Cropredy C of E Primary School

Curriculum Handbook
Key Stage 1 and Key Stage 2
Maths

Updated: September 2025

Curriculum Statement

INTENT

Mathematics is important in everyday life and, with this in mind, the purpose of Mathematics at Cropredy C of E Primary School is to develop an ability to solve problems, to reason, to think logically and to work systematically and accurately. All children are challenged and encouraged to excel in Maths. New mathematical concepts are introduced using a 'Concrete, Pictorial and Abstract' approach; enabling all children to experience hands-on learning when discovering new mathematical topics, and allows them to have clear models and images to aid their understanding. Arithmetic and basic maths skills are practised daily to ensure key mathematical concepts are embedded and children can recall this information to see the links between topics in Maths.

IMPLEMENTATION

Maths teaching begins as soon as the children enter school for the day. Firstly, the children will practice a range of fluency questions for 10-15 minutes, working on skills that they have been previously taught throughout the year. During this time, children will also be given the opportunity to closely work with an adult for a session of pre-teaching. These children will be identified from classroom assessment, as well as the teacher's extensive knowledge and relationships with the children within their class. This pre-teaching session aims to recap the previous learning intention, or will provide a head start for less confident mathematicians that may require additional modelling and scaffolding before the new small step is introduced that day.

Children will be sat in mixed ability pairings throughout their Maths lessons for an inclusive environment. This will promote the opportunity for mathematical discussions and give children the chance to explain concepts to other children and therefore, deepen their understanding. At the beginning of the Maths lesson, children are to undertake the 'fluency 5' - five fluency questions which will recap small steps previously taught throughout the year. Similarly, this segment of the learning journey could instead focus on counting out loud, working on key skills such as 'number bonds to 10' through a tens frame or practising times table and division facts.

Each lesson will be based around one of the small steps from the White Rose progression document, which will then be taught for increased depth throughout the lesson. To determine what the children need to know in order to achieve the learning intention, teachers will be encouraged to look at the progression document to assess which small steps the children have already experienced. This will form the basis for the 'Link it' phase of the lesson, where the children will recap prior learning that links to the lesson objective.

Each lesson will then involve the teacher delivering a new skill to all the children The 'Learn it' section of this lesson will involve stem sentences which will be repeated and written or stuck into books, as well as the use of manipulatives which will be in place for all learners where appropriate. This teaching will form guided work with the teacher, with the children demonstrating their understanding within their book in pencil. At this point, teachers will be monitoring and assessing children's understanding of the teaching throughout using techniques such as: live marking, mathematical conversations or white boards. Each guided activity will also involve a 'star challenge' question which children who are finished can complete. These questions will require a deeper level of thinking for the concept being taught.

If the class require more time to practice the learning intention, there is a chance that some children, who the teacher knows has a good understanding of the concept, can go off and complete an investigation related to the teaching.This will challenge confident children to deepen their understanding, as well as provide less confident children the chance to have additional practice of a learning intention.

Before the independent task, the children will be given a chance to deepen their understanding of the learning intention during the 'build on it' segment of the lesson. This will introduce a reasoning or problem solving element for the class that will introduce misconceptions, worded problems using real life contexts or a chance to explain a concept or calculation in more detail.

Once children are finished with the guided segment of the learning journey, there will be an independent task which will be completed in books underneath the headings 'Do it', 'Reason it' and 'Solve it.' Independent tasks will involve a range of areas from fluency, reasoning and problem solving which will have 'real life' connotations. All learners, regardless of their ability will be taught around the problems and have the opportunity to solve them independently. Lessons will have varying levels of challenge which the children can undertake at their own choosing. Throughout the independent work, teachers will be questioning children and where necessary, running mini plenaries for children who are unsure of how to succeed. In particular, children who have misconceptions from the lesson input will be supported by the teacher, using modelling and scaffolding to help them access the independent task.

At the end of the teaching, They will then be introduced to an 'exit task' that links to the learning and provides a final opportunity for children to think about the objective deeply.

IMPACT

At Cropredy, we want to create a community of confident, engaged and enthusiastic mathematicians who can all make progress across the curriculum.
Firstly, from designing a coherent curriculum that is mapped out into smaller, more achievable steps, all learners are challenged and able to make progress, as well as having a deeper, conceptual understanding of Maths. This is supported by high quality whole class teaching, as well as the use of concrete, pictorial and abstract methods consistently throughout the school.

Secondly, with the implementation of constant recall sessions, pre-teaching, regular consolidation and structured and scaffolded whole class teaching, all learners will be challenged and given the opportunity to make progress. This is further underpinned by the use of manipulatives and ethos of mastery, as children will be able to become more independent learners and gain the confidence to have mathematical conversations with their peers.

In addition, with carefully structured lessons, the variation of questioning and opportunity to attempt fluency, reasoning and problem solving tasks, children will become confident, fluent, deep thinking mathematicians.

RECORDING

Across the school, daily recording takes place in pupils' personalised Maths books. Work is set out daily on a new page, under the learning objective for the lesson, along with a margin and short date. High quality presentation is encouraged throughout the school and a consistent approach of one number per box and use of rulers is evident in all books to ensure neat and tidy presentation. Our aim is to ensure presentation does not affect mathematical calculations and allows any 'errors' to be easily identified and edited accordingly. Pupils are encouraged to consciously structure their recordings so it becomes part of the thinking process. Recording carefully what we are finding out helps to reveal underlying patterns or structures, or leads to a further question to possibly explore. By encouraging our children to organise their findings, they become a problem-solving tool in itself. Our pupils take pride in the presentation of their work; our high standards allow children to use their books for reference when returning to mathematical concepts, for example, during 'fluency 5' a child might look back in their books to refresh prior learning of roman numerals to aid them in a current challenge.

When pupils are recording in their Maths books, showing all mathematical thinking is encouraged. A wide variety of recording from concrete to abstract will be evident in books including photographs, pictorial models, representations, jottings and in-depth problem solving and justified reasoning in writing. We believe that recording pictorial representations, alongside abstract ones, ensures that those pupils who find recording difficult can still prove their mathematical understanding and provides an opportunity to practise the elements of recording the pupil is finding hard.
Each class has a Maths working wall and Maths help desk to support children on a daily basis. Through models on working walls and providing recording scaffolds, pupils can be shown how the recording might look. Where these are used most effectively, pupils will use them repeatedly from many different starting points and will start to develop their own links too. Having used the same recording frame many times, starting at different points, pupils have the opportunity to reinforce understanding, make new links and develop independence.

- Encourage pupils to record alongside concrete models
- Encourage pupils to record pictorially and abstractly together
- Develop depth of understanding through encouraging multiple representations
- Provide pupils with opportunities to complete representations to show understanding
- Encourage pupils to prove how they know
- Support pupils to develop independence in recording
- Use questions with limited recording to uncover understanding that is not yet secure
- Use recording to challenge
- Support pupils to know how the recording could look through modelling and then present on working wall
- Give pupils the mathematical vocabulary
- Give pupils the language to communicate mathematically

Pupils need to be supported to talk mathematically before they will be able to record in this way and we know that the quality of this talk is crucial. This is one of the reasons that Stem sentences and scaffolded sentences are so integral to the new ESSENTIAL maths resources. The talk has value in itself and so will not always be recorded, but the same speaking frames used to support the talk, can be used as writing frames where appropriate. In addition, talk can be captured where this is purposeful. In EYFS/KS1, we achieve this by using post-it-notes or stickers written on and stuck into books or by recording directly into the book.

Curriculum Statement

ASSESSMENT

At Cropredy, we use PiXL as our end of term, summative assessments. These are from Year 1-6 and cover the main strands of the mathematics curriculum with a focus on arithmetic, reasoning and problem solving. This gives us a snapshot of children's attainment and the areas that need to be addressed further.

Our formative assessment is carried out by marking against the learning objective for each maths lesson. This is done by giving one tick for each learning objective if they have reached it and two ticks if they have secure knowledge. We use an assessment for learning (AfL) focus as the teacher will decide how their class has grasped the concept to know how and when to move the learning on and if some children need a further intervention separate from the maths lesson. The AfL focus will also form the basis for pre-teaching and consolidation opportunities in preparation for the next small step the children will undertake.

INCLUSION

Inclusion is such an important aspect of our Maths curriculum and can be seen in a multitude of ways. Primarily, whole class teaching drives the message that children of all ability levels will be able to achieve in Maths. To accomplish this, class teachers carefully select models, images and manipulatives that assist the children's understanding and visualisation of a mathematical concept. These are used by all children, promoting a positive ethos in the classroom.
Furthermore, in the classroom, the children are organised in mixed attainment seating - focusing on personalities and the dynamics of a class, rather than being organised solely on their confidence in mathematics. This promotes independence and increases the chance for meaningful, mathematical conversations that encourage the children to help and learn from each other. For those children who are lacking in confidence, they can seek assistance from their peers, whereas those with a greater understanding of a concept are challenged by helping the others around them, enhancing their reasoning skills.

However, when the children find a specific learning objective challenging, teachers will use their knowledge of formal assessment to implement 'fluid groupings.' These groups will be formed during lessons to provide additional scaffolding for those requiring additional support. Fluid groupings can also be used during pre-teaching sessions. These sessions are undertaken before class input, providing opportunities for teachers to prepare children for an upcoming lesson or for consolidation.
To further support SEN children and challenge all learners, the design of a lesson is pivotal to make sure every child is able to achieve. Firstly, from organising the curriculum into smaller, more manageable objectives, the children are able to retain more information due to the reduction of cognitive load, as well as helping less confident learners to progress through a lesson at a pace that is more suitable for their individual needs. It is within this lesson that teachers will also deepen and stretch more confident children's conceptual understanding with their use of questioning, task design, variance and a more explicit exploration of reasoning, problem solving and investigative, open ended challenges.

Secondly, task design is also a key aspect of our curriculum that aims to stretch and challenge all learners. It is our goal as a school to make sure that all children are exposed to fluency, reasoning and problem solving questions and that all children can achieve. Our independent tasks are given to all children but progressively become more challenging due to the variance of questioning. Therefore, children are given the chance to experience fluency, reasoning and problem solving tasks, with teachers and teaching assistants providing scaffolding and support for less confident learners.

CULTURAL CAPITAL

Cultural Capital is the essential knowledge that children need to prepare them for their future successes in the world of work, in relationships forged throughout life and as a valued contributor to society. Through our curriculum, it is our firm belief that all children are given the chance to understand the importance and relevance of mathematics - learning essential mathematical knowledge and skills that will prepare them for their lives outside of the classroom. Therefore, the children at Cropredy are exposed to a range of mathematical concepts that link to the wider curriculum. Geography and science provide children with the opportunity to use statistical data and to present their findings using a variety of graphs such as bar graphs, line graphs, pictograms and pie charts. In art, the children use their knowledge of shape, symmetry and angles to produce sketches and individual pieces of artwork, while elements of problem solving, the number system and logic can be utilised in computing.

From EYFS to year 6, it is clear that many children arrive at school with different and sometimes more limited experiences than others. Therefore, by breaking down the curriculum into more manageable chunks, using manipulatives and pictorial representations, vocalising relevant vocabulary needed throughout their education and by giving children the opportunity to link maths to real-life contexts, the children at Cropredy will be able to apply these skills to future areas of their lives.

Number: Addition and Subtraction

NUMBER BONDS

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Explore number bonds to 10 and number bonds to 5 (ELG)	represent and use number bonds and related subtraction facts within 20	recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100				

MENTAL CALCULATION

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Recall addition and subtraction sentences without counting aid and rhymes.	Add and subtract one-digit and two-digit numbers to 20, including zero Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Written Methods)	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	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 mentally with increasingly large numbers	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

WRITTEN METHODS

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Starting to explore number sentences using the correct symbols and numerals.	read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Mental Calculation)		add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)	

INVERSE OPERATIONS, ESTIMATING AND CHECKING ANSWERS

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
		recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	estimate the answer to a calculation and use inverse operations to check answers	estimate and use inverse operations to check answers to a calculation	use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy	use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.

Number: Addition and Subtraction

PROBLEM SOLVING

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
	Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = * - 9	Solve problems with addition and subtraction: • using concrete objects and pictorial representations, including those involving numbers, quantities and measures • applying their increasing knowledge of mental and written methods Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change (copied from Measurement)	Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction	Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why Solve problems involving addition, subtraction, multiplication and division

Algebra

EQUATIONS

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
	Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = * - 9 (copied from Addition and Subtraction) Represent and use number bonds and related subtraction facts within 20 (copied from Addition and Subtraction)	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)	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)		Use the properties of rectangles to deduce related facts and find missing lengths and angles (copied from Geometry: Properties of Shapes)	Express missing number problems algebraically Find pairs of numbers that satisfy number sentences involving two unknowns Enumerate all possibilities of combinations of two variables

FORMULAE

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
				Perimeter can be expressed algebraically as 2(a + b) where a and b are the dimensions in the same unit. (Copied from NSG measurement)		Use simple formulae Recognise when it is possible to use formulae for area and volume of shapes (copied from Measurement)

Algebra

SEQUENCES

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
	Sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening (copied from Measurement)	Compare and sequence intervals of time (copied from Measurement) Order and arrange combinations of mathematical objects in patterns (copied from Geometry: position and direction)				Generate and describe linear number sequences

Fractions (including Decimals and Percentages)

COUNTING IN FRACTIONAL STEPS

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
		Pupils should count in fractions up to 10, starting from any number and using the ½ and ¾ equivalence on the number line (Non Statutory Guidance)	Count up and down in tenths	Count up and down in hundredths		

RECOGNISING FRACTIONS

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Recognise half of something using sharing.	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	Recognise, find, name and write fractions ⅓, ¼, ¾ and ¾ of a length, shape, set of objects or quantity.	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	Recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten	Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents (appears also in Equivalence)	

Fractions (including Decimals and Percentages)

COMPARING FRACTIONS

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
			Compare and order unit fractions, and fractions with the same denominators		Compare and order fractions whose denominators are all multiples of the same number	Compare and order fractions, including fractions >1

COMPARING DECIMALS

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
				compare numbers with the same number of decimal places up to two decimal places	read, write, order and compare numbers with up to three decimal places	identify the value of each digit in numbers given to three decimal places

ROUNDING INCLUDING DECIMALS

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
				round decimals with one decimal place to the nearest whole number	round decimals with two decimal places to the nearest whole number and to one decimal place	solve problems which require answers to be rounded to specified degrees of accuracy

Fractions (including Decimals and Percentages)

EQUIVALENCE (INCLUDING FRACTIONS, DECIMALS AND PERCENTAGES)

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
		write simple fractions e.g. ½ of 6 = 3 and recognise the equivalence of ²⁄₄ and ½.	recognise and show, using diagrams, equivalent fractions with small denominators	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 ¼; ½; ¾	identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths Read and write decimal numbers as fractions (e.g. 0.71 = $^{71}/_{100}$) Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents Recognise the per cent symbol (%) and understand that per cent relates to "number of parts per hundred", and write percentages as a fraction with denominator 100 as a decimal fraction	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.

Fractions (including Decimals and Percentages)

ADDITION AND SUBTRACTION OF FRACTIONS

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
			Add and subtract fractions with the same denominator within one whole (e.g. $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$)	Add and subtract fractions with the same denominator	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. $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$)	Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions

MULTIPLICATION AND DIVISION OF FRACTIONS

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
					Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	Multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$) multiply one-digit numbers with up to two decimal places by whole numbers Divide proper fractions by whole numbers (e.g. $\frac{1}{3} \div 2 = \frac{1}{6}$)

Fractions (including Decimals and Percentages)

MULTIPLICATION AND DIVISION OF DECIMALS

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
				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		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

Fractions (including Decimals and Percentages)

PROBLEM SOLVING

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
			Solve problems that involve all of the above	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.	Solve problems involving numbers up to three decimal places Solve problems which require knowing percentage and decimal equivalents of ½, ¼, ⅕, ⅖, ⅘ and those with a denominator of a multiple of 10 or 25.	

Geometry of Shapes

IDENTIFYING SHAPES AND THIER PROPERTIES

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Using vocabulary to describe to describe shapes e.g. flat, round, big, small Start to explore terms such as edges, corners, faces and describing shapes with these terms. To name basic 2D and 3D 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].	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]		identify lines of symmetry in 2-D shapes presented in different orientations	Identify 3-D shapes, including cubes and other cuboids, from 2-D representations	Recognise, describe and build simple 3-D shapes, including making nets (appears also in Drawing and Constructing) Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius

DRAWING AND CONSTRUCTING

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Use a range of construction materials and bricks to explore shape. To create structures for a purpose, using 3D shapes.			Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them	Complete a simple symmetric figure with respect to a specific line of symmetry	Draw given angles, and measure them in degrees (o)	Draw 2-D shapes using given dimensions and angles Recognise, describe and build simple 3-D shapes, including making nets (appears also in Identifying Shapes and Their Properties)

Geometry of Shapes

COMPARING AND CLASSIFYING

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Sorting 2D and 3D shapes by using the terms flat and solid, as well as 2D and 3D.		compare and sort common 2-D and 3-D shapes and everyday objects		compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes	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	compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons

ANGLES

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
			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	Identify acute and obtuse angles and compare and order angles up to two right angles by size	Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles identify: • angles at a point and one whole turn (total 360°) • angles at a point on a straight line and ½ a turn (total 180°) • other multiples of 90°	Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles

Measurement

COMPARING AND ESTIMATING

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Making estimates using weight, capacity, length etc. Use mathematical language to compare amounts such as 'biggest, smallest'	compare, describe and solve practical problems for: • lengthsandheights [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]	compare and order lengths, mass, volume/ capacity and record the results using >, < and = compare and sequence intervals of time	compare durations of events, for example to calculate the time taken by particular events or tasks estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight (appears also in Telling the Time)	estimate, compare and calculate different measures, including money in pounds and pence (also included in Measuring)	Calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes (also included in measuring) estimate volume (e.g. using 1 cm^3 blocks to build cubes and cuboids) and capacity (e.g. using water)	calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3.

Measurement

MEASURING AND CALCULATING

FOUNDATION

Use a range of equipment to compare length, as well as using basic terminology.

YEAR 1

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

YEAR 2

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

YEAR 3

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

YEAR 4

Estimate, compare and calculate different measures, including money in pounds and pence (appears also in Comparing)

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

Find the area of rectilinear shapes by counting squares

YEAR 5

Use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling.

Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres

Calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes

Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})
(copied from Multiplication and Division)

YEAR 6

Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate (appears also in Converting)

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

Calculate the area of parallelograms and triangles

Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3), and extending to other units [e.g. mm^3 and km^3].

Recognise when it is possible to use formulae for area and volume of shapes

Measurement

TELLING THE TIME

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Explore time terminology such as 'first, later, after that', relating to their daily routines.	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	Tell and write the time to five minutes, including quarter past/ to the hour and draw the hands on a clock face to show these times. Know the number of minutes in an hour and the number of hours in a day. (appears also in Converting)	Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight (appears also in Comparing and Estimating)	Read, write and convert time between analogue and digital 12 and 24-hour clocks (appears also in Converting) Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days (appears also in Converting)	Solve problems involving converting between units of time	

Measurement

CONVERTING

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
		Know the number of minutes in an hour and the number of hours in a day. (appears also in Telling the Time)	Know the number of seconds in a minute and the number of days in each month, year and leap year	Convert between different units of measure (e.g. kilometre to metre; hour to minute) Read, write and convert time between analogue and digital 12 and 24-hour clocks (appears also in Converting) Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days (appears also in Telling the Time)	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	Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate (appears also in Measuring and Calculating) Convert between miles and kilometres

Multiplication and Division

MULTIPLICATION & DIVISION FACTS

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
To explore multiplication with arrays, manipulatives and objects. To explore the concept of sharing using a range of equipment with divisible and non-divisible numbers.	count in multiples of twos, fives and tens (copied from Number and Place Value)	count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward (copied from Number and Place Value) recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers	count from 0 in multiples of 4, 8, 50 and 100 (copied from Number and Place Value) recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	count in multiples of 6, 7, 9, 25 and 1 000 (copied from Number and Place Value) recall multiplication and division facts for multiplication tables up to 12 × 12	count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 (copied from Number and Place Value)	

MENTAL CALCULATION

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
		show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot	write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods (appears also in Written Methods)	use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers recognise and use factor pairs and commutativity in mental calculations (appears also in Properties of Numbers)	multiply and divide numbers mentally drawing upon known facts multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	perform mental calculations, including with mixed operations and large numbers associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. ⅜) (copied from Fractions)

Multiplication and Division

WRITTEN CALCULATION

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
		calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs	write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods (appears also in Mental Methods)	multiply two-digit and three-digit numbers by a one-digit number using formal written layout	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	multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication divide numbers up to 4-digits by a two-digit whole number using the formal written method of short division where appropriate for the context divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context use written division methods in cases where the answer has up to two decimal places (copied from Fractions (including decimals))

Multiplication and Division

PROPERTIES OF NUMBERS: MULTIPLES, FACTORS, PRIMES, SQUARE AND CUBE NUMBERS

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Explore odd and even numbers using a range of manipulatives and number squares.				recognise and use factor pairs and commutativity in mental calculations (repeated)	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})	identify common factors, common multiples and prime numbers use common factors to simplify fractions; use common multiples to express fractions in the same denomination (copied from Fractions) calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3 (copied from Measures)

ORDER OF OPERATIONS

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
						use their knowledge of the order of operations to carry out calculations involving the four operations

Multiplication and Division

INVERSE OPERATIONS, ESTIMATING AND CHECKING ANSWERS

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
			estimate the answer to a calculation and use inverse operations to check answers (copied from Addition and Subtraction)	estimate and use inverse operations to check answers to a calculation (copied from Addition and Subtraction)		use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy

PROBLEM SOLVING

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
To explore problems in context using verbal reasoning and resources.	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	solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	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	solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects	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	solve problems involving addition, subtraction, multiplication and division solve problems involving similar shapes where the scale factor is known or can be found (copied from Ratio and Proportion)

Number and Place Value

COUNTING

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Counting objects, actions and sounds. Count beyond 10 Verbally count beyond 20, recognising the pattern of the counting system. (ELG)	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	count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward	count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number	count backwards through zero to include negative numbers count in multiples of 6, 7, 9, 25 and 1 000 find 1 000 more or less than a given number	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 1 000 000	use negative numbers in context, and calculate intervals across zero

COMPARING NUMBERS

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Compare numbers using objects.	use the language of: equal to, more than, less than (fewer), most, least	compare and order numbers from 0 up to 100; use <, > and = signs	compare and order numbers up to 1 000	order and compare numbers beyond 1 000 compare numbers with the same number of decimal places up to two decimal places (copied from Fractions)	read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)

Number and Place Value

IDENTIFYING, REPRESENTING AND ESTIMATING NUMBERS

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
• Subitise • Link the number symbol (numeral) to its cardinal number value.	identify and represent numbers using objects and pictorial representations including the number line	identify, represent and estimate numbers using different representations, including the number line	identify, represent and estimate numbers using different representations	identify, represent and estimate numbers using different representations		

READING AND WRITING NUMBERS (INCLUDING ROMAN NUMERALS)

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
To write numbers to 10 (ELG).	read and write numbers from 1 to 20 in numerals and words.	read and write numbers to at least 100 in numerals and in words	read and write numbers up to 1 000 in numerals and in words tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks (copied from Measurement)	read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.	read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Comparing Numbers) read Roman numerals to 1 000 (M) and recognise years written in Roman numerals.	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Understanding Place Value)

Number and Place Value

UNDERSTANDING PLACE VALUE

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Counting objects, actions and sounds. Count beyond 10 Verbally count beyond 20, recognising the pattern of the counting system. (ELG)	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	count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward	count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number	count backwards through zero to include negative numbers count in multiples of 6, 7, 9, 25 and 1 000 find 1 000 more or less than a given number	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 1 000 000	use negative numbers in context, and calculate intervals across zero

COMPARING NUMBERS

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
		recognise the place value of each digit in a two-digit number (tens, ones)	recognise the place value of each digit in a three-digit number (hundreds, tens, ones)	recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as units, tenths and hundredths (copied from Fractions)	read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers) recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents (copied from Fractions)	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers) identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1 000 where the answers are up to three decimal places (copied from Fractions)

Number and Place Value

ROUNDING

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
				round any number to the nearest 10, 100 or 1 000 round decimals with one decimal place to the nearest whole number (copied from Fractions)	round any number up to 1 000 000 to the nearest 10, 100, 1 000, 10 000 and 100 000 round decimals with two decimal places to the nearest whole number and to one decimal place (copied from Fractions)	round any whole number to a required degree of accuracy solve problems which require answers to be rounded to specified degrees of accuracy (copied from Fractions)

PROBLEM SOLVING

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
		use place value and number facts to solve problems	solve number problems and practical problems involving these ideas.	solve number and practical problems that involve all of the above and with increasingly large positive numbers	solve number problems and practical problems that involve all of the above	solve number and practical problems that involve all of the above

Position and Direction

POSITION, DIRECTION AND MOVEMENT

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
To explore directional language such as forward and back.	Describe position, direction and movement, including half, quarter and three-quarter turns.	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)		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	identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed	describe positions on the full coordinate grid (all four quadrants) draw and translate simple shapes on the coordinate plane, and reflect them in the axes.

PATTERN

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Explore patterns by: • Spotting errors in patterns • Identifying a unit of repeat • Creating and continuing patterns		order and arrange combinations of mathematical objects in patterns and sequences				

Ratio and Proportion

STATEMENTS ONLY APPEAR IN YEAR 6 BUT SHOULD BE CONNECTED TO PREVIOUS LEARNING, PARTICULARLY FRACTIONS AND MULTIPLICATION AND DIVISION

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
						Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts Solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison Solve problems involving similar shapes where the scale factor is known or can be found Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

Statistics

INTERPRETING, CONSTRUCTING AND PRESENTING DATA

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
		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	interpret and present data using bar charts, pictograms and tables	interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs	complete, read and interpret information in tables, including timetables	interpret and construct pie charts and line graphs and use these to solve problems

SOLVING PROBLEMS

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
			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.	solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.	solve comparison, sum and difference problems using information presented in a line graph	calculate and interpret the mean as an average

YEAR 1 Small Steps

AUTUMN TERM — 52 STEPS

WEEKS 1 – 5

PLACE VALUE (WITHIN 10)

Small Steps: 19 (W/R)

NCETM Spine: 1.1 (comparison context) 1.2 (part-part-whole), 1.3, (numbers 0-5) and 1.4 (numbers 6-10)

- Sort objects.
- Count objects.
- Count objects from a group of 10 (larger group).
- Represent objects.
- Represent numbers to 10.
- Recognise numbers as words
- Count on from any number.
- 1 more
- Count backwards within 10
- 1 less
- Compare groups by matching
- Fewer, more, same
- Less than, greater than, equal to
- Compare numbers
- Introduce = , > and < symbols.
- Order groups of objects.
- Order numbers.
- Ordinal numbers (1st, 2nd, 3rd ….).
- The number line (2 steps)

Note: part-whole shows up in 1.2 which could be used before 1.3

Guidance:

- Small Steps which are highlighted are White Rose Small steps which have been broken down into smaller steps so there may not be resources online.
- Make sure children have a secure knowledge of place value
- Tens frames, bead strings, objects, cubes.
- Bold steps are from the new scheme of learning.
- Use reasoning to stretch and challenge/provide fluency for LA to secure knowledge.
- Constant revision of skills in 5 a day/fluency time.
- Spine 1:2 can be introduced earlier if required.

WEEKS 6 – 10

ADDITION AND SUBTRACTION (WITHIN 10)

Small Steps: 25 (W/R)

NCETM Spine: 1.2 (part whole model) 1.5, 1.6, 1.7

- Introducing parts and wholes
- Part-whole model (with images and objects)
- Part whole model.
- Write number sentences.
- Addition symbol.
- Fact families – Addition facts.
- Fact families
- Find number bonds for numbers within 10. (2 steps)
- Systematic methods for number bonds within 10.
- Number bonds to 10. (At least 2 steps)
- Compare number bonds. (2 steps)
- Addition: Adding together.
- Addition: Adding more.
- Addition problems
- Finding a part.
- Subtraction finding a part.
- Fact families – The 8 facts.
- Subtraction: Taking away, how many left? Crossing out.
- Subtraction: Taking away, how many left?
- Introducing the subtraction symbol.
- Subtraction: Finding a part, breaking apart.
- Subtraction on a number line.
- Subtraction: Finding the difference. (2 steps)
- Add or subtract 1 or 2.
- Comparing addition and subtraction statements

Guidance:

- Small Steps which are highlighted are White Rose Small steps which have been broken down into smaller steps so there may not be resources online.
- 2 Steps (Explore first with manipulatives)
- Fact Families – Use PD Materials (Less depth on W/R)
- Learn a concept using 2 carefully chosen models: Part-part-whole and 10s frame.

YEAR 1 Small Steps

WEEKS 10/11

GEOMETRY: SHAPE

Small Steps: 8 (W/R)

NCETM Spine: N/A

- Name 2D shapes.
- Recognise 2D shapes
- Sort 2D shapes.
- Name 3D shapes.
- Recognise 3D shapes.
- Properties of 3D shapes.
- Sort 3D shapes.
- Patterns with 3D and 2D shapes

Guidance:

- Small Steps which are highlighted are White Rose Small steps which have been broken down into smaller steps so there may not be resources online.
- Revise 2D shapes before 3D shapes. - This is different to the WhiteRose scheme guidance
- Take time to fully explore and learn vocabulary.

WEEKS 12

CONSOLIDATION

SPRING TERM

62 STEPS

WEEKS 1 – 3

PLACE VALUE (WITHIN 20)

Small Steps: 16 (W/R)

NCETM Spine: 1.10 (TP 1 and 2)

- Count within 20
- Count forwards and write numbers to 20, in numerals and words
- Count backwards and write numbers to 20, in numerals
- Count backwards and write numbers to 20, in words
- Understand 10
- Understand 11, 12 and 13
- Understand 14, 15 and 16
- Understand 17, 18 and 19
- Understand 20
- Count 1 more
- Count 1 less
- The number line to 20
- Use a number line to 20
- Estimate on a number line to 20
- Compare numbers to 20
- Order numbers to 20

WEEKS 4 – 6

ADDITION AND SUBTRACTION (WITHIN 20)

Small Steps: 14 (W/R)

NCETM Spine: 1.10 (TP 5), 1.11 (TP 5 and 6)

- Add by counting on – manipulatives
- Add by counting on (Strategies)
- Add by counting on (Number Lines & Bead strings)

YEAR 1 Small Steps

- Adding Number Bonds to 10 (recap)
- Adding using multiples of 10
- Add ones using number bonds (2 steps)
- Find and make number bonds to 20
- Doubles
- Near Doubles
- Subtract ones using number bonds
- Subtraction - Counting back
- Subtraction - Finding the difference
- Related Facts (2 steps)
- Missing number problems (2 steps)

Guidance:

- Small Steps which are highlighted are White Rose Small steps which have been broken down into smaller steps so there may not be resources online.
- Continue to use a range of manipulatives to aid number sense e.g. tens frames, base 10
- Extra steps have been added for increased depth.

WEEKS 7 – 8

PLACE VALUE (WITHIN 50) INCLUDES COUNTING IN 2S AND 5S

Small Steps: 17 (W/R)

NCETM Spine: 1.9, 2.1

- Count from 20 to 50
- 20, 30, 40 & 50
- Numbers to 50
- Count by making groups of ten
- Groups of tens and ones
- Represent numbers to 50
- Partition into tens and ones
- The number line to 50
- Estimate on a number line to 50
- 1 more
- 1 less
- Compare numbers within 50
- Order numbers within 50

- 1 more
- 1 less
- Compare numbers within 50
- Order numbers within 50

Guidance:

- Small Steps which are highlighted are White Rose Small steps which have been broken down into smaller steps so there may not be resources online.
- Either use PD materials that explore numbers within 50 through counting in 2s, 5s and 10s using money OR follow White Rose Steps and extend when needed.

WEEKS 9 – 10

MEASUREMENT: LENGTH AND HEIGHT

Small Steps: 8 (W/R)

NCETM Spine: 1.1

- Compare lengths (seperate)
- Compare heights (Seperate)
- Compare lengths and heights
- Measuring lengths using objects
- Measure lengths in cm
- Measure length (1).
- Adding lengths problems
- Subtracting lengths problems.

Guidance:

- Small Steps which are highlighted are White Rose Small steps which have been broken down into smaller steps so there may not be resources online.
- Explore lessons using real life contexts are advised.

YEAR 1 Small Steps

WEEKS 11 – 12

MEASUREMENT: MASS AND VOLUME

Small Steps: 7 (W/R)

NCETM Spine: 1.1

- Heavier and lighter
- Measure Mass
- Compare mass.
- Full and empty
- Compare volume
- Measure capacity
- Compare Capacity

Guidance:

- Small Steps which are highlighted are White Rose Small steps which have been broken down into smaller steps so there may not be resources online.
- Explore lessons using real life contexts are advised.

SUMMER TERM

54 STEPS

WEEKS 1 – 3

NUMBER: MULTIPLICATION AND DIVISION

Small Steps: 13 (W/R)

NCETM Spine: 2.1 (TP 1-3) could also ref back to 1.8 TP 2

- Count in 2s
- Count in 5s
- Count in 10s
- Make equal groups (Activity)
- Recognise equal groups
- Add equal groups.
- Make arrays. (Activity)
- Make arrays
- Make doubles
- Make equal groups – grouping. (Activity)
- Make equal groups
- Make equal groups – Sharing (Activity)
- Make equal groups – sharing

Guidance:

- Small Steps which are highlighted are White Rose Small steps which have been broken down into smaller steps so there may not be resources online.
- Activities and exploring are advised before recording and independent tasks In books.
- Manipulatives and a variety of representations with real life contexts will make concepts more relevant.

YEAR 1 Small Steps

WEEKS 4 – 5

FRACTIONS

Small Steps: 8 (W/R)

NCETM: Key Stage 1 / Year 1: Halving shapes or objects / Year 1: Find a quarter of a shape or object

- Recognise a half of an object or a shape
- Find a half of an object or a shape
- Recognise a half of a quantity
- Making a quarter (activity)
- Recognise a quarter of an object or shape
- Find a quarter of an object or shape
- Recognise a quarter of a quantity
- Find a quarter of a quantity

Guidance:

- Small Steps which are highlighted are White Rose Small steps which have been broken down into smaller steps so there may not be resources online.
- Added steps will encourage children to explore and use fractions in real life contexts.
- Use a range of representations and objects e.g. cubes, food, objects, counters etc.

WEEK 6

GEOMETRY: POSITION & DIRECTION

Small Steps: 6 (W/R)

NCETM Spine: N/A

- Describe turns. (Activity)
- Describe turns
- Describe Position - left and right
- Describe Position - forwards and backwards
- Describe position - above and below
- Ordinal numbers

WEEKS 7 – 8

PLACE VALUE (WITHIN 100)

Small Steps: 11 (W/R)

NCETM: 1.9

- Count from 50 to 100
- Counting in tens to 100
- Counting forwards and backwards within 100.
- Introduce the 100 square.
- Partitioning numbers.
- Introducing the number line to 100
- 1 more - seperate
- 1 less - seperate
- Compare numbers with the same number of tens
- Compare any two numbers
- Ordering numbers

Guidance:

- Small Steps which are highlighted are White Rose Small steps which have been broken down into smaller steps so there may not be resources online.
- Use plenty of manipulatives, especially base 10 to improve number sense.
- Added steps to increase depth.

WEEK 9

MEASURES: MONEY

Small Steps: 5 (W/R)

NCETM Spine: 2.1 (TP 4 – 6)

- Unitising
- Recognising coins.
- Recognising notes.
- Counting in coins. (Activity)
- Counting in coins.

Guidance:

- Small Steps which are highlighted are White Rose Small steps which have been broken down into smaller steps so there may not be resources online.
- Use physical coins and build on counting small steps previously taught.

YEAR 1 Small Steps

WEEKS 10 – 11

MEASUREMENT: TIME

Small Steps: 11 (W/R)

NCETM: N/A

- Before and after (activity)
- Before and after.
- Days of the week
- Months of the year
- Hours
- Minutes
- Seconds
- Time to the hour (activity)
- Time to the hour.
- Time to the half hour (activity)
- Time to the half hour.

Guidance:

- Small Steps which are highlighted are White Rose Small steps which have been broken down into smaller steps so there may not be resources online.
- Make sure children are secure by adding extra steps when required.
- Third Space maths article advises to teach hour hand and minute hand separately to reduce cognitive load.

WEEK 12

CONSOLIDATION

YEAR 2 Small Steps

AUTUMN TERM — 62 STEPS

WEEKS 1 - 4

NUMBER: PLACE VALUE

Small Steps: 24

NCETM Spine: 1.9 (revisit Year 1 PV to 100), 2.1 (count in 2s, 5s, 10s)

- Numbers to 20.
- Counting forwards and backwards within 20.
- Tens and ones within 20.
- Counting forwards and backwards within 50.
- Tens and ones within 50.
- Compare numbers within 50.
- Count objects to 100 by making 10s.
- Recognise tens and ones.
- Use a place value chart.
- Partition numbers to 100.
- Write numbers to 100 in words.
- Flexibly partition numbers to 100.
- Write numbers to 100 in expanded form.
- 10s on a number line to 100.
- 10s and 1s on the number line to 100.
- Estimate numbers on a number line.
- Compare objects.
- Compare numbers.
- Order objects and numbers.
- Count in 2s
- Count in 5s
- Count in 10s
- Count in 2s, 5s and 10s. (consolidation)
- Count in 3s.

Guidance:

- Secure understanding of place value by using base 10, bead strings and a variety of models.
- Part whole model to be used for partitioning, with the bead string used as a concrete resource for the number line.
- Constant revision of number facts to form 10,20 and 100 throughout the year.

YEAR 2 Small Steps

WEEKS 5 – 9

NUMBER: ADDITION AND SUBTRACTION

Small Steps: 24

NCETM Spine: Could refer back to 1.2 (for part-whole), 1.8 (support with tens and bonds to 100), 1.9 (TP 6 using PV for fact families) 1.7 (fact families inverse etc.) 1.14 (add and sub tens, 10 more less) 1.13 - (covers most small steps) 1.14, 1.15 ,1.16 (subtraction 2 digit 2 digit, bonds 10s and 1s) 1.11 (three addends) 2.1 (TP 2 bonds to 100 from Y3)

- Bonds to 10.
- Fact families – Addition and subtraction bonds within 20.
- Related facts
- Bonds to 100 (tens)
- Bonds to 100 (tens and ones).
- Add 1s. - seperate
- Subtract 1s - seperate
- Add by making 10.
- Add three 1 digit-numbers
- Add to the next ten.
- Add across a 10.
- Subtract across a ten.
- Subtract across 10.
- Subtract from a ten.
- Subtract a 1-digit number from a 2-digit number (across a ten)
- 10 more and 10 less.
- Add and subtract 10s.
- Add two 2-digit numbers (not across a 10)
- Add two 2-digit numbers (across a ten)
- Subtract two 2 digit-numbers (not across a ten)
- Subtract two 2 digit-numbers (across a ten)
- Mixed addition and subtraction.
- Compare number sentences.
- Missing number problems.

Guidance:

- Part whole models, tens frames, base 10, bead strings.
- Knowing number bonds and how to make ten will aid mental addition and subtraction.
- Bar models can be introduced later in the unit alongside part-whole models.

YEAR 2 Small Steps

WEEKS 10 – 12

GEOMETRY: PROPERTIES OF SHAPE

Small Steps: 14

NCETM Spine: N/A

- Recognise 2D shapes. - seperate
- Recognise 3D shapes. - seperate
- Count sides on 2D shapes.
- Count vertices on 2D shapes.
- Draw 2D shapes.
- Lines of symmetry on shapes.
- Use lines of symmetry to complete shapes.
- Sort 2D shapes.
- Count faces on 3D shapes.
- Count edges on 3D shapes.
- Count vertices on 3D shapes.
- Sort 3D shapes.
- Make patterns with 2D shapes. seperate
- Make patterns with 3D shapes - seperate

Guidance:

- Extra steps required to make sure children are secure with the properties and names of 2D and 3D shapes.

YEAR 2 Small Steps

SPRING TERM — 51 STEPS

WEEKS 1 - 2

MEASUREMENT: MONEY

Small Steps: 12

NCETM Spine: revisit 2.1 (TP 4-6), Use Add & Sub skills from previous block and apply to money (y4 is next spine on money)

- Recognising coins and notes.
- Count money – pence.
- Count money – pounds (notes and coins).
- Count money – pounds and pence
- Choose notes and coins
- Make the same amount.
- Compare ammounts of money.
- Calculate with money
- Make a pound
- Find change.
- Find the differnece.
- Two-step problems.

Guidance:

- Mental methods, added by part-whole models.
- Bar models can be used at this stage.

WEEKS 3 – 7

NUMBER: MULTIPLICATION AND DIVISION

Small Steps: 22

NCETM Spine: 2.2, 2.3 (TP1) 2.5 (arrays) 2.3 (2x table), 2.4 (10 and 5 x table) (1.4 and 1.10 TP 3 if needed to refer back to y1 odd/even numbers) 2.6 - (TP 1-3 sharing and grouping) (TP 4 divide by 2, 5, 10)

- Recognise equal groups
- Make equal groups
- Add equal groups.
- Introcude the multipliocation symbol

YEAR 2 Small Steps

- Multiplication sentences
- Make doubles
- Make arrays
- Use arrays
- Make equal groups – sharing.
- Make equal groups – sharing.
- Make equal groups - grouping
- Make equal groups – grouping.
- 2 times-table.
- Divide by 2
- Doubling
- Halving
- Even numbers
- Odd numbers
- 5 times-table.
- Divide by 5
- 10 times-table
- Divide by 10

Guidance:

- Visuals and concrete resources important so children understand the concept of multiplication and division, as well as linking them together.
- Real life contexts, arrays and then progress onto bar models near the end of the unit.

WEEKS 8 – 9

MEASUREMENT: LENGTH & HEIGHT

Small Steps: 6

NCETM Spine: could ref back to 1.1

- Measure length (cm).
- Measure length (m).
- Compare lengths.
- Order lengths.
- Four operations with lengths and heights
- Problem solving with lengths.

Guidance:

- Introduce new steps if more depth is required.
- Exploring lessons are advised for practical steps.

YEAR 2 Small Steps

WEEKS 10 – 12

MEASUREMENT: MASS, CAPACITY AND TEMPERATURE

Small Steps: 11

NCETM Spine: N/A

- Measure mass.
- Compare mass.
- Measure mass in grams.
- Measure mass in kilograms.
- Four operations with mass
- Introduce capacity and volume.
- Compare volume and capacity.
- Measure in Millilitres.
- Measure in Litres.
- Four operations with Volume and capacity
- Temperature.

Guidance:

- Introduce new steps if more depth is required.
- Explore using scales, containers etc.
- Link to real life contexts for relevance.
- Links to science can increase depth.

SUMMER TERM

WEEKS 1 - 3

NUMBER: FRACTIONS

Small Steps: 14

NCETM Spine: Key Stage 1 Fractions

- Introduction to parts and wholes
- Unequal and equal parts
- Find half.
- Recognise quarter.
- Find a quarter.
- Recognise a third.
- Find a third.
- Find the whole
- Unit fractions.
- Non unit fractions.
- Equivalence of ½ and $^{2}/_{4}$.
- Recognise 3/4
- Find three quarters.
- Count in fractions up to a whole

Guidance:

- Use a range of representations and bar models.
- Use real life examples to make fractions relevant to the children.
- Add more steps so children have opportunities to explore fractions.

YEAR 2 Small Steps

WEEKS 4 - 6

MEASUREMENT: TIME

Small Steps: 9

NCETM Spine: N/A

- Telling time to the hour.
- Telling time to the half hour.
- O'clock and half past.
- Quarter past and quarter to (45 minutes past*)
- Tell the time past the hour
- Tell the time to the hour
- Telling time to 5 minutes.
- Minutes in an hour,
- Hours in a day.

Guidance:

- Teach analogue using two clock faces (Third Space Maths article)
- *Teach 'past the hour' securely first. Then teach 'to the hour'.

WEEKS 7 - 8

STATISTICS

Small Steps: 7

NCETM Spine: some ideas in 1.12 but this is mainly a focus on difference

- Make tally charts.
- Tables
- Block Diagrams
- Draw pictograms (1-1).
- Interpret pictograms (1-1).
- Draw pictograms (2, 5 and 10).
- Interpret pictograms (2, 5 and 10).

Guidance:

- Link statistics to science and topic to make maths relevant and to give it a purpose.

YEAR 2 Small Steps

WEEKS 9 -10

GEOMETRY: POSITION AND DIRECTION

Small Steps: 5

NCETM Spine: N/A

- Language of position
- Describing movement.
- Describing turns.
- Describing movement and turns.
- Making patterns with shapes.

Guidance:

- Add extra steps where required.

WEEKS 10 - 12

CONSOLIDATION

YEAR 3 Small Steps

AUTUMN TERM — 57 STEPS

WEEKS 1 - 3

NUMBER: PLACE VALUE

Small Steps: 16

NCETM Spine: 1.17 (TP1 hundreds, 1000, 50s, 25s), 1.18 (TP1 100s,10s,1s) (TP2 number line to 1000) (TP3 1,10,100 more or less) (TP4 compare order)

- Represent numbers to 100.
- Partition numbers to 100
- Flexible partitioning to 100.
- Number line to 100.
- Hundreds (NCETM 1.17)
- Represent numbers to 1,000.
- Partition numbers to 1,000.
- Flexible partitioning of numbers to 1,000
- 100s, 10s and 1s (1).
- Find 1, 10, 100 more or less than a given number
- Number line to 1,000.
- Estimating on a number line to 1,000
- Compare numbers to 1,000.
- Order numbers.
- Count in 50s.

Guidance:

- Place value must be secure and focused on in depth.
- High importance on the composition of 100 and known facts.
- Base 10, bead strings, part-whole models. Place value counter usage limited to understand the size of numbers.
- Constant revision of core number facts required.

YEAR 3 Small Steps

WEEKS 4 – 8

NUMBER: ADDITION AND SUBTRACTION

Small Steps: 24

NCETM Spine: 1.18 (TP 5 add and sub multiples of 100) 1.19 ,1.17 (TP 3 + 4 crossing 10s and 100s) 1.20 (written addition) 1.21 (written subtraction)

- Apply number bonds within 10.
- Add and subtract 1s.
- Add and subtract 10s.
- Add and subtract 100s.
- Spot the pattern.
- Add 1s across a 10.
- Add 10s across a 100.
- Subtract 1s across a 10.
- Subtract 10s across a 100.
- Make connections.
- Mental Strategies up to 999 (NCETM – 1.19)
- Add two numbers (no exchange)
- Subtract two numbers (no exchange)
- Add two numbers (across a 10)
- Add two numbers (across a 100)
- Add 2-digit and 3-digit numbers.
- Subtract two numbers (across a 10)
- Subtract two numbers across a 100)
- Subtract a 2-digit number from a 3-digit number.
- Compliments to 100.
- Estimate answers.
- Inverse operations.
- Make decisions.

Guidance:

- First steps before written method (number lines, part-whole) are mental strategies for fluency. NCETM has been added to guide this.
- Physical resources important for the concept of subtraction.
- Worded problems and bar models introduced early and taught within the unit.
- Estimation, checking strategies, efficient methods to be taught within – especially inverse relationships

YEAR 3 Small Steps

WEEKS 9 – 12

NUMBER: MULTIPLCATION AND DIVISION

Small Steps: 17

NCETM Spine: 2.6 (revisit for equal groups) 2.8 (TP 1 mult and divide by 3) 2.7 (mainly TP2 mult divide by 4 incl 4x table) (TP3 & 4 mult and divide by 8 incl 8x table)

- Multiplication – equal groups.
- Use arrays
- Multiples of 2
- Multiples of 5 and 10
- Make equal groups – sharing
- Make equal groups – grouping
- Multiples of 2
- Divide by 2
- Multiplying by 3.
- Dividing by 3.
- The 3 times-table.
- Multiplying by 4.
- Dividing by 4.
- The 4 times-table.
- Multiplying by 8.
- Dividing by 8.
- The 8 times-table.
- The 2s, 4s and 8 times tables.

Guidance:

- Explore lessons for arrays and concept of multiplication and division.
- Inverse relationships to be discussed with multiplication and division.
- Division needs a physical resource approach (concrete to bar models)
- 3,6,9 have been placed together (NCETM) and 2,4,8 to see the link and relationships.
- This unit is able to move into Spring due to the number of steps.

YEAR 3 Small Steps

SPRING TERM — 56 STEPS

WEEKS 1 - 4

NUMBER: MULTIPLICATION AND DIVISION

Small Steps: 11

NCETM Spine: 2.6 TP4 related 2.13 (TP 6 related facts taken from y4) 2.19 (related facts taken from y5) 2.17 and 2.8 (TP 5 scaling) 2.14 (select from TP 1 & 2) 2.15 (TP 1) (Concrete resources best for this topic)

- Multiples of ten
- Related calculations.
- Reasoning about Multiplication
- Multiply 2-digits by 1-digit (1).
- Multiply 2-digits by 1-digit (2).
- Linkd between multiplciation and division
- Divide 2-digits by 1-digit (1 - no exchange).
- Divide 2-digits by 1-digit (2 - flexible partitioning).
- Divide 2-digits by 1-digit (3 - with remainders).
- Scaling.
- How many ways? (Multiple steps)

Guidance:

- Multiple steps for times tables and statements – use exploration with arrays and concrete materials.
- Multiple steps until children are secure with multiplication and division.
- Reasoning and problem solving for HA.
- Use base 10 before place value counters.

YEAR 3 Small Steps

WEEKS 4 – 6

MEASUREMENT: LENGTH AND PERIMETER

Small Steps: 16

NCETM Spine: 2.16 (TP 1 to introduce)

- Measure in cm
- Draw accureately in cm
- Measure length (m)
- Measure length (mm)
- Draw accurately in mm
- Measure in cm and mm
- Draw accureately in cm and mm
- Metres, cm and mm
- Equivalent lengths – m & cm.
- Equivalent lengths – mm & cm.
- Compare lengths
- Add lengths.
- Subtraction lengths.
- What is perimeter?
- Calculate perimeter
- Measure perimeter.

Guidance:

- Convert measures in real life contexts and in multiple steps until children are secure.
- Use mental methods for adding perimeter.
- Multiple steps required until children are secure with perimeter.

WEEKS 7 – 10

FRACTIONS

Small Steps: 22

NCETM Spine: revisit Key Stage 1 - 3.1, 3.2 3.6 (TP 3 Fractions of amounts) 3.3 (compare and order) 3.4 (add and sub fractions), 3.7 (select from TP 1 + 2 only)

- Wholes and parts
- Make equal parts.
- What is a fraction - unit fractions
- Compare unit fractions - seperate

Small Steps

- Order unit fractions - seperate
- Non-unit fractions.
- Understand the whole
- Compare non unit fractions
- Order non unit fractions
- Fractions and scale
- Fractions on a number line
- Count in fractions
- Equivalent fractions,
- Equivalent fractions - on a number line.
- Equivalent fractions - on a bar model
- Equivalent fractions as bar models.
- Add fractions.
- Subtract fractions.
- Partition the whole
- Unit fractions of a set of objects
- Non unit fractions of a set of objects
- Reasoning with fractions of an amount

Guidance:

- PD materials are useful for this unit.
- Use a variety of representations to secure understanding of fractions.
- Use manipulatives and bar models for fractions of an amount.
- Extra steps for fractions of an amount.

WEEKS 11 – 12

MEASURES: MONEY

Small Steps: 7

NCETM Spine: revisit 2.1 1.25 (select appropriate)

- Recognising coins
- Count money (pence & pounds)
- Pounds and pence.
- Converting pounds and pence.
- Adding money.
- Subtracting money.
- Find change.

Guidance:

- Explore with coins so the children are used to money.
- Children to revise mental methods to add and subtract money.
- Use plenty of real life contexts.
- Use mental methods for adding perimeter.
- Multiple steps required until children are secure with perimeter.
- Draw accurately (Summer 2) has been moved to this unit as it links to measure.

YEAR 3 Small Steps

SUMMER TERM — 42 STEPS

WEEKS 1 – 3

MEASUREMENT: MASS AND CAPACITY

Small Steps: 10

NCETM Spine: N/A

- Use scales
- Measure mass in grams
- Measure mass in grams and kilograms
- Equivalent masses
- Compare mass
- Add and subtract mass.
- Compare volume.
- Measure capacity (and volume in ml).
- Measure capacity (in litres and ml).
- Temperature

Guidance:

- Exploring lessons for real life contexts advised.
- Possible links to science topics.

WEEKS 4 – 6

MEASUREMENT: TIME

Small Steps: 12

NCETM Spine: N/A

- Roman Numerals to 12
- Months and years.
- Days and hours.
- Telling the time
- Telling the time to 5 minutes.
- Telling the time to the minute.
- Reading time on a digital clock
- Use AM and PM
- Hours and minutes (use start and end times)
- Hours and minutes - use durations
- Minutes and seconds
- Units of time
- Problem solving with time.

Guidance:

- Third Space Maths useful guide to telling time on an analogue clock.
- Assess the children before the unit to determine levels of understanding.
- Teachers advised to teach 'past the hour' first in order for a secure understanding of digital and 24-hour time.

YEAR 3 Small Steps

WEEKS 7 – 9

GEOMETRY: PROPERTIES OF SHAPE

Small Steps: 10

NCETM Spine: N/A

- Turns and angles
- RIght angles
- Compare angles
- Measure and draw accurately
- Horizontal and vertical
- Parallell and perpendicular lines
- Symmetry
- Recognise and describe 2D shapes.
- Draw Polygons
- Recognise and describe 3D shapes.
- Make 3D shapes. (Multiple steps)

Guidance:

- Perpendicular taught explicitly after right angles.
- Multiple steps required to remember the names and properties of 2D and

WEEKS 10 – 11

STATISTICS

Small Steps: 8

NCETM Spine: N/A

- Make tally charts
- Interpret Pictograms
- Draw pictograms.
- Interpret pictograms.
- Interpret Bar charts
- Draw bar charts
- Collect and represent data
- Two-way tables.

Guidance:

- Link statistics to topic and science so that it has more of a purpose.

WEEK 12

CONSOLIDATION

YEAR 4 Small Steps

AUTUMN TERM — 60 STEPS

WEEKS 1 – 4

NUMBER: PLACE VALUE

Small Steps: 21

NCETM Spine: 1.17 (count in 25s), 1.22, 1.27 (negative numbers)

- Represent Numbers to 1000
- Partition numbers to 1,000
- Number line to 1000.
- Thousands
- Represent numbers to 10,000.
- Partitioning numbers to 10,000.
- Flexible partitioning to 10,000
- Find 1, 10, 100 more or less.
- Count in 1,000s.
- 1,000/10,000 more or less.
- Number line to 10,000 (2 steps)
- Compare numbers.
- Order numbers.
- Round to the nearest 10.
- Round to the nearest 100.
- Round to the nearest 1,000.
- Count in 25s.
- Roman numerals to 100. (2 lessons)

Guidance:

- Base 10/place value counters and chart/part-part whole models/bar models.
- Option to use bead strings for counting on a number line.
- Count in 25s to be taught either in starters or linked to fractions/ decimals/scales.
- Depth and confidence of place value before moving on.

WEEKS 5 – 7

NUMBER: ADDITION AND SUBTRACTION

Small Steps: 19

NCETM Spine: 1.22 (TP 3 add sub 1s,10s,100s,1000s and TP5). Refer back to 1.20 and 1.21 for introducing written methods.

- Add 1s, 10s, 100s and 1000s.
- Efficient methods (Estimate answers.)
- Add two 3-digit numbers – not crossing 10 or 100.
- Add two 4-digit numbers – no exchange.
- Add two 3-digit numbers – crossing 10/100
- Add two 4-digit numbers – one exchange.
- Add two 4-digit numbers – more than one exchange.
- Efficient methods.
- Problem solving (addition)
- Subtract 1s, 10s, 100s and 1000s.
- Efficient methods (Mental subtraction)
- Subtract a 3-digit number from a 3-digit number – no exchange.
- Subtract two 4-digit numbers – no exchange.
- Subtract 3-digit number from a 3-digit number – exchange.

YEAR 4 Small Steps

- Subtract two 4-digit numbers – one exchange.
- Subtract two 4-digit numbers – more than one exchange.
- Efficient subtraction.
- Problem solving (subtraction)
- Checking strategies

Guidance:
- Mental strategies for first steps before using written methods. Efficient methods need to be explored throughout.
- Efficient methods for mental and written calculations discussed throughout.
- Estimation needs to be discussed throughout.
- Problem solving used in all lesson to provide contexts. Taught using part-part whole and bar models.
- Checking strategies – part whole relationships and the inverse.
- Base 10 and place value counters to be used. Lots of exploration required.

WEEK 8

MEASURES: AREA

Small Steps: 5

NCETM Spine: 2.16

- What is area?
- Counting squares (2 steps)
- Comparing area.
- Making shapes

Guidance:
- Using area in real life contexts.
- Post-its useful to work out the area and make shapes.
- Geoboards for practical exploration.

WEEK 9 – 12

NUMBER: MULTIPLICATION AND DIVISION

Small Steps: 15

NCETM Spine: 2.6 (TP5 for x ÷ 0 and 1), 2.8 (6x and 9x), 2.9 (7x), 2.13 (x ÷ 10,100)

- 6 times-table
- Dividing by 6 and related facts.
- Multiply by 9.
- Dividing by 9 and related facts.
- 12 times tables.
- Dividing by 12 and related facts.
- Multiply by 7.
- Dividing by 7 and related facts.

YEAR 4 Small Steps

- Multiply by 1 and 0.
- Divide by 1.
- Multiply by three numbers.

Guidance:

- Scaling and word problems to be explored throughout the unit.
- Children must understand the concept of multiplication and division, using arrays, bar models, part-part wholes.
- Discuss that numbers are ten/one hundred times bigger or smaller (Avoid adding or taking away a zero).

YEAR 4 Small Steps

SPRING TER — 59 STEPS

WEEKS 1 – 3

NUMBER: MULTIPLICATION AND DIVISION

Small Steps: 18

NCETM Spine: 2.10 (factor pairs), 2.11 (11x, 12x & efficient multiplication), 2.14 (multiplication) 2.15 (division) 2.12 (remainders)

- Factor pairs
- Use factor pairs
- Multiply by 10.
- Multiply by 100.
- Divide by 10.
- Divide by 100.
- Related facts - multiplication and division
- Informal written methods for multiplication (partitioning)
- Multiply 2-digits by 1 –digit.
- Multiply 3-digits by 1-digit.
- Problem Solving
- Divide 2 digits by 1 digit.(partitioning)
- Divide 2-digits by 1-digit (short division with no exchanges).
- Divide 2-digits by 1-digit (exchanges).
- Divide 3-digits by 1-digit (exchanges)
- Divide 3-digits by 1-digit (with remainders)
- Problem Solving (efficient methods)
- Correspondence problems

Guidance:

- Place value counters to explore the concept of short multiplication.
- Worded problems taught alongside bar models to increase understanding.
- Efficient methods must be discussed to avoid overusing written methods.

WEEK 4 - 5

MEASURES: LENGTH & PERIMETER

Small Steps: 11/12

NCETM Spine: 2.16

- Equivalent lengths – mm, cm & m (2 steps)
- Kilometres.
- Equivalent lengths (km and m)
- Perimeter on a grid.
- Perimeter of a rectangle.
- Add lengths
- Subtract lengths
- Perimeter of rectilinear shapes
- Find missing lengths in rectillinear shapes
- Calculate perimeter of rectillinear shapes
- Perimeter of regular polygons

Guidance:

- Explore perimeter using Cuisenaire rods.
- Secure knowledge of the properties of rectangles.
- Revision of multiplying and dividing by 10,100,1000.

YEAR 4 Small Steps

WEEK 6 – 9

NUMBER: FRACTIONS

Small Steps: 17

NCETM Spine:May need to visit 3.0 (KS1 fractions) & Year 3 for intro.

3.4 (add and sub fractions) 3.7 (equivalents - TP1 & TP2),

3.5 (be selective - show more than one whole in fractions, count on & back past 1, add & sub)

- Unit and non-unit fractions.
- Understand the whole
- Count in fractions beyond 1.
- Partition a mixed number
- Numberlines with mixed numbers
- Compare and order mixed numbers
- Understanding improper fractions
- Converting mixed numbers to improper fractions
- Covert im[roper fractions to mixed numbers
- Equivalent fractions
- Equivalent fractions - on a numberline
- Equivalent fractions - families
- Add two or more fractions
- Subtract 2 fractions.
- Subtract from whole amounts.
- Subtract from mixed numbers
- Fractions of an amount (2 steps)
-

Guidance:

- Use bar models to represent fractions but use other representations (circles, objects, food, etc.)
- Knowledge of equivalents needs to be secure. Use fraction walls, folding paper, bar models.

YEAR 4 Small Steps

WEEKS 10 – 12

NUMBER: DECIMALS

Small Steps: 15

NCETM Spine: (Revisit 2.13 for ÷ 10 and 100),
1.23 (tenths, hundredths), 1.24 (mainly TP 1 and some of TP2)

- Tenths as fractions
- Tenths as decimals
- Tenths on a place value grid.
- Tenths on a number line.
- Make a whole with tenths
- Decimals greater than 1.
- Partition decimals
- Flexibly partition decimals
- Compare decimals
- Order decimals
- Round to the nearest whole. (One decimal Place)
- Divide 1 digit by 10.
- Divide 1 digit by 100
- Divide 2 digits by 10.
- Divide 2 digits by 100

Guidance:

- Hundredths can move into summer 1 if required.
- Refer to decimals as decimal-fractions.
- Bead strings for rounding to the nearest whole.
- PD materials advised for increased depth.

YEAR 4 Small Steps

SUMMER TERM — 58 STEPS

WEEKS 1 – 2

MEASUREMENT: MONEY

Small Steps: 11

NCETM Spine: 1.22 (TP 4 estimate money) 1.25

- Fractions as hundredths
- Hundredths as decimals
- Pounds and pence.
- Writing money using decimals
- Convert between pounds and pence
- Compare amounts of money
- Estimate with money
- Calculate with money
- Add money.
- Subtract money.
- Solve problems with money

Guidance:

- Add money using partitioning not column addition.
- Same for subtraction
- Reinforce mental methods

YEAR 4 Small Steps

WEEK 3 – 5

MEASURES: TIME

Small Steps: 9

NCETM Spine: N/A

- Hours, minutes and seconds.
- Years, months, weeks and days.
- Telling the time to 5 minutes.
- Telling the time to the minute (multiple steps)
- Using a.m. and p.m.
- Analogue to digital – 12 hour. (2 steps)
- 24-hour clock
- Analogue to digital – 24 hour. (converting)
- Problem solving with time (durations)

Guidance:

- Third Space maths article for analogue
- Analogue time past the hour to 59 in order to aid fluency and understanding of digital time and to avoid misconception.

WEEK 6 – 9

GEOMETRY: PROPERTIES OF SHAPE

Small Steps: 14

NCETM Spine: N/A

- Understand angles as turns
- Right angles
- Identify angles
- Compare angles.
- Order angles
- Symmetry
- Lines of symmetry.
- Complete a symmetrical figure.
- Parallel Lines
- Perpendicular Lines
- Recognise and describe 2-D shapes.
- Triangles. (2 Steps)
- Quadrilaterals. (2 Steps)
- Polygons

Guidance:

- Identify angles – spend 1 lesson exploring, 1 lesson fluency and problem solving.
- Steps have been moved to revise properties of 2D shapes before introducing triangles and quadrilaterals.

WEEKS 1 – 2

YEAR 4 Small Steps

WEEK 10

STATISTICS

Small Steps: 4

NCETM Spine: N/A

- Interpret charts.
- Comparison, sum and difference.
- Introducing line graphs.
- Draw line graphs.

Guidance:

- Link to topic and science as much as possible to show context of statistics

WEEK 11 – 12

GEOMETRY: POSITION & DIRECTION

Small Steps: 5

NCETM Spine: N/A

- Describe position using co-ordinates
- Plot co-ordinates.
- Draw 2D shapes on a grid.
- Translate on a grid.
- Describe translation on a grid.

Guidance:

- When drawing a coordinate on a grid, the number goes on the line and not in the box.

YEAR 5 Small Steps

AUTUMN TERM — 65 STEPS

WEEKS 1 – 3

NUMBER: PLACE VALUE

Small Steps: 15 W/R

NCETM Spine:1.26 (12) Negative numbers - 1.27 (6)

- 1000s, 100s, 10s, 1s
- Number to 10,000.
- Round to the nearest 10
- Round to the nearest 100
- Round to the nearest 1000.
- Number to 100,000.
- Compare numbers to 100,000.
- Order numbers to 100,000.
- Round numbers within 100,000.
- Numbers to a million.
- Counting in 10s, 100s, 1,000s, 10,000s and 100,000s.
- Compare and order numbers to a million.
- Round numbers to a million.
- Negative numbers.
- Roman Numerals to 100
- Roman numerals to 1,000.

Prior knowledge and guidance:

- Chn must be secure in 4-digit place value before unit starts (Ready to progress – Year 4 - PV)
- Use PD materials for depth.
- Many Steps require more than 1 lesson.
- Use Year 4 W/R + P.D materials if required.

WEEKS 4 – 5

NUMBER: ADDITION AND SUBTRACTION

Small Steps: Minimum 10 W/R

NCETM Spine: Revisit 1.22 (TP 3 and TP5) and 1.2 , 1.21 for written methods. 1.29: (strategies and mental methods as opposed to written. Includes decimals) (TP 3 difference) (TP 6 estimate, approximate, inverse) 1.28 - (multi-step problems)

- Add two four-digit numbers
- Add whole numbers with more than 4- digits (column method).
- Subtract two four-digit numbers
- Subtract whole numbers with more than 4-digits (column method).
- Round to estimate and approximate.
- Inverse operations (addition and subtraction).
- Part-Part Whole Relationship - 1.28
- Multi-step addition and subtraction problems

Prior knowledge and guidance:

- All chn need to be secure with written methods before 4 digits are attempted. Revisit and use depth if required.
- Early steps/depth lessons can include efficient methods/mental methods to use so children aren't dependent on abstract.
- Inverse - 1.29 useful for understanding equality.
- 1.28 explores algebra and different bar models in preparation for M-S problems.
- Good opportunity for statistics/perimeter/money revisiting/measure.

YEAR 5 Small Steps

WEEKS 6 – 8

NUMBER: MULTIPLICATION AND DIVISION

Small Steps: Minimum 18 W/R

NCETM Spine: 2.21 (factors multiples prime), 2.9 (square numbers) 2.13 (mult-divide 10,100,100), 2.19 (10,100,1000), 2.20 (cube numbers) 2.18 (maybe stand alone as equivalence)

- Multiples.
- Factors.
- Common factors.
- Prime numbers.
- Square numbers.
- Cube numbers.
- Cubic Centimetres
- Compare volume.
- Estimate volume.
- Estimate capacity
- Multiplying by 10
- Multiply by 100
- Multiply by 1000.
- Dividing by 10
- Dividing by 100
- Dividing by 1000.
- Multiples of 10, 100 and 1000. (2 steps)

Prior knowledge and guidance:

- Spine 2.21 has great depth.
- Volume can be linked to cubed numbers.
- Multiple steps required for primes/factors etc.

WEEKS 9 – 12

NUMBER: FRACTIONS A

Small Steps: Minimum 22 W/R

NCETM Spine: revisit parts of earlier fractions to prepare for topic (3.1 , 3.2, 3.3 , 3.4) 3.7 (equivalents and simplifying, compare order), 3.8 (add and subtract), 3.5 improper and mixed, 3.6 multiplying.

- What is a fraction?
- Unit fractions.
- Non-Unit fractions
- Equivalent fractions (yr4)
- Equivalent fractions.
- Simplifying Fractions (2/3 steps)
- Improper fractions to mixed numbers.
- Mixed numbers to improper fractions.
- Number sequences.
- Compare fractions less than 1.
- Order fractions less than 1.
- Compare fractions greater than 1.
- Order fractions greater than 1.
- Add and subtract fractions.
- Add fractions within 1.
- Add 3 or more fractions.
- Add fractions.
- Add mixed numbers.
- Subtract fractions.
- Subtract mixed numbers.
- Subtract – breaking the whole.
- Subtract 2 mixed numbers.

Guidance:

- Expect these steps to run into the Spring term.
- Children need strong understanding of what a fraction is. Recaps steps are key.
- Bar models and a range of representations are vital.

YEAR 5 Small Steps

SPRING TERM — 44 STEPS

WEEKS 1 – 3

NUMBER: MULTIPLICATION AND DIVISION

Small Steps: Minimum 12 W/R

NCETM Spine:2.23 (area model), 2.15 (division), 2.14 (written multiplication)

- Multiply 2 digit by 1 digit
- Multiply 3 digits by 1 digit.
- Multiply 4-digits by 1-digit.
- Multiply 2-digits (area model).
- Multiply 2-digits by 2-digits.
- Multiply 3-digits by 2-digits.
- Multiply 4-digits by 2-digits.
- Divide 2 digits by 1 digit.
- Divide 3 digits by 1 digit.
- Divide 4-digits by 1-digit.
- Divide with remainders.
- Problem solving (multiplication and division)

Prior knowledge and guidance:

- PD materials have a variety of division/multiplication strategies.
- Smaller steps required if calculation is not secure.
- Opportunities for depth: multi-step problems, area questions.

WEEKS 4 – 5

NUMBER: FRACTIONS B

Small Steps: Minimum 7 W/R

NCETM Spine: revisit parts of earlier fractions to prepare for topic (3.1 , 3.2 , 3.3 , 3.4) 3.7 (equivalents and simplifying, compare order), 3.8 (add and subtract), 3.5 improper and mixed, 3.6 multiplying.

- Multiply unit fractions by an integer.
- Multiply non-unit fractions by an integer.
- Multiply mixed numbers by integers.
- Fractions of a quantity.
- Fraction of an amount.
- Find the whole
- Using fractions as operators.

YEAR 5 Small Steps

WEEKS 6 – 8

DECIMALS AND PERCENTAGES

Small Steps: Minimum 19 W/R, W/R yr 4

NCETM Spine: continue from y4 1.23 and 1.24 (1/10, 1/100, 1/000ths)

1.24 (TP 3 compare and order), 3.10 FDP (TP1,TP2,TP4, TP5)

- Tenths as decimal fractions
- Decimals greater than 1.
- Hundredths as fractions
- Hundredths as decimals
- Decimals up to 2 decimal places on a place value grid
- Decimals greater than 1 (2 decimal places)
- Order decimals
- Compare decimals
- Round to the nearest whole.(recap of 1 decimal place)
- Round to the nearest whole 2 decimal places)
- Thousandths as fractions
- Thousandths as decimals
- Thousandths on a place value grid
- Compare and order decimals
- Understand percentages.
- Percentages as fractions
- Percentages as decimals.
- Halves and quarters as decimals
- Equivalent F.D.P.

Prior knowledge and guidance:

- Many steps have been added from the P.D materials. These will not be required depending on secure knowledge of tenths.
- P.D materials add depth needed to understand decimals and their function.
- Visuals and models from NCETM and W.R are vital, as well as the use of base 10 to represent the scale of tenths and hundredths.

WEEKS 9 – 10

MEASUREMENT: PERIMETER AND AREA

Small Steps: Minimum 7 W/R

NCETM Spine: revisit 2.16

- Perimeter of rectangles
- Perimeter of rectilinear shapes
- Perimeter of Polygons
- Counting squares
- Area of rectangles.
- Area of compound shapes.
- Estimate area

Guidance:

- Measure perimeter relies more on using a ruler. Moved to measurement unit.
- Rectilinear shapes require multiple lessons due to tricky concept.

YEAR 5 Small Steps

WEEKS 11 – 12

STATISTICS

Small Steps: 5 W/R

NCETM Spine: some examples in 1.28 and 1.29

- Read and interpret line graphs.
- Draw line graphs.
- Read and interpret tables.
- Two-way tables.
- Timetables.

Prior knowledge and guidance:

- These weeks can be removed and integrated in other units/science/geography etc.
- Timetables can be moved to time unit (year 4)

YEAR 5 Small Steps

SUMMER TERM — 51 STEPS

WEEKS 1 – 3

GEOMETRY: PROPERTIES OF SHAPE

Small Steps: Minimum 13 W/R

NCETM Spine: N/A 1.28 (some ideas in TP4)

- Identify compare and order angles
- Understand and use degrees.
- Classify angles
- Estimate angles
- Measuring angles up to 180 degrees.
- Drawing lines and angles accurately.
- Calculating angles on a straight line.
- Calculating angles around a point.
- Lengths and angles in shapes
- Triangles
- Quadrilaterals
- Regular and irregular polygons.
- 3D shapes.

Prior knowledge and guidance:

- Recap steps are included if required.
- Knowledge of quadrilaterals and triangles may need multiple steps.

WEEKS 4 – 5

GEOMETRY: POSITION & DIRECTION

Small Steps: Minimum 7 W/R

NCETM Spine: 1.27 TP 6

- Read and plot co-ordinates
- Problem solving with co-ordinates
- Translation
- Translation with co-ordinates
- Lines of symmetry
- Reflection in horizontal and vertical lines
- Reflection with co-ordinates

Guidance:

- Use mirrors for symmetry

YEAR 5 Small Steps

WEEKS 6 – 8

NUMBER: DECIMALS

Small Steps: Minimum 11 W/R

NCETM Spine: ref back to 1.23 TP 4 -6 1.24 (TP 4 & 6) 2.19 TP 2 and 2.29 (decimals by 10,100,1000)

- Use known facts to add and subtract decimals within 1.
- Complements to 1.
- Adding decimals – crossing the whole.
- Subtracting decimals – crossing the whole.
- Adding decimals with the same number of decimal places.
- Subtracting decimals with the same number of decimal places.
- Adding decimals with a different number of decimal places.
- Subtracting decimals with a different number of decimal places.
- Efficient strategies for adding and subtracting decimals
- Decimal sequences.
- Multiply and divide decimals - mising values

Prior knowledge and guidance:

- Revisits column addition and subtraction.
- Chance to revisit measures/conversions/perimeter

WEEKS 9

NUMBER: NEGATIVE NUMBERS

Small Steps: Minimum 5 W/R

NCETM Spine: 1.26 (12), Negative numbers - 1.27 (6)

- Understand negative numebrs
- Count through zero in ones
- Count through zero in multiples
- Compare and order negative numbers
- Find the differnece

Guidance:

- Steps have been moved later on in the year by White Rose.
- Steps included are based from NCETM 1.27.

YEAR 5 Small Steps

WEEKS 10 – 12

MEASUREMENT: CONVERTING UNITS

Small Steps: Minimum 14 W/R

NCETM Spine:1.24 (TP5)

- Kilograms and kilometres.
- Millimeters and millilitres.
- Convert units of length
- Convert metric units
- Convert imperial units
- Cnvert units of time
- Calculate with timetables

- Time (W/R – Yr4 Recaps)
- Telling time to the minute
- Using am/pm
- 24 hour clock
- Analogue to digital
- Converting units of time.
- Timetables

Prior knowledge and guidance:

- Multiplying and Dividing moved into measures to help with conversion.
- Multiple recaps of mm, cm, m, km etc.
- Measure perimeter moved to recap perimeter and measures in context.
- Time recaps are there for chn who are not secure with telling the time.
- Analogue time (Third Space Maths)

YEAR 6 Small Steps

AUTUMN TERM

62 STEPS

WEEKS 1 – 2

NUMBER: PLACE VALUE

Small Steps: 10

NCETM Spine: revisit y5 1.26 PV 1.30 (mainly TP2 and TP3) 1.30 (TP 5 rounding)

- Numbers to 100,000
- Numbers to a million
- Numbers to ten million.
- Powers of 10
- Number line to 1,000,000
- Number line to 10,000,000
- Compare an order any integer.
- Round numbers to 10,100,1000
- Round any integer.
- Negative numbers.

Guidance:

- Add in small steps from previous year groups to build depth.
- PD materials provide useful guide to recap previous steps from KS2.
- Place value grids used more extensively to reveal structure of number in 'groups of 3'.
- Number lines has more emphasis, focusing on 2,4,5 and 10 sections.

WEEKS 3 – 7

NUMBER: THE FOUR OPERATIONS

Small Steps: 27

NCETM Spine: 1.30TP 4 (revisit 1.20 and 1.21 for column) 1.30 (maybe use to secure PV and counting through boundaries using mental methods TP4 and fluency including RPS in TP6) 2.24 (division - ref back to 2.15 if necessary) 2.23 long multiplication 2.21 common factors, common multiples, primes 2.20 cubes and ref back to 2.9 for square numbers 2.22 and 2.28 (order operations) 2.25 (reason known facts)

- Add whole numbers with more than 4 digits
- Subtract whole numbers with more than 4 digits.
- Inverse operations.
- Multi-Step problems
- Add and subtract integers.
- Common factors.
- Common multiples.
- Rules of divisibility.
- Primes to 100.
- Square numbers
- Cube numbers
- Multiply 4 digits by 1 digit.
- Multiply 2 digits – (area model, two by two, three by two)
- Divide 4 digit by 1 digit.
- Divide with remainders.
- Short division.

YEAR 6 Small Steps

- Factors
- Division using factors.
- Introduction to long division (Multiple steps)
- Long division with remainders.
- Solve problems with division.
- Solve multi-step problems. (Multiple steps)
- Order of operations.
- Mental calculations and estimation.
- Reasoning from known facts

Guidance:
- Teachers must assess gaps and provide extra steps before new learning.
- Bar models will support teaching of multi-step problems – See Barvember challenges for examples.

WEEKS 8 – 9

NUMBER: FRACTIONS A

Small Steps: 13

NCETM Spine: 3.7 simplify equivalent incl. number line

revisit 3.5 mixed number improper fraction add, sub, number line 3.8 add and sub fractions 3.8 TP 5 (compare denom. and numerator) 3.9

- Equivalent fractions (Multiple Steps if required)
- Simplify fractions.
- Equivalent fractions with simplifying.
- Compare & order (denominator).
- Compare & order (numerator).
- Add & subtract simple fractions.
- Add & subtract any 2 fractions.
- Convert mixed and improper fractions.
- Add mixed numbers.
- Subtract mixed numbers.
- Multi-step problems. (Multiple steps)

Guidance:
- Children to understand equivalents and the abstract to find common denominators.
- Revise steps from other year groups if children are not secure.
- Bar models used to support children.

YEAR 6 Small Steps

WEEKS 10 – 11

NUMBER: FRACTIONS B

Small Steps: 7

NCETM Spine: Multiply, divide 3.9 fractions of amounts TP1 - revisit 3.6 TP 3

- Multiply fractions by integers.
- Multiply fractions by fractions.
- Divide fractions by an integers.
- Divide any fractions by an integer.
- Mixed questions with fractions.
- Fraction of an amount.
- Fraction of an amount - finding the whole.

Guidance:

- Use bar models to support new learning.
- Recap year 5 steps to support new learning.

WEEK 12

MEASURES: CONVERT UNITS

Small Steps: 5

NCETM Spine: 2.29 TP2 (metric only)

- Metric measures.
- Convert metric measures.
- Calculate with metric measures.
- Miles and kilometres.
- Imperial measures.

YEAR 6 Small Steps

SPRING TERM — 58 STEPS

WEEKS 1 – 2

NUMBER: RATIO

Small Steps: 10

NCETM Spine: 2.27

- Add or multiply?
- Use ratio language
- Introduction to the ratio symbol
- Ratio and fractions
- Scale Drawing
- Use Scale factors
- Similar shapes
- Ratio Problems
- Proportion problems
- Recipies

Guidance:

- NCETM Spine useful for guidance.
- Use visuals and real-life representations.

WEEKS 3 – 4

NUMBER: ALGEBRA

Small Steps: 10

NCETM Spine: 1.28, 1.31

- 1-step function machines
- 2-step function machines
- Form expressions
- Substitution
- Formulae
- Form equations
- Solve 1-step equations
- Solve 2-step equations
- Find pairs of values
- Solve problems with two unknowns
-

Guidance:

- Use bar models and manipulatives to support learners.

YEAR 6 Small Steps

WEEKS 5 – 6

NUMBER: DECIMALS

Small Steps: 10

NCETM Spine: revisit TP 1.24 for 3 D.P, revisit 2.29 - multi div 10,100,1000

2.19 mult div decimals by integers

2.28 (some support with division problems but no decimals)

3.10 fraction decimal

- Understand thousandths
- Place value within 1
- Place value - integers and decimals
- Round Decimals
- Add and subtract Decimals
- Multiply by 10, 100 and 1,000.
- Divide by 10, 100 and 1,000.
- Multiply decimals by integers.
- Divide decimals by integers.
- Multiply and divide in context

Guidance:

- Children need secure understanding of tenths, hundredths and thousandths.
- Use visuals (PD materials useful for this).

WEEKS 7 – 8

NUMBER: FRACTIONS, DECIMALS AND PERCENTAGES

Small Steps:11

NCETM Spine: 3.10

- Understand percentages
- Fractions to percentages.
- Decimal and Fraction equivalents
- Fractions as Divisions
- Understand Percentages
- Fractions to percentages
- Equivalent fractions, decimals and percentages
- Order fractions, decimals and eprcentages
- Percentage of an amount - one step
- Percentage of an amount - two step
- Percentages - Missing values.

Guidance:

- Use one hundred squares as a pictorial representation.
- Children to use the term decimal-fractions.

YEAR 6 Small Steps

WEEKS 9 – 10

MEASUREMENT: PERIMETER, AREA AND VOLUME

Small Steps: 11

NCETM Spine: 2.30 area perimeter (revisit 2.16), 2.20 volume

- Perimeter
- Perimeter of rectilinear shapes (Multiple steps)
- Shapes – same area.
- Area and Perimeter
- Area of a triangle (counting squares).
- Area of a triangle (right angled triange).
- Area of a triangle (any triangle).
- Area of a parallelogram.
- What is volume?
- Volume – counting cubes.
- Volume of a cuboid.

Guidance:

- Children need to understand the difference between area and perimeter.
- Children encouraged to calculate perimeter and area of rectilinear shapes confidently before missing length problems.

WEEKS 11 – 12

STATISTICS

Small Steps: 6

NCETM Spine: 1.28 TP3 (pie chart, bar chart - missing values focus)

3.10 TP6 - percentage context, 2.26 mean average

- Line graphs
- Dual bar charts
- Read and interpret pie charts
- Pie charts with percentages
- Draw pie charts
- The mean

Guidance:

- Use statistics through science and geography to increase depth and provide a purpose.

YEAR 6 Small Steps

SUMMER TERM — 20 STEPS

WEEKS 1 – 3

GEOMETRY: PROPERTY OF SHAPE

Small Steps: 14

NCETM Spine: 1.28 TP4 (missing angles only)

- Introduce angles.
- Measure and classify angles
- Calculate angles.
- Vertically opposite angles.
- Different types of triangles.
- Angles in a triangle.
- Angles in a triangle – special cases.
- Angles in a triangle – missing angles.
- Quadrilaterals.
- Angles in special quadrilaterals.
- Circles
- Draw shapes accurately.
- Nets of 3D shapes.

Guidance:

- Constant recapping of the properties of shape required e.g. parallel, perpendicular, angles, regular, irregular, lines of symmetry.
- Constant recapping of 2D and 3D shape names.
- Add small steps where required.

WEEK 4

GEOMETRY: POSITION & DIRECTION

Small Steps: 5

NCETM Spine: 1.27 TP 6

- The first quadrant
- Read and plot points in four quadrants
- Solve problems with coordinates
- Translations.
- Reflections.

Guidance:

- Introduce steps for depth where required.

WEEKS 5 – 12

THEMED PROJECTS, CONSOLIDATION AND PROBLEM SOLVING.

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