MATHS

THE FOXTON CURRICULUM

Foxton Primary School

2023/24

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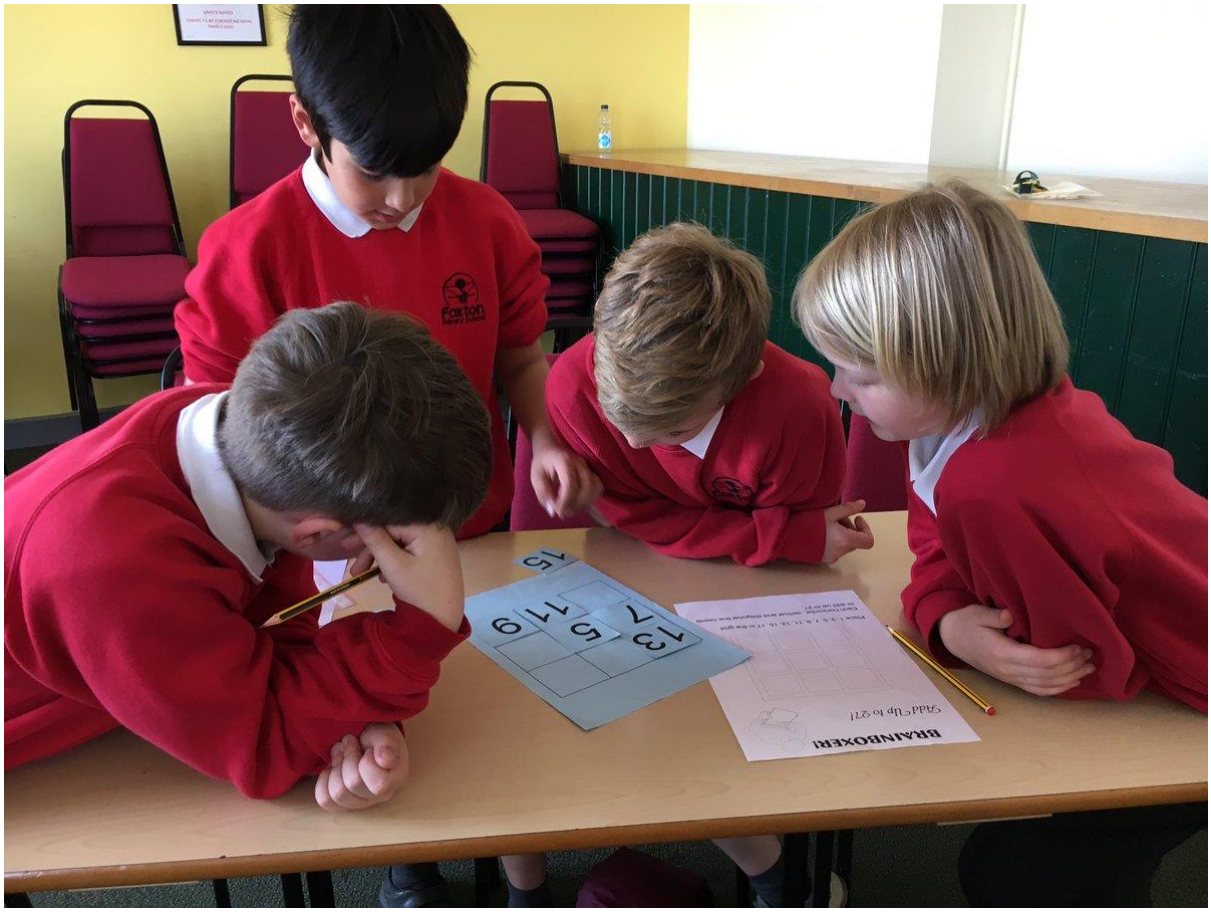
Pure mathematics is, in its way, the poetry of logical ideas
– Albert Einstein

At Foxton Primary School, we are mathematicians.



Our Maths Curriculum

We follow a mastery approach to teaching mathematics and have adopted the White Rose Mixed Age Schemes of Work which are aligned to the National Curriculum (see Appendix 1). In every lesson, children develop mathematical fluency before moving onto reasoning and problem solving. Throughout each year, children will cover and build on their understanding in place value, the four operations, fractions, the properties of shape, describing position, direction and movement, measures, statistics and algebra.

We understand the importance of making connections across these areas of maths, which are revisited regularly, in order to solve problems. We also believe it is important for children to be able not only to find the answers to problems but also to be able to explain the reasoning behind their lines of enquiry using accurate mathematical vocabulary which we have mapped the progression of over each year group (see Appendix 2).

EYFS Overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Baseline		Match, sort and compare		Talk about measure and patterns		It's me 1, 2, 3 Circles and triangles			1, 2, 3, 4, 5 Shapes with 4 sides		
Spring	Alive in 5		Mass and capacity	Growing 6, 7, 8		Length, height and time		Building 9 and 10			Explore 3D shapes	
Summer	To 20 and beyond		How many now?	Manipulate, compose and decompose		Sharing and grouping		Visualise, build and map			Make connections	Consolidation

Year 1/2 Overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Place value (within 10)					Addition & subtraction (within 10)					Shape	Consolidation
	Place value					Addition & subtraction				Shape		
Spring	Place value (within 20)				Addition & subtraction (within 20)			Place value (within 50)		Length and height		Mass and volume
	Money			Multiplication and division				Length and height		Mass, capacity and temperature		
Summer	Multiplication and division				Fractions	Position & direction		Place value (within 100)		Money	Time	Consolidation
	Statistics			Fractions		Position & direction		Problem solving		Time		

Year 3/4 Overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Place value			Addition and subtraction					Multiplication and division			
	Place value				Addition and subtraction			Area	Multiplication and division			Consolidation
Spring	Multiplication and division			Length and perimeter			Fractions			Mass and capacity		
	Multiplication and division			Length and perimeter		Fractions				Decimals		
Summer	Fractions		Money		Time			Shape		Statistics		Consolidation
	Decimals		Money		Time		Consolidation	Shape		Statistics	Position and direction	

Year 5/6 Overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Place value			Addition & subtraction		Multiplication and division			Fractions A			
	Place value		Four operations					Fractions A		Fractions B		Conversion
Spring	Multiplication and division			Fractions B		Decimals and percentages			Perimeter and area		Statistics	
	Ratio		Algebra		Decimals		Fractions, decimals & percentages		Area, perimeter & volume		Statistics	
Summer	Shape			Position and direction		Decimals			Negative numbers	Converting units		Volume
	Shape			Position & direction	Themed projects, consolidation and problem solving							

The White Rose Mixed Age Progression document allows teachers to see exactly where the National Curriculum objectives are placed within our scheme of work. This helps teachers understand the knowledge that has been taught previously and how their lessons build upon this. Systematic retrieval practice at the start of every lesson also helps children revisit and remember key content over time.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Place Value: Counting	• count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number • Count numbers to 100 in numerals; count in multiples of twos, fives and tens **Y1/2- Autumn 1** **Y1/2- Autumn 3** **Y1/2- Spring 2** **Y1/2- Summer 3**	• count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward **Y1/2- Autumn 3** **Y2/3- Autumn 3**	• count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number **Y2/3- Autumn 1** **Y2/3- Autumn 3** **Y2/3- Summer 2** **Y3/4- Autumn 1** **Y3/4- Autumn 3**	• count in multiples of 6, 7, 9, 25 and 1000 • count backwards through zero to include negative numbers **Y3/4- Autumn 1** **Y3/4- Autumn 3** **Y4/5- Autumn 1** **Y4/5- Autumn 3**	• count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 • count forwards and backwards with positive and negative whole numbers, including through zero **Y4/5- Autumn 1** **Y5/6- Autumn 1**	
Place Value: Represent	• identify and represent numbers using objects and pictorial representations • read and write numbers to 100 in numerals • read and write numbers from 1 to 20 in numerals and words. **Y1/2- Autumn 1** **Y1/2- Autumn 3** **Y1/2- Spring 2** **Y1/2- Summer 3**	• read and write numbers to at least 100 in numerals and in words • identify, represent and estimate numbers using different representations, including the number line **Y1/2- Autumn 3** **Y2/3- Autumn 3**	• identify, represent and estimate numbers using different representations • read and write numbers up to 1000 in numerals and in words **Y2/3- Autumn 1** **Y3/4- Autumn 1**	• identify, represent and estimate numbers using different representations • read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value **Y3/4- Autumn 1** **Y4/5- Autumn 1**	• read, write, (order and compare) numbers to at least 1 000 000 and determine the value of each digit • read Roman numerals to 1000 (M) and recognise years written in Roman numerals. **Y4/5- Autumn 1** **Y5/6- Autumn 1**	• read, write, (order and compare) numbers up to 10 000 000 and determine the value of each digit **Y5/6-Autumn 1**

In a typical maths lesson, learning is supporting by the use of concrete and pictorial resources before children move onto abstract representations. This is exemplified in our Calculation Policy (see Appendix 3). The maths subject leader and several teachers have worked alongside the NCETM and East Midlands South Maths Hub to develop our approach to teaching maths, which is underpinned by the NCETM's 5 big ideas in teaching for mastery:

1. Coherence

Lessons are broken down into small connected steps that gradually unfold the concept, providing access for all children and leading to a generalisation of the concept and the ability to apply the concept to a range of contexts.

2. Representation and Structure

Representations used in lessons expose the mathematical structure being taught, the aim being that students can do the maths without recourse to the representation. See calculation policy.

3. Mathematical Thinking

If taught ideas are to be understood deeply, they must not merely be passively received but must be worked on by the student: thought about, reasoned with and discussed with others.

4. Fluency

Quick and efficient recall of facts and procedures and the flexibility to move between different contexts and representations of mathematics.

5. Variation

Variation is twofold. It is firstly about how the teacher represents the concept being taught, often in more than one way, to draw attention to critical aspects, and to develop deep and holistic understanding. It is also about the sequencing of the episodes, activities and exercises used within a lesson and follow up practice, paying attention to what is kept the same and what changes, to connect the mathematics and draw attention to mathematical relationships and structure.

In line with our mastery approach, the expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress are based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly are challenged through being offered rich

mastery and sophisticated problems, such as low-threshold high-ceiling tasks from NRICH, before any acceleration through new content. Those who are not sufficiently fluent with earlier material are given time to consolidate their understanding, including through additional practice, before moving on.

Knowing more and remembering more

Every maths lesson starts with retrieval practice which takes into account interleaving in order to combat the forgetfulness curve. Through responsive teaching, staff continuously monitor pupils' progress against expected attainment for their age, making formative assessment notes where appropriate and using these to inform teaching and intervention.

To further develop mathematical fluency, our children in Fox Cubs and Rabbit class have a Mastering Number session most afternoons. Further up the school, this time is used for learning times tables and arithmetic practice.

Summative assessments are completed at the end of each unit. Our subsequent question level analysis informs the teachers next steps. Headstart Assessments are used termly to help teachers verify their teacher assessments. The standardised scores these generate can be reliably compared against national averages. Additionally, year-on-year progress can be judged.

A Global Curriculum

Integral to our comprehensive Global Curriculum at Foxton, mathematics plays a pivotal role in nurturing both analytical acumen and informed global citizenship. Mathematical fluency serves as a cornerstone for conducting inquiry-based projects, such as evaluating trends in poverty, computing personal water footprints, and engaging in our bioblitz initiative. These endeavours resonate with several United Nations Sustainable Development Goals (SDGs), reinforcing the significance of mathematical proficiency.

The ability to comprehend and analyse statistics is crucial for understanding and interpreting data related to the Global Goals. As students delve into mathematical concepts, they gain the skills necessary to critically engage with information, aligning with Goal 4: Quality Education and Goal 17: Partnerships for the Goals.

Furthermore, our commitment to developing competent mathematicians aligns closely with Goals 8 and 9: Decent Work and Economic Growth, and Industry, Innovation, and Infrastructure. Equipping students with strong mathematical foundations ensures that they are well-prepared for the evolving job landscape, fostering adaptability and innovation in an ever-changing world.

Through our primary maths curriculum, we empower students not only with mathematical fluency but also with a broader perspective on their role as global citizens. By nurturing their ability to make informed decisions and

engage critically with data, our curriculum fosters a generation of individuals who are poised to contribute positively to the challenges and opportunities that lie ahead.

Appendix 1

National Curriculum

You can access the full Mathematics Programme of Study here.

Appendix 2

Progression of Maths Vocabulary

Year 1 Maths Vocabulary	
Number and place value	Ten more/less, digit, numeral, figure(s), compare, (in) order/a different order, size, value, between, halfway between, above, below, tens, ones
Addition and subtraction	Number bonds, number line, add, more, plus, make, sum, total, altogether, inverse, double, near double, equals, is the same as (including equals sign), difference between, subtract, take away, minus How many more to make …? How many more is … than ... ? How much more is ... ? How many fewer is … than… ? How much less is … ?
Multiplication and division	Once, twice, three, five times, multiple of times Multiply, multiply by, repeated addition, array, row, column, double, halve, share, share equally, group in pairs, threes, etc., equal groups of, divide, divided by, left over
Measure	Time, days of the week, seasons, day, week, month, year, weekend, birthday, holiday, morning, afternoon, evening, night, midnight, bedtime, dinnertime, playtime, today, yesterday, tomorrow Before, after, next, last, now, soon, early, late, quick, quicker, quickest, quickly , fast, faster, fastest, slow, slower, slowest, slowly, old, older, oldest, new, newer, newest Takes longer, takes less time, hour, o'clock, half past, clock, watch, hands, how long ago?, How long will it be to … ?, How long will it take to … ?, How often?, always, never, often, sometimes, usually, once, twice, first, second, third, etc., estimate, close to, about the same as, just over, just under, too many, too few, not enough, enough Length, width, height, depth, long, longer, longest, short, shorter shortest, tall, taller, tallest, high, higher, highest, Low, wide, narrow, deep, shallow, thick, thin, far, near, close, metre, ruler, metre stick How much?, How many?, money, coin, penny, pence, pound, price, cost, buy, sell, spend, spent, pay, change, dear(er), costs more, costs less, cheaper, costs the same as, total
Geometry (position and direction)	Before, after, beside, next to, opposite, apart, between, middle, edge, centre, corner, direction, journey, left, right, up, down, forwards, backwards, sideways, across, close, far, near, along, through, to, from, towards, away from, movement, slide, roll, turn, whole turn, half turn, stretch, bend
Geometry (properties of shape)	Corner (point, pointed), face, side, edge, make, build, draw
Fractions	Whole, equal parts, four equal parts, one half, two halves, a quarter, two quarters
Problem solving	Change, change over, split, separate, carry on, continue, repeat, what comes next?, find, choose, collect, use, make, build Tell me, describe, pick out, talk about, explain, show me, read, write, record, trace, copy, complete, finish, end, fill in, shade, colour, tick, cross, draw, draw a line between, join (up), ring, arrow Cost, count, work out, answer, check same number(s)/different number(s)/missing number(s)

	Number facts, number line, number track, number square, number cards, abacus, counters, cubes, blocks, rods, die, dice, dominoes, pegs, peg board Same way, different way, best way, another way, in order, in a different order, not all, every, each

Year 2 Maths Vocabulary	
Number and place value	Numbers to one hundred, hundreds, partition, recombine, more/less
Measure	Quarter past/to, metres, kilometres, grams, kilograms, millimetres, liters, temperature, degrees
Geometry (position and direction)	Rotation, clockwise, anticlockwise, straight line, ninety degree turn, right angle
Geometry (properties of shape)	Size, bigger, larger, smaller, symmetrical, line of symmetry, fold, match, mirror line, reflection, pattern, repeating pattern
Fractions	Three quarters, one third, a third, equivalence, equivalent
Data/statistics	Count, tally, sort, vote, graph, block graph, pictogram, represent, group, set, list, table, label, title, most popular, most common, least popular, least common
Problem solving	Predict, describe the pattern, describe the rule, find, find all, find different, investigate
Number and place value	Numbers to one hundred, hundreds, partition, recombine, more/less

Year 3 Maths Vocabulary	
Number and place value	Numbers to one thousand
Addition and subtraction	Column addition and subtraction
Multiplication and division	Product, multiples of four, eight, fifty and one hundred, scale up
Measure	Leap year, twelve-hour/twenty-four-hour clock, Roman numerals I to XIII
Geometry (position and direction)	Greater/less than ninety degrees, orientation (same orientation, different orientation)
Geometry (properties of shape)	Horizontal, perpendicular and parallel lines
Fractions	Numerator, denominator, unit fraction, non-unit fraction, compare and order, tenths
Data/statistics	Chart, bar chart, frequency table, Carroll diagram, Venn diagram, axis, axe

Year 4 Maths Vocabulary	
Number and place value	Tenths, hundredths, decimal (places), round (to nearest), thousand more/less than, negative integers, count through zero, Roman numerals I to C
Multiplication and division	Multiplication facts (up to 12x12), division facts, inverse, derive
Measure	Convert
Geometry (position and direction)	Co-ordinate, translate, quadrant, X-axis, Y-axis, perimeter, area
Geometry (properties of shape)	Quadrilaterals, triangles, right, acute and obtuse angles
Fractions and decimals	Equivalent decimals and fractions
Data/statistics	Continuous data, line graph

Year 5 Maths Vocabulary	
Number and place value	Powers of 10
Addition and subtraction	Efficient written method
Multiplication and division	Factor pairs, composite numbers, prime number, prime factors, square number, cubed number, formal written method
Measure	Volume, imperial units, metric units
Geometry (position and direction)	Reflex angle, dimensions
Geometry (properties of shape)	Regular and irregular polygons

Fractions and decimals	Proper fractions, improper fractions, mixed numbers, percentage, half, quarter, fifth, two fifths, four fifths, ratio, proportion

Year 6 Maths Vocabulary	
Number and place value	Numbers to ten million
Addition and subtraction	Order of operations
Multiplication and division	Common factors and common multiples
Geometry (position and direction)	Four quadrants (for co-ordinates)
Geometry (properties of shape)	Vertically opposite (angles), circumference, radius, diameter
Fractions and decimals	Degree of accuracy, simplify
Algebra	Linear number sequence, substitute, variables, symbol, known values
Data/statistics	Mean, pie chart, construct

Appendix 3

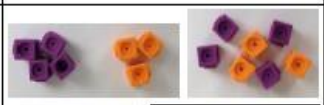
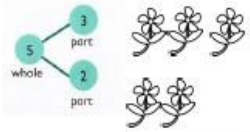
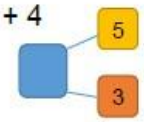
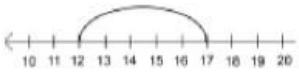
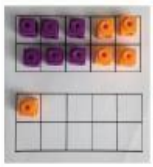
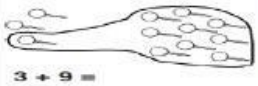
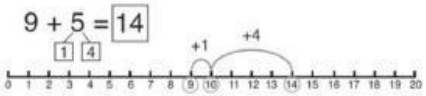
MathsHUBS White Rose

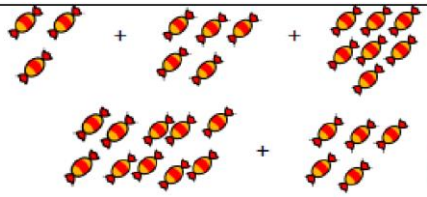
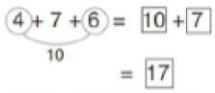
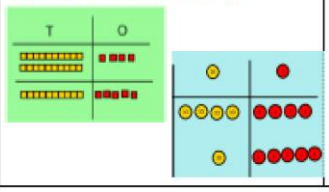
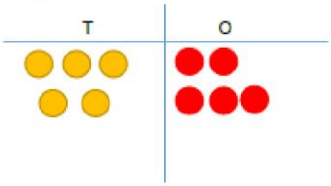
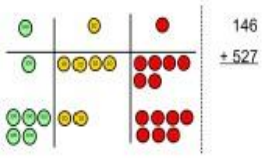
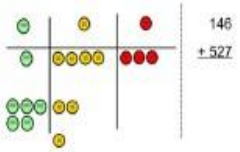
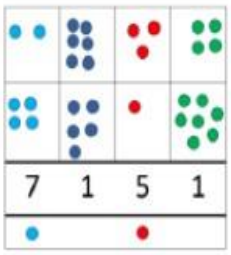
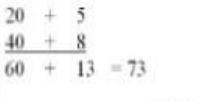
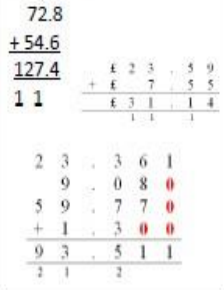
Progression in Calculations

Addition

Foxton Primary School

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Addition	Combining two parts to make a whole: part whole model. Starting at the bigger number and counting on. Regrouping to make 10.	Adding three single digits. Column method – no regrouping.	Column method- regrouping. (up to 3 digits)	Column method- regrouping. (up to 4 digits)	Column method- regrouping. (with more than 4 digits) (Decimals- with the same amount of decimal places)	Column method- regrouping. (Decimals- with different amounts of decimal places)

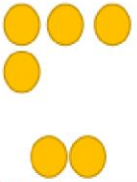
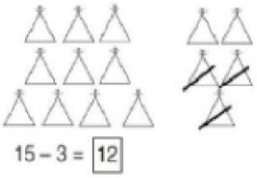
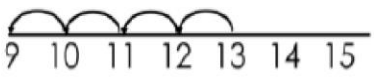
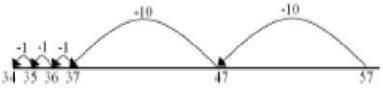
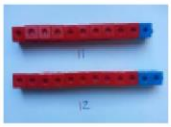
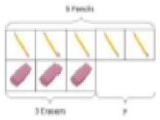
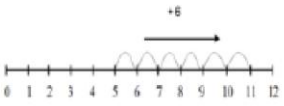
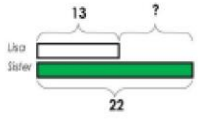
Objective and Strategies	Concrete	Pictorial	Abstract
Combining two parts to make a whole: part-whole model	  Use cubes to add two numbers together as a group or in a bar. 	  Use pictures to add two numbers together as a group or in a bar. 	4 + 3 = 7 10= 6 + 4  Use the part-part whole diagram as shown above to move into the abstract.
Starting at the bigger number and counting on	 Start with the larger number on the bead string and then count on to the smaller number 1 by 1 to find the answer.	12 + 5 = 17  Start at the larger number on the number line and count on in ones or in one jump to find the answer.	5 + 12 = 17 Place the larger number in your head and count on the smaller number to find your answer.
Regrouping to make 10.	 6 + 5 = 11  Start with the bigger number and use the smaller number to make 10.	 Use pictures or a number line. Regroup or partition the smaller number to make 10. 	7 + 4= 11 If I am at seven, how many more do I need to make 10. How many more do I add on now?

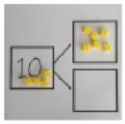
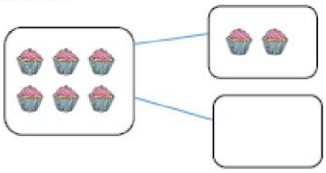
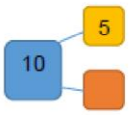
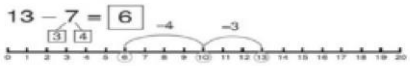
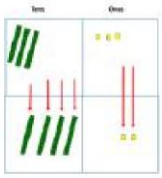
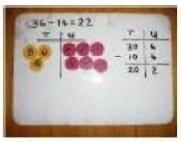
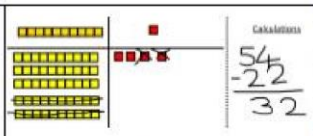
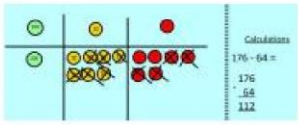
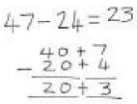
Objective and Strategies	Concrete	Pictorial	Abstract
Adding three single digits	4 + 7 + 6= 17 Put 4 and 6 together to make 10. Add on 7.  Following on from making 10, make 10 with 2 of the digits (if possible) then add on the third digit.	 Add together three groups of objects. Draw a picture to recombine the groups to make 10.	 Combine the two numbers that make 10 and then add on the remainder.
Column method- no regrouping	24 + 15= Add together the ones first then add the tens. Use the Base 10 blocks first before moving onto place value counters. 	After practically using the base 10 blocks and place value counters, children can draw the counters to help them to solve additions. 	Calculations 21 + 42 = 21 + 42
Column method- regrouping	Make both numbers on a place value grid.  Add up the units and exchange 10 ones for one 10.  Add up the rest of the columns, exchanging the 10 counters from one column for the next place value column until every column has been added. This can also be done with Base 10 to help children clearly see that 10 ones equal 1 ten and 10 tens equal 100. As children move on to decimals, money and decimal place value counters can be used to support learning.	Children can draw a pictoral representation of the columns and place value counters to further support their learning and understanding. 	Start by partitioning the numbers before moving on to clearly show the exchange below the addition.  As the children move on, introduce decimals with the same number of decimal places and different. Money can be used here. 

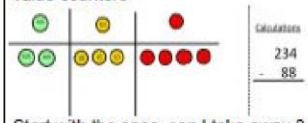
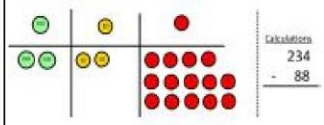
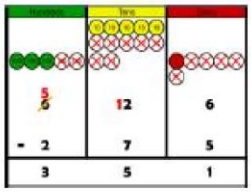
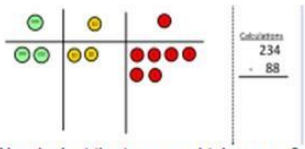
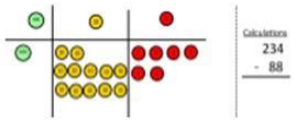
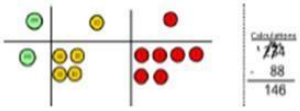
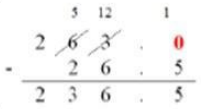
Progression in Calculations

Subtraction

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Subtraction	Taking away ones Counting back Find the difference Part whole model Make 10	Counting back Find the difference Part whole model Make 10 Column method- no regrouping	Column method with regrouping. (up to 3 digits)	Column method with regrouping. (up to 4 digits)	Column method with regrouping. (with more than 4 digits) (Decimals- with the same amount of decimal places)	Column method with regrouping. (Decimals- with different amounts of decimal places)

Objective and Strategies	Concrete	Pictorial	Abstract
Taking away ones	Use physical objects, counters, cubes etc to show how objects can be taken away. 	Cross out drawn objects to show what has been taken away. 	18 -3= 15 8 – 2 = 6
Counting back	Make the larger number in your subtraction. Move the beads along your bead string as you count backwards in ones.  Use counters and move them away from the group as you take them away counting backwards as you go. 	Count back on a number line or number track  Start at the bigger number and count back the smaller number showing the jumps on the number line.  This can progress all the way to counting back using two 2 digit numbers.	Put 13 in your head, count back 4. What number are you at? Use your fingers to help.
Find the difference	Compare amounts and objects to find the difference.  Use cubes to build towers or make bars to find the difference  Use basic bar models with items to find the difference	 Count on to find the difference. Draw bars to find the difference between 2 numbers. **Comparison Bar Models** *Lisa is 13 years old. Her sister is 22 years old. Find the difference in age between them.* 	Hannah has 23 sandwiches, Helen has 15 sandwiches. Find the difference between the number of sandwiches.

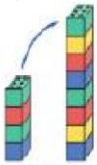
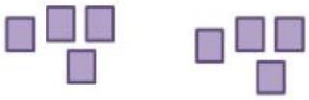
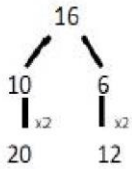
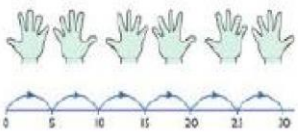
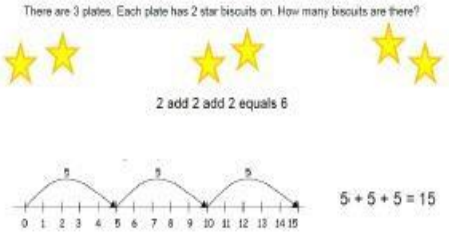
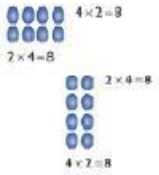
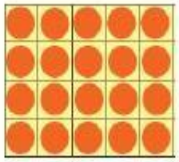
Objective and Strategies	Concrete	Pictorial	Abstract
Part Part Whole Model	 Link to addition- use the part whole model to help explain the inverse between addition and subtraction. If 10 is the whole and 6 is one of the parts. What is the other part? 10 - 6 =	Use a pictorial representation of objects to show the part part whole model. 	 Move to using numbers within the part whole model.
Make 10	14 – 5=  Make 14 on the ten frame. Take away the four first to make 10 and then takeaway one more so you have taken away 5. You are left with the answer of 9.	 Start at 13. Take away 3 to reach 10. Then take away the remaining 4 so you have taken away 7 altogether. You have reached your answer.	16 – 8= How many do we take off to reach the next 10? How many do we have left to take off?
Column method without regrouping	 Use Base 10 to make the bigger number then take the smaller number away. Show how you partition numbers to subtract. Again make the larger number first. 	 Draw the Base 10 or place value counters alongside the written calculation to help to show working. 	 This will lead to a clear written column subtraction. 

Objective and Strategies	Concrete	Pictorial	Abstract
Column method with regrouping	Use Base 10 to start with before moving on to place value counters. Start with one exchange before moving onto subtractions with 2 exchanges. Make the larger number with the place value counters  Start with the ones, can I take away 8 from 4 easily? I need to exchange one of my tens for ten ones. 	 Draw the counters onto a place value grid and show what you have taken away by crossing the counters out as well as clearly showing the exchanges you make.  When confident, children can find their own way to record the exchange/regrouping. Just writing the numbers as shown here shows that the child understands the method and knows when to exchange/regroup.	 Children can start their formal written method by partitioning the number into clear place value columns.  Moving forward the children use a more compact method.
	Now I can subtract my ones.  Now look at the tens, can I take away 8 tens easily? I need to exchange one hundred for ten tens.  Now I can take away eight tens and complete my subtraction  Show children how the concrete method links to the written method alongside your working. Cross out the numbers when exchanging and show where we write our new amount.		This will lead to an understanding of subtracting any number including decimals. 

Progression in Calculations

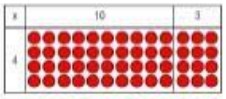
Multiplication

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Multiplication	Doubling Counting in multiples Arrays (with support)	Doubling Counting in multiples Repeated addition Arrays- showing commutative multiplication	Counting in multiples Repeated addition Arrays- showing commutative multiplication Grid method	Column multiplication (2 and 3 digit multiplied by 1 digit)	Column multiplication (up to 4 digit numbers multiplied by 1 or 2 digits)	Column multiplication (multi digit up to 4 digits by a 2 digit number)

Objective and Strategies	Concrete	Pictorial	Abstract
Doubling	Use practical activities to show how to double a number.  double 4 is 8 4 × 2 = 8	Draw pictures to show how to double a number. Double 4 is 8 	 Partition a number and then double each part before recombining it back together.
Counting in multiples	  Count in multiples supported by concrete objects in equal groups.	 Use a number line or pictures to continue support in counting in multiples.	Count in multiples of a number aloud. Write sequences with multiples of numbers. 2, 4, 6, 8, 10 5, 10, 15, 20, 25 , 30
Repeated addition	   Use different objects to add equal groups.	 5 + 5 + 5 = 15	Write addition sentences to describe objects and pictures. 
Arrays- showing commutative multiplication	Create arrays using counters/ cubes to show multiplication sentences.  	Draw arrays in different rotations to find commutative multiplication sentences.   Link arrays to area of rectangles.	Use an array to write multiplication sentences and reinforce repeated addition.  5 + 5 + 5 = 15 3 + 3 + 3 + 3 + 3 = 15 5 x 3 = 15 3 x 5 = 15

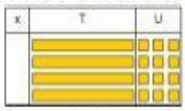
Grid Method

Show the link with arrays to first introduce the grid method.



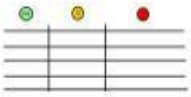
4 rows of 10
4 rows of 3

Move on to using Base 10 to move towards a more compact method.

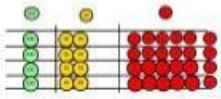


4 rows of 13

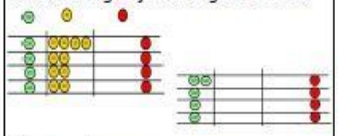
Move on to place value counters to show how we are finding groups of a number.We are multiplying by 4 so we need 4 rows.



Fill each row with 126.



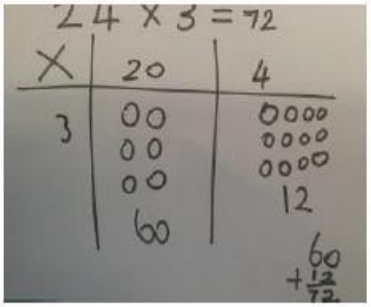
Add up each column, starting with the ones making any exchanges needed.



Then you have your answer.

Children can represent the work they have done with place value counters in a way that they understand.

They can draw the counters, using colours to show different amounts or just use circles in the different columns to show their thinking as shown below.



Start with multiplying by one digit numbers and showing the clear addition alongside the grid.

X	30	5
7	210	35

210 + 35 = 245

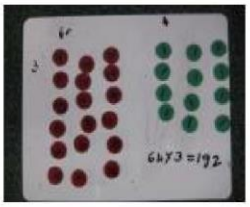
Moving forward, multiply by a 2 digit number showing the different rows within the grid method.

	10	8
10	100	80
3	30	24

X	1000	300	40	2
10	10000	3000	400	20
8	8000	2400	320	16

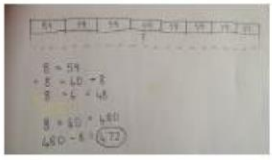
Column multiplication

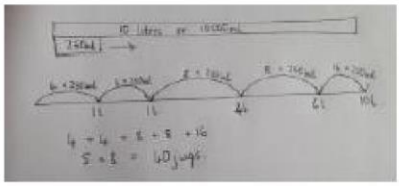
Children can continue to be supported by place value counters at the stage of multiplication.



It is important at this stage that they always multiply the ones first and note down their answer followed by the tens which they note below.

Bar modelling and number lines can support learners when solving problems with multiplication alongside the formal written methods.



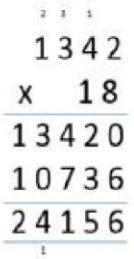


Start with long multiplication, reminding the children about lining up their numbers clearly in columns.

If it helps, children can write out what they are solving next to their answer.

32
x 24
8 (4 x 2)
120 (4 x 30)
40 (20 x 2)
600 (20 x 30)
768

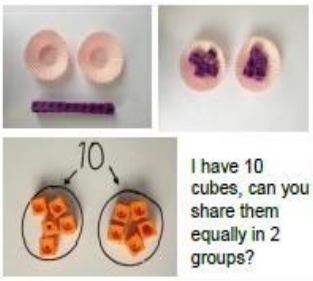
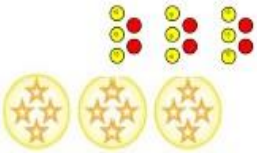
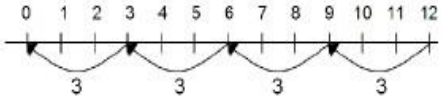
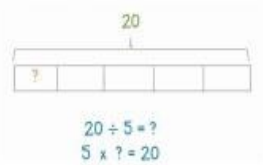
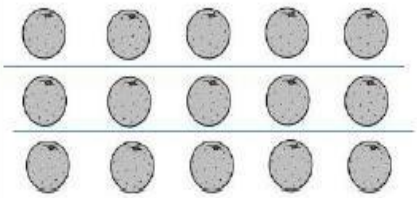
This moves to the more compact method.



Progression in Calculations

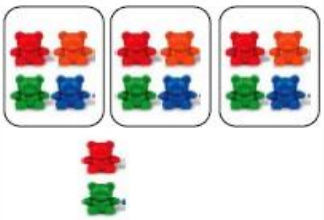
Division

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Division	Sharing objects into groups Division as grouping	Division as grouping Division within arrays	Division within arrays Division with a remainder Short division (2 digits by 1 digit- concrete and pictorial)	Division within arrays Division with a remainder Short division (up to 3 digits by 1 digit- concrete and pictorial)	Short division (up to 4 digits by a 1 digit number interpret remainders appropriately for the context)	Short division Long division (up to 4 digits by a 2 digit number- interpret remainders as whole numbers, fractions or round)

Objective and Strategies	Concrete	Pictorial	Abstract
Sharing objects into groups	 I have 10 cubes, can you share them equally in 2 groups?	Children use pictures or shapes to share quantities.  8 ÷ 2 = 4	Share 9 buns between three people. 9 ÷ 3 = 3
Division as grouping	Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding.   96 ÷ 3 = 32 	Use a number line to show jumps in groups. The number of jumps equals the number of groups.  Think of the bar as a whole. Split it into the number of groups you are dividing by and work out how many would be within each group. 	28 ÷ 7 = 4 Divide 28 into 7 groups. How many are in each group?
Division within arrays	 Link division to multiplication by creating an array and thinking about the number sentences that can be created. Eg 15 ÷ 3 = 5 5 x 3 = 15 15 ÷ 5 = 3 3 x 5 = 15	 Draw an array and use lines to split the array into groups to make multiplication and division sentences.	Find the inverse of multiplication and division sentences by creating four linking number sentences. 7 x 4 = 28 4 x 7 = 28 28 ÷ 7 = 4 28 ÷ 4 = 7

Division with a remainder

14 ÷ 3 =
Divide objects between groups and see how much is left over

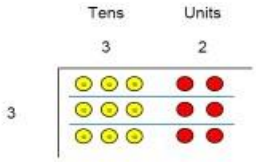


Jump forward in equal jumps on a number line then see how many more you need to jump to find a remainder.

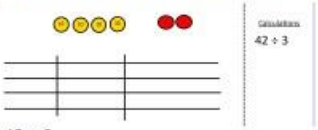
Draw dots and group them to divide an amount and clearly show a remainder.

Complete written divisions and show the remainder using r.

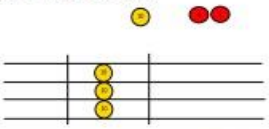
Short division



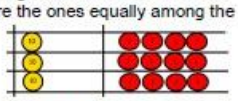
Use place value counters to divide using the bus stop method alongside



42 ÷ 3=
Start with the biggest place value, we are sharing 40 into three groups. We can put 1 ten in each group and we have 1 ten left over.

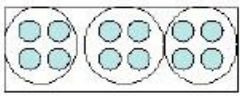


We exchange this ten for ten ones and then share the ones equally among the groups.



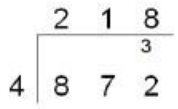
We look how much in 1 group so the answer is 14.

Students can continue to use drawn diagrams with dots or circles to help them divide numbers into equal groups.

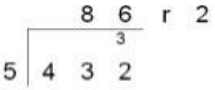


Encourage them to move towards counting in multiples to divide more efficiently.

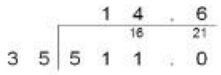
Begin with divisions that divide equally with no remainder.

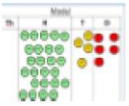
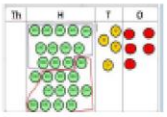
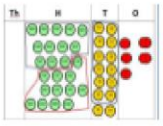
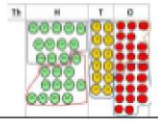


Move onto divisions with a remainder.



Finally move into decimal places to divide the total accurately.



Long division	 2544 ÷ 12 How many groups of 12 thousands do we have? None Exchange 2 thousand for 20 hundreds.  $\begin{array}{r} 0 \\ 12\overline{)2544} \end{array}$ How many groups of 12 are in 25 hundreds? 2 groups. Circle them. We have grouped 24 hundreds so can take them off and we are left with one.  $\begin{array}{r} 02 \\ 12\overline{)2544} \\ 24 \\ \hline 1 \end{array}$ Exchange the one hundred for ten tens so now we have 14 tens. How many groups of 12 are in 14? 1 remainder 2  $\begin{array}{r} 021 \\ 12\overline{)2544} \\ 24 \\ \hline 14 \\ 12 \\ \hline 2 \end{array}$ Exchange the two tens for twenty ones so now we have 24 ones. How many groups of 12 are in 24? 2  $\begin{array}{r} 0212 \\ 12\overline{)2544} \\ 24 \\ \hline 14 \\ 12 \\ \hline 24 \\ 24 \\ \hline 0 \end{array}$	Instead of using physical counters, students can draw the counters and circle the groups on a whiteboard or in their books. Use this method to explain what is happening and as soon as they have understood what move on to the abstract method as this can be a time consuming process.	$\begin{array}{r} 0\,3\,1\,8\ r5 \\ 20\overline{)6\,3\,6\,5} \\ -6\,0\downarrow \\ \quad 3\,6 \\ \quad -2\,0 \\ \quad 1\,6\,5 \\ \quad -1\,6\,0 \\ \quad\quad 5 \end{array}$