise, describe and build simple 3-D shapes, including making nets

illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius

draw 2-D shapes using given dimensions and angles

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

Algebra

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

Geometry—position and direction

describe positions on the full coordinate grid (all four quadrants)

draw and translate simple shapes on the coordinate plane, and reflect them in the axes.

Statistics

interpret and construct pie charts and line graphs and use these to solve problems

calculate and interpret the mean as an average