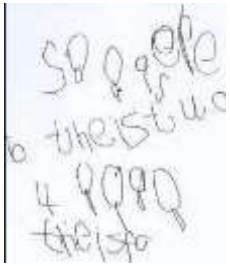
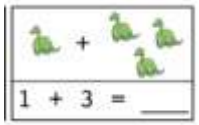
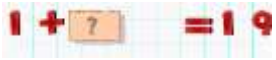
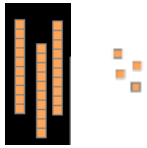
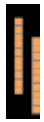
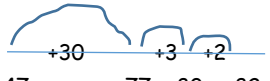
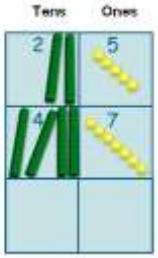
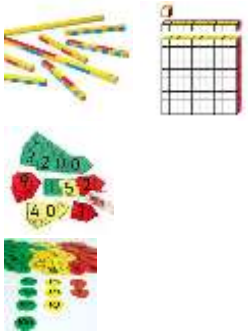
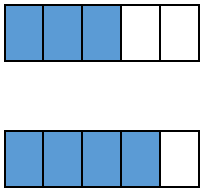
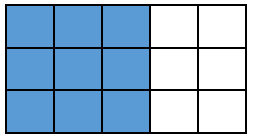
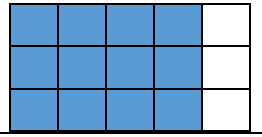
Usworth Colliery Primary School- Progression in Addition

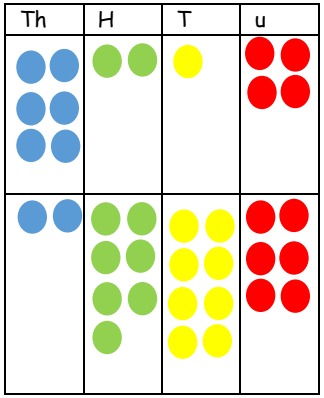
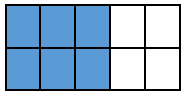
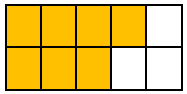
Year group	Foundation	Rapid Recall	Mental calculation	Objective	Method	Practical method	Pictorial/written methods	Vocabulary
EYFS		1 more numbers up to 10 Number bonds in the range of 10.		Add one more to a group of objects 0-5 then 0-10, then 0-20 Addition as 'combining 2 groups' using single digit numbers in range 0-5 then 0-10 then 0-20 Addition as 'counting on' in range 0-5 then 0-10 then 0-20 Real life problems in range 0-10	Practical / recorded using ICT (eg digital photos / pictures on IWB)	Range of Toys, Books, Beads, Rhymes, Counters, Number tiles, objects (stationary and moving) number lines, Numicon, stories, Role play.    Adding 1 more Combining 2 groups  Counting on	Drawings of problems.  Begin to record using marks. 	add, more than, equals, altogether, same as, plus, number bonds, number sentences,

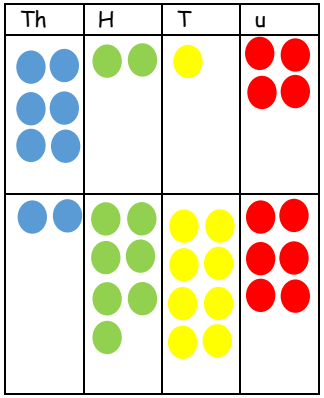
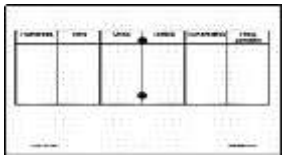
Year group	Foundation	Rapid Recall	Mental calculation	Objective	Method	Practical method	Pictorial/written methods	Vocabulary
Y1	1 more Number bonds: 5, 6,7,8,9,10 Largest number first. Add 10. Number Ten plus ones. Doubles up to 10 Use number bonds of 10 to derive bonds of 11	Number bonds up to 10. 1 or 10 more than a number Doubles up to 10 (double 5)	U + multiple of 10 TU + multiple of 10	Consolidation of EYFS Read, write and interpret mathematical statements involving addition (+) and equals (=) signs Adding U+U (bridging 10) TU + U by counting on in range 0-20 TU + U (bridging 20) Concept of addition in any order Concept of addition and subtraction as inverse operations Solve real life/missing number 1 step problems in range 0-20	Practical / recorded using ICT Informal written methods Horizontal recording	Objects, Number lines, numbertrack , 100 squares, Multilink, Numicon, Lego, beads, tape measures, bead strings, fingers, whiteboards, role play,  Counting on U+U  TU+U	Jumps along a number track.  Jumps along a number line.  Bigger jumps on a number line.  Horizontal layout.  Missing numbers. 	add, more than, equals, altogether, same as, plus, number bonds, number sentences, Total, equal to, most, least, put together, more than

Year group	Foundation	Rapid Recall	Mental calculation	Objective	Method	Practical method	Pictorial/written methods	Vocabulary
Y2	10 more Number bonds: 20, Number bonds: 12,13,14,15, 16,17,18,19 Add 1 digit to 2 digit by bridging. Partition second number, add tens then ones Add 10 and multiples. Doubles up to 20 Multiples of 5 Add near multiples of 10 Partition and recombine	Number bonds to 20 Pairs to 100 (using multiples of 10)	TU+U TU+ multiple of 10 U+U+U +9 (by +10-1)	Consolidation of Y1 TU+T TU + TU (bridging 10s / 100) U + U + U Add 9 and 11 by adding 10, then one less or one more Recognise addition and use in problem solving including numbers, quantities and measures	Practical Informal written methods Horizontal recording	Bead strings, number lines, 100 squares, Dienes, place value cards.    34+20=54 	Number line progressing to efficient jumps. 35+47=  Partitioning 33 + 42 30 + 40 = 70 3 + 2 = 5 70 + 5 = 75 Beginning to record in columns  	add, more than, equals, altogether, same as, plus, number bonds, number sentences, Total, equal to, most, least, put together, more than inverse, sum, partition

Year group	Foundation	Rapid Recall	Mental calculation	Objective	Method	Practical method	Pictorial/written methods	Vocabulary
Y3	Add multiples of 10, 100 Add single digit bridging through boundaries Partition second number to add Pairs of 100 Use near doubles to add Add near multiples of 10 and 100 by rounding and adjusting Partition and recombine	Number bonds to 20/100/1000 Pairs of two-digit multiples of 5 and 10 that total 100 Multiples of 50 and 100 that total 1000	TU+U TU+TU TU+ near multiple of 10	Consolidation of Y2 Add up to 3 digit numbers using formal written methods (column no carrying) Add up to 3-digit numbers including bridging 100 (carrying 10s) Add fractions with the same denominator within one whole Estimate answers using approximation Using inverse to check Application into problem solving TU + TU including bridging 100, HTU + TU not bridging 1000, HTU + HTU not bridging 1000	Practical Informal written methods Horizontal recording Formal written method (no carrying)	Counting sticks, dienes, number lines, hundred square, tape measures, place value cards, place value counters. 	Partitioning 57 + 285 0+200=200 50+80=130 7+5=12 200+130+12=342 Column addition (no carrying) 243 +126 369 Adding fractions 3/5 + 1/5 = 4/5 	add, more than, equals, altogether, same as, plus, number bonds, number sentences, Total, equal to, most, least, put together, more than, inverse, sum, partition column addition

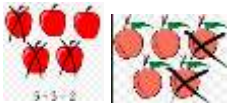
Year group	Foundation	Rapid Recall	Mental calculation	Objective	Method	Practical method	Pictorial/written methods	Vocabulary
Y4	Add multiples of 10s , 100s, 1000s Fluency of 2 digit + 2 digit Partition second number to add Decimal pairs of 10 and 1 Use near doubles to add Adjust both numbers before adding Add near multiples Partition and recombine	Bonds to 1000 Derive sums of pairs of multiples of 10/100/1000 Multiples of 50 that total 1000. Pairs of fractions to 1 whole	TU+TU Pairs of multiples of 10/100/1000 Three, 2 digit multiples of 10 (40+50+30) Two, 3 digit multiples of 10 (320+150)	Consolidation of Y3 Add 4 digit numbers using formal written methods including bridging 1000 Add fractions with the same denominator Add decimals in the context of money Estimate using rounding Use rounding to check answers Recognise addition as the inverse of subtraction Solve 2 step problems including money and fractions	Practical Informal written methods Horizontal recording Formal written method (carrying)	Place value counters and cards, dienes, coins, fraction cards and pictures. 	Partitioning 1234 + 3472 1000 + 3000 = 4000 200 + 400 = 600 30 + 70 = 100 4 + 2 = 6 4000 + 600 + 100 + 6 = 4706 Column addition (with carrying) 2358 + 1874 = 4232 1 1 1 £3.48 + £2.41 = £5.89 Adding fractions 3/5 + 1/5 = 4/5  	add, more than, equals, altogether, same as, plus, number bonds, number sentences, Total, equal to, most, least, put together, more than, inverse, sum, partition, column addition Increase, decimal point, denominator, numerator

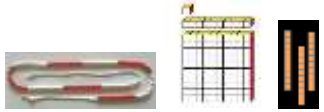
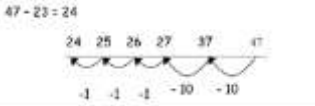
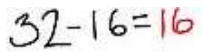
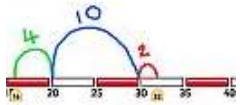
Year group	Foundation	Rapid Recall	Mental calculation	Objective	Method	Practical method	Pictorial/written methods	Vocabulary
Y5	Add multiples of 10s , 100s, 1000s, tenths, Fluency of 2 digit + 2 digit including with decimals Partition second number to add Use number facts, bridging and place value Adjust numbers to add Partition and recombine	Derive bonds up to 1 (1 dp) Derive bonds up to 10 (1 dp)	Integer + decimal e.g. 19 +3.4	Consolidation of Y4 Add numbers of more than 4 digits using column addition Addition of numbers with up to 3 decimal places Add fractions with the same denominator, and denominators that are multiples of the same number where answer exceeds 1 Solve multi-step problems deciding on appropriate operation	Practical Informal written methods Horizontal recording Formal written method	Place value counters and cards, coins, fraction cards/pictures   6214 +  2786	Column addition (with carrying) 5.761 +3.725 9.486 1 Adding fractions 3/5 + 7/10 = 13/10 = 1 3/10  + 	add, more than, equals, altogether, same as, plus, number bonds, number sentences, Total, equal to, most, least, put together, more than, inverse, sum, partition, column addition, increase, decimal point, denominator, numerator tenths, hundredths, thousandths, partition, near multiples, denominator

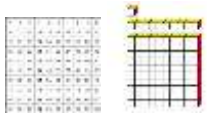
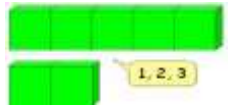
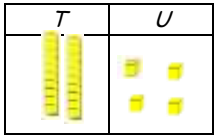
Year group	Foundation	Rapid Recall	Mental calculation	Objective	Method	Practical method	Pictorial/written methods	Vocabulary
Y6	Add multiples of 10s , 100s, 1000s, tenths, hundredths. Fluency of 2 digit + 2 digit including with decimals Partition second number to add Use number facts, bridging and place value Adjust numbers to add Partition and recombine	Derive bonds up to 1 (2 dp) Derive bonds up to 10 (2 dp)	Decimal + decimal e.g. 19.7+3.4	Consolidation of Y5 Application of all prior skills learnt to increase fluency Solve multi-step problems deciding on appropriate operation Explore the order of operations using brackets Add fractions with different denominators/ mixed numbers	Practical Informal written methods Formal written method	Place value counters, fraction cards/cubes, decimal place value cards     	3/4 + 2/3 9/12 + 8/12 = 17/12 = 1 5/12 4 6 2 1 4 + 2 5 7 8 7 7 2 0 0 1 1 1 1 Column addition with decimals 2 6 . 3 7 + 2 8 . 0 9 5 4 . 4 6 1 1	add, more than, equals, altogether, same as, plus, number bonds, number sentences, Total, equal to, most, least, put together, more than, inverse, sum, partition, column addition, increase, decimal point, denominator, numerator, tenths, hundredths, thousandths, partition, near multiples, denominator Common denominator

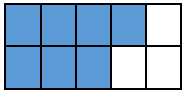
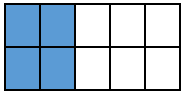
Usworth Colliery Primary School – Progression in Subtraction

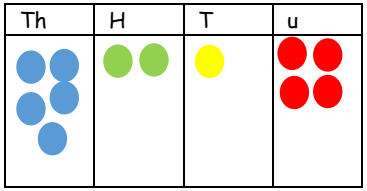
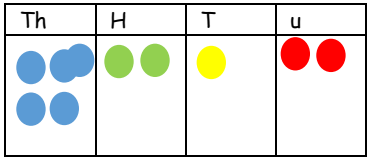
Year group	Foundation	Rapid Recall	Mental calculation	Objective	Method	Practical methods	Pictorial/written methods	Vocabulary
EYFS		1 less Numbers up to 10		Compare sets of objects Remove objects from a set Say what is one less than a given number within 5 then 10 Use quantities and objects to subtract using single digit numbers	Practical / recorded using ICT (eg digital photos / pictures on IWB)	A range of Toys, Books, Beads, Rhymes, Counters, Number tiles, objects (stationary and moving) number lines, Numicon, stories, Role play   Taking away 1   Counting back single subtracting Digits Children should physically remove objects and count what is left.	Those who are ready will begin to make drawings of problems.  And begin to record using marks they can explain. 	Take away, left, left over, gone, one less, fewer, count back(wards), equals

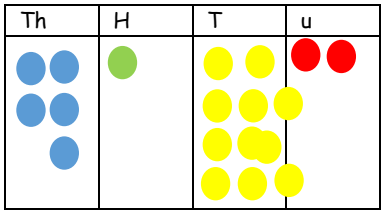
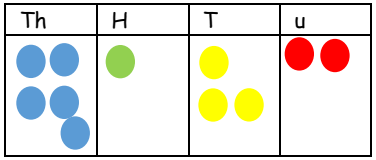
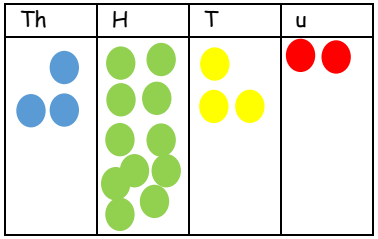
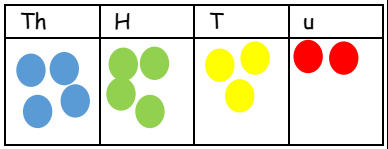
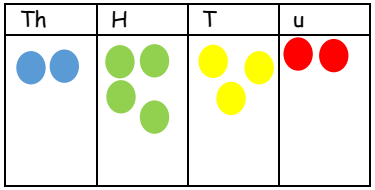
Year group	Foundation	Rapid Recall	Mental calculation	Objective	Method	Practical methods	Pictorial/written methods	Vocabulary
Y1	One less Subtraction; 5,6, 7,8,9 Count back. Number bonds. Subtract 10. Teens subtract 10. Difference between.	Subtraction facts using bonds to 10 1 or 10 less than a number	TU multiple of 10	Consolidation of EYFS Use subtraction (-) and equals (=) signs Represent and use subtraction facts within 20 Subtract one-digit and two-digit numbers to 20, including 0 Solve one-step problems that involve subtraction and missing number problems Concept of addition and subtraction as inverse operations	Practical / recorded using ICT Informal written methods Horizontal recording	Counting sticks, 100 Squares, Dienes, coins, cubes, bead strings, Numicon, number tracks, dominoes, dice etc.  Count back/take away subtraction 	Pictures to represent working out.    Count back on a number line  Horizontal layout Missing numbers	Take away, left, left over, gone, one less, fewer, count back(wards), equals Subtract, minus, leave, how much/many less,

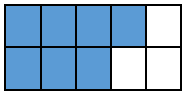
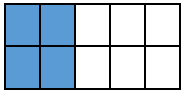
Year group	Foundation	Rapid Recall	Mental calculation	Objective	Method	Practical methods	Pictorial/written methods	Vocabulary
Y2	10 less. Number bonds. Subtraction: 20, 12,13,14,15,16,17 18,19 Subtract 1 digit from 2 digit by bridging. Partition second number, count back in 10's then 1's. Subtract 10 and multiples of 10. Subtract near multiples of 10. Difference between.	Subtraction facts using bonds to 20 Derive and use related facts to 100	TU –U/ multiple of 10 Difference of small numbers by counting up	Consolidation of Y1 Solve problems with subtraction, including those involving numbers, quantities and measures TU – U TU – T TU – TU Know that subtraction cannot be done in any order Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	Practical Informal written methods Horizontal recording	Counting sticks, bead strings, number lines, 100 squares, Dienes,  43-20=14   5-2=3 Find the difference when numbers are close together.	Number line progressing to efficient jumps once children were secure in taking away, counting back. Moving on to finding the difference using a number line    Partitioning 33 - 12 30 - 10 = 20 3 - 2 = 1 20 + 1 = 21	Take away, left, left over, gone, one less, fewer, count back(wards), equals, subtract, minus, leave, how much/many less, inverse, partition difference takeaway subtract

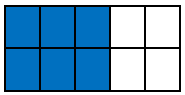
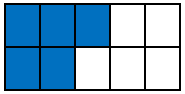
Year group	Foundation	Rapid Recall	Mental calculation	Objective	Method	Practical methods	Pictorial/written methods	Vocabulary
Y3	Subtract multiples of 10 and 100. Subtract single digit by bridging through boundaries. Partition second number to subtract. Difference between.	Subtraction facts to at least 20 Differences of multiples of 10	HTU - U HTU - T HTU - H HTU-HTU by finding the difference. TU - near multiple of 10	Consolidation of Y2 Subtraction as taking away. Subtraction as finding the difference. Subtract numbers with up to 3 digits, using formal written method (column) without decomposition. Estimate the answer to a calculation and use inverse operations to check answers Solve problems, including missing number problems, using number facts, place value, and more complex subtraction.	Practical Informal written methods Horizontal recording Formal written method	Counting sticks, dienes, number lines, hundred square, fraction pictures etc.   use practical equipment ie chocolate, cakes etc.	*Counting back on a number line when teaching subtraction as taking away.* *Counting on using a number line when teaching subtraction as finding the difference.*  *Partitioning* *573 - 261* *500 - 200 = 300* *70 - 60 = 10* *3 - 1 = 2* *300+10+2=312* *Concrete method before moving to formal column method.*  *24-13=11* *Column subtraction (no decomposition)* *243* *- 122* *121*	Take away, left, left over, gone, one less, fewer, count back(wards), equals, subtract, minus, leave, how much/many less, inverse, partition difference takeaway subtract inverse, partition minus subtract takeaway how many less fewer

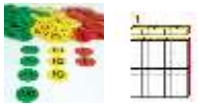
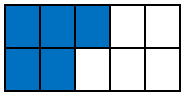
				Subtract fractions with the same denominator within one whole			*Subtract fractions* *7/10 – 3/10 = 4/10*  - *3/10 =* 	

Year group	Foundation	Rapid Recall	Mental calculation	Objective	Method	Practical methods	Pictorial/written methods	Vocabulary
Y4	Subtract multiples of 10's, 100's and 1000's. Fluency of 2 digit subtract 2 digit. Partition second number to subtract. Decimal subtraction from 10 or 1. Difference between. Subtract near multiples by rounding and adjusting.	Derive differences of pairs of multiples of 10/100/1000	TU-TU Subtract pairs of multiples of 10/100/1000 ThHTU-ThHTU with a small difference	Consolidation of Y3 Subtract numbers with up to 4 digits using the formal written methods (column) Subtract decimals in context of money	Practical Informal written methods Horizontal recording Formal written method	Dienes, place value cards, place value counters, fraction cards.   	Partitioning 5678 - 3462 5000 - 3000 = 2000 600 - 400 = 200 70 - 60 = 10 8 - 2 = 6 2000 + 200 + 10 + 6 = 2216 Expanded method: 82 80 2 70 12 -57 50 7 50 7 Concrete method using place value counters: Exchange hundreds for tens and tens for units. 5 2 1 4 -2 7 8 2  Subtract starting from the right and exchanging where needed. Subtract the ones  	Take away, left, left over, gone, one less, fewer, count back(wards), equals, subtract, minus, leave, how much/many less, inverse, partition difference takeaway subtract, inverse, partition minus subtract takeaway how many less fewer Increase, decimal point, denominator, numerator Exchange Minus Subtract fewer partition

				Estimate and use inverse operations to check answers to a calculation Solve subtraction two-step problems in contexts, deciding which operations and methods to use and why			Then subtract the tens, exchanging is needed.   Subtract the hundreds, again exchanging is needed.   Finally subtract the thousands  	

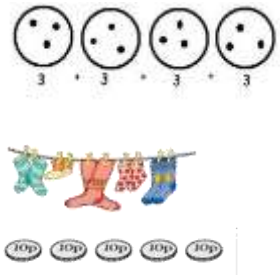
				Subtract fractions with the same denominator			Answer: 2432 Moving on to formal column method with decomposition. $2\overset{3}{\cancel{4}}\overset{1}{5}6 - 1385 = 1071$ £ 6.$\overset{3}{\cancel{4}}\overset{1}{5}$ − £ 4.17 = £ 2.28 Subtract fractions 7/10 – 3/10 = 4/10  -3/10 	

Year group	Foundation	Rapid Recall	Mental calculation	Objective	Method	Practical methods	Pictorial/written methods	Vocabulary
Y5	Subtract multiples of 10's, 100's 1000's and tenths. Fluency of 2 digit- 2digit including with decimals. Partition second number to subtract. Difference between. Adjust numbers to subtract.	Subtraction facts linked to bonds up to 1 (one dp) eg 1.0 – 0.7 = 0.3 U - U.t	Near multiple of 1000-near multiple of 1000 eg 6070-4097= Decimal-decimal 9.5-3.7	Consolidation of Y4 Subtract whole numbers with more than 4 digits, using formal written methods (column) Subtract numbers with up to 3 decimal places using formal written methods (column) Solve subtraction multi-step problems in contexts, deciding which operation and methods to use and why Subtract fractions with the same denominator, and denominators that are multiples of the same number	Practical Informal written methods Horizontal recording Formal written method	Dienes, place value counters, fraction cards 	Use expanded method to show place value as above for those who need it. Extend to: Column subtraction (with decomposition) Abstract method $5\ ^{8}\cancel{9}^{10}\cancel{1}\ ^{1}4 -$ $2\ 7\ 8\ 7$ $3\ 1\ 2\ 7$ 3/5 – 1/10 = 5/10  	Take away, left, left over, gone, one less, fewer, count back(wards), equals, subtract, minus, leave, how much/many less, inverse, partition difference takeaway subtract, inverse, partition minus subtract takeaway how many less fewer, increase, decimal point, denominator, numerator exchange minus, subtract fewer partition tenths, hundredths, thousandths, partition, near multiples

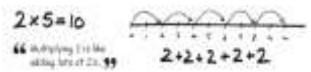
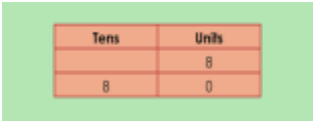
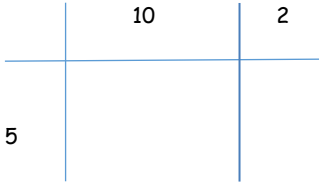
Year group	Foundation	Rapid Recall	Mental calculation	Objective	Method	Practical methods	Pictorial/written methods	Vocabulary
Y6	Subtract multiples of 10's, 100's, 1000's, tenths and hundredths. Fluency of 2 digit- 2digit including with decimals. Partition second number to subtract. Use number facts, bridging and place value. Adjust numbers to subtract. Difference between.	As previous with increasing fluency Subtract mentally with increasingly large numbers and mixed operations.	As above Integer/decimal (1dp) subtract integer/decimal (1dp)	Consolidation of Y5 Application of all prior skills learnt to increase fluency Solve multi-step problems deciding on appropriate operation Pupils explore the order of operations using brackets Subtract fractions with different denominators/ mixed numbers	Practical Informal written methods Formal written method	Dienes, place value counters, fraction cards/cubes 	As Y5. Embedding understanding of formal written method with decomposition using larger numbers and decimals. 3/4 - 2/3 = 9/12 - 8/12 = 1/12 3/5 – 1/10 = 5/10 (1/2)  	Take away, left, left over, gone, one less, fewer, count back(wards), equals, leave, how much/many less, inverse, partition difference takeaway subtract, inverse, partition minus how many less fewer, increase, decimal point, denominator, numerator exchange fewer partition, tenths, hundredths, thousandths, partition, near multiples Common denominator

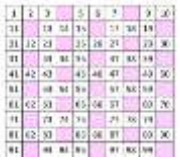
Usworth Colliery Primary School – Progression in Multiplication

Year group	Foundation	Rapid Recall	Mental calculation	Objective	Method	Practical methods	Pictorial/written methods	Vocabulary
EYFS		Chanting of counting in 2s		Repeated grouping Counting in pairs Doubling	Practical/ recorded using ICT (eg digital photos / pictures on IWB)	Toys, Beads, Rhymes, Counters, objects, number lines, Numicon, stories, role play, number lines- hopping on, counting pairs. 	Drawing problems  Begin to record using marks they can explain 	Chanting/ counting in 2s.

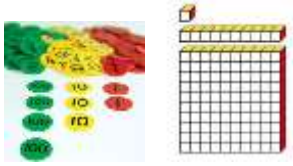
Year group	Foundation	Rapid Recall	Mental calculation	Objective	Method	Practical methods	Pictorial/written methods	Vocabulary
Y1	Count in 2's Count in 10's Doubles up to 10 Count in 5's Double multiples of 10 Count in 2's, 5's and 10's	Consolidation of EYFS Chanting of counting in 2s, 5s 10s Double pairs to 10, then 20		Consolidation of EYFS Begin to understand multiplication through grouping small quantities, Solve one-step problems involving multiplication Make connections between arrays and number patterns Double numbers and quantities Count in multiples of twos, fives and tens	Practical / recorded using ICT Informal written methods Horizontal recording	long number lines, 100 square, counting sticks, Dienes, tape measure, coins, cubes, bead strings, peg boards, numicon 	Pictures to represent working out.  Using arrays with teacher support.	Chanting/ counting in 2s. Count on in…, lots of, groups of, pattern,

Year group	Foundation	Rapid Recall	Mental calculation	Objective	Method	Practical methods	Pictorial/written methods	Vocabulary
Y2	2 x table 10 x table Doubles up to 20 and multiples of 5. 5 x table Count in 3's. 2x , 5x and 10x tables.	Count in 2s, 5s and 10s Derive multiples of 2, 5 & 10. Relate to x facts (and derive related facts) Understand that halving is the inverse of doubling and derive and recall doubles of all numbers to 20, and the correspondi ng halves.	Doubles of TU numbers	Consolidation of Y1 Count in steps of 2 and 5 from 0, and in 10s from any number, forward and backward Recall and use multiplication facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers Calculate mathematical statements for multiplication within the multiplication tables and write them using the multiplication (×) and equals (=) signs Show that multiplication of two numbers can be done in any order (commutativity)	Practical Informal written methods Horizontal recording	Counting sticks, bead strings, number lines, 100 squares, Dienes, objects in groups and arrays.   counting on  arranging objects in array.	Arrays   Repeated addition  Horizontal recording as repeat addition and using x and =	Chanting/ counting in 2s. count on in…, lots of, groups of, pattern, odd, even, every other, how many times, multiple of, sequence, times, multiply, multiplied by, multiple of, once, twice, three times, four times, five times… ten times… as (big, long, wide and so on), repeated addition, array, row, column, double

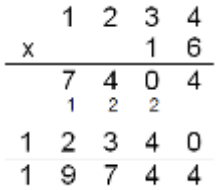
				Solve problems involving multiplication using materials, arrays, repeated addition, mental methods, and multiplication facts, including problems in contexts. Connect the 10 x multiplication table to place value Relate multiplication to grouping discrete and continuous quantities, to arrays and to repeated addition. Use commutativity and inverse relations to develop multiplicative reasoning (for example, 4 × 5 = 20 and 20 ÷ 5 = 4).			 Multiplying by 10 using place value  Grid Method 	

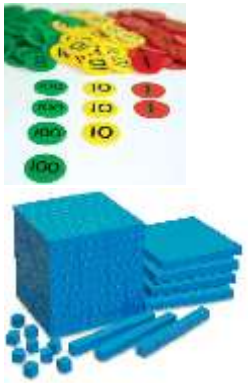
Year group	Foundation	Rapid Recall	Mental calculation	Objective	Method	Practical methods	Pictorial/written methods	Vocabulary
Y3	Review 2x, 5x and 10x tables 4x tables Double 2 digit numbers. 8x table. 3x table. 6x table or review others.	Derive and recall 2, 3, 4, 5, 8 and 10 times tables (Derive related division facts). Also count in multiples of above. Recognise multiples of 2, 5 and 10 up to 1000. Use knowledge of number operations and correspondi	U/TU x 10/100 (describe the effect) Doubles of TU/HTU numbers	Consolidation of Y2 Count from 0 in multiples of 3, 4, 50 and 100 Connect the 2, 4 and 8 multiplication tables through doubling. Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables Multiply TU x U using mental methods and progressing to formal written methods Solve problems, including missing number problems, involving multiplication including positive integer	Practical Informal written methods Horizontal recording Formal written method	Counting sticks, dienes, number lines, hundred square, tape measures   Grid method using concrete materials: 	Partitioning 32 x 6 = 30 x 6 = 180 2 x 6 = 12 180 + 12 = 192 Written method: grid method | x | 30 | 5 | | --- | --- | --- | | 7 | 210 | 35 | 210 + 35 = 245 Introduce formal written method (expanded form): 36 x 5 30 150 180	Chanting/ counting in 2s. count on in…, lots of, groups of, pattern, odd, even, every other, how many times, multiple of, sequence, times, multiply, multiplied by, multiple of, once, twice, three times, four times, five times… ten times… as (big, long, wide and so on), repeated addition, array, row, column, double Count on in hundreds,

		ng inverses, including doubling and halving, to estimate and check calculations		scaling problems and correspondence problems in which n objects are connected to m objects Pupils develop efficient mental methods, for example, using commutativity and associativity (for example, 4 × 12 × 5 = 4 × 5 × 12 = 20 × 12 = 240) and multiplication facts to derive related facts (for example, 3 x 2 = 6, 30 × 2 = 60).				multiplication, product

Year group	Foundation	Rapid Recall	Mental calculation	Objective	Method	Practical methods	Pictorial/written methods	Vocabulary
Y4	4x, 8x tables. 10 times bigger. 3x, 6x and 12x tables. Double larger numbers and decimals. 3x and 9x tables. 11x and 7x tables.	Derive and recall facts to 10 x 10 Count in multiples of 6, 7, 9, 25 and 1000 Recognise and use factor pairs and commutativity in mental calculations.	Numbers up to 1000 x 10/100 (whole number answers and understand the effect) Doubles of TU/HTU numbers and multiples of 10/100	Consolidation of Y3 Count in multiples of 6, 7, 9, 25 and 1000 Recall facts for multiplication tables up to 12 × 12 Use place value, known and derived facts to multiply mentally, including: multiplying by 0 and 1 and multiplying together three numbers Recognise and use factor pairs and commutativity in mental calculations Multiply TU x U using formal written layout Multiply HTU x U using formal written layout 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.	Practical Informal written methods Formal written method	Dienes, place value counters, coins  Using the grid method (as in Y3), with place value counters. x 400 10 3 Moving to written method using the grid	Moving to written method using grid  1800+120+42=1962 More formal written method (expanded method) 327 x 6 42 120 1800 1962 Formal written method (compact form) 327 x 6 1962 1 4	Chanting/ counting in 2s. count on in…, lots of, groups of, pattern, odd, even, every other, how many times, multiple of, sequence, times, multiply, multiplied by, multiple of, once, twice, three times, four times, five times… ten times… as (big, long, wide and so on), repeated addition, array, row, column, double, count on in hundreds, multiplication, product Factor, exchange

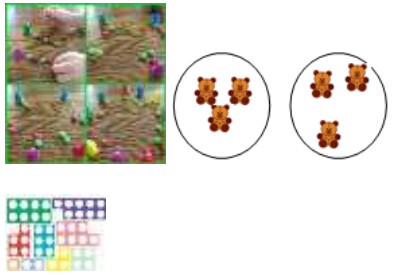
Year group	Foundation	Rapid Recall	Mental calculation	Objective	Method	Practical methods	Pictorial/written methods	Vocabulary
Y5	4x and 8x tables. 100, 1000 times bigger. 3x, 6x and 12x tables. 10, 100, 1000 times smaller. Double larger numbers and decimals. 3x and 9x tables. 11x and 7x tables. Partition to multiply mentally.	Recall quickly facts to 12 x 12 Use facts to multiply pairs of multiples of 10/100 Use known facts to derive other facts eg 300x6 = 1800 Also, find common multiples of two numbers	TU x U (eg 12 x 9) TU x TU (eg 16 x 25) Doubles of U.t / 0.th Multiply whole numbers and decimals by 10/100/1000	Consolidation of Y4 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 ThHTU x U using a formal written method ThHTU x TU using a formal written method, including long multiplication for two-digit numbers Multiply numbers mentally drawing upon known facts Multiply whole numbers and those involving decimals by 10, 100 and 1000	Practical Informal written methods Formal written method	Dienes, place value counters  	Written method: (grid method to be used when introducing and embedding understanding of formal method): 42 X 23 = x | 40 | 2 20 | 800 | 40 3 | 120 | 6 And recording as: 800 120 40 + 6 966 Moving on to a more formal method: 34 x 13 102 (34 x 3; carrying 1 ten from 4 x 3) 1 340 (34 x 10) 442	Chanting/ counting in 2s. count on in…, lots of, groups of, pattern, odd, even, every other, how many times, multiple of, sequence, times, multiply, multiplied by, multiple of, once, twice, three times, four times, five times… ten times… as (big, long, wide and so on), repeated addition, array, row, column, double, count on in hundreds, multiplication, product, factor, exchange

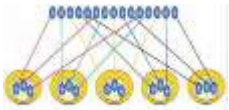
				Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3) Solve problems involving multiplication including using their knowledge of factors and multiples, squares and cubes Solve problems involving multiplication.			Moving further to more complex numbers: 	Factor, prime, prime factor

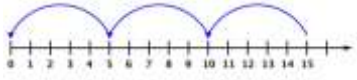
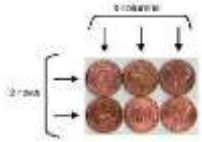
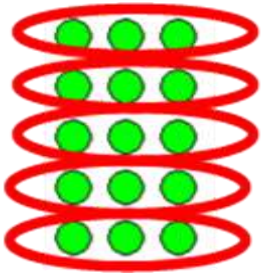
Year group	Foundation	Rapid Recall	Mental calculation	Objective	Method	Practical methods	Pictorial/written methods	Vocabulary
Y6	Multiplication facts up to 12x12 Partition to multiply mentally. Double larger numbers and decimals	Use facts up to 10 x 10 to derive facts involving multiples of 10/100 (eg 80 x 30) and decimals (eg 0.8 x 7) Derive squares of numbers to 12 x 12	TU x U U.t x U Integer x 1000/ 100/10/0.1/0.01	Consolidation of Y5 ThHTU x TU using the formal written method of long multiplication Multiply one-digit numbers with up to two decimal places by whole numbers. Identify common factors, common multiples and prime numbers Explore the order of operations using brackets; for example, 2 + 1 x 3 = 5 and (2 + 1) x 3 = 9.	Practical Informal written methods Formal written method	Dienes, place value counters 	As above (including multiplying decimals by whole numbers eg 4.92 x 3). Equivalent Fractions: $\frac{3}{} (x3) = \frac{9}{}$ 5 (x3) =15 Multiplying fractions $\frac{1}{} \quad \frac{3}{} \quad \frac{3}{}$ 2 x 8 = 16 (multiply numerators) ——————— (multiply denominators)	Chanting/ counting in 2s. count on in…, lots of, groups of, pattern, odd, even, every other, how many times, multiple of, sequence, times, multiply, multiplied by, multiple of, once, twice, three times, four times, five times… ten times… as (big, long, wide and so on), repeated addition, array, row, column, double,

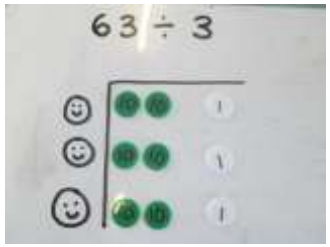
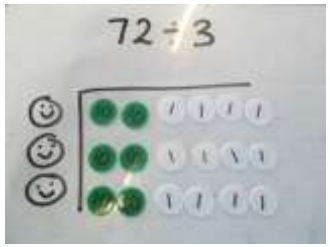
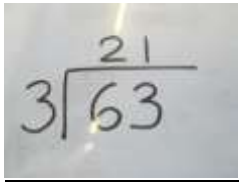
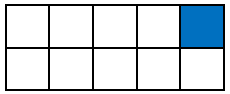
		Derive corresponding squares of multiples of 10.		Use common factors to find equivalent fractions. Multiply simple pairs of proper fractions, writing the answer in its simplest form (1/2 x 2/4 = 2/8 = 1/4)				count on in hundreds, multiplication, product, factor, exchange, factor, prime, prime factor Common denominator

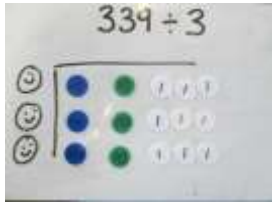
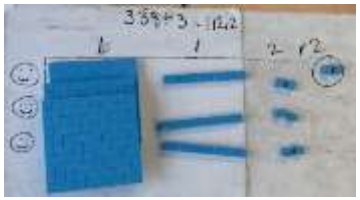
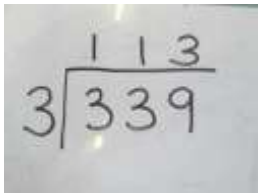
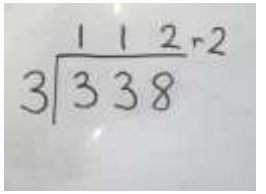
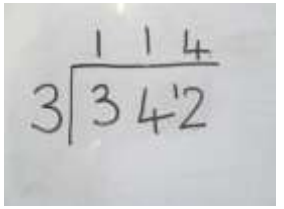
Usworth Colliery Primary School – Progression in Division

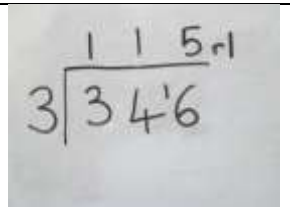
Year group	Foundations	Rapid Recall	Mental calculation	Objective	Method	Practical methods	Pictorial/written methods	Vocabulary
EYFS		Chanting of counting in 2s		Division as sharing – one for me, one for you… Division as grouping – how many groups of 3 can we make?	Practical and recorded using ICT (eg digital photos/ pictures on IWB)	Concrete materials – counters, teddies, Numicon etc… Real life situations - sharing out the milk, fruit, pencils. 	Drawings of problems Begin to record using marks they can explain 	Group, pairs, left over, share, equal, half/halve, same, count out, share out, left, left over

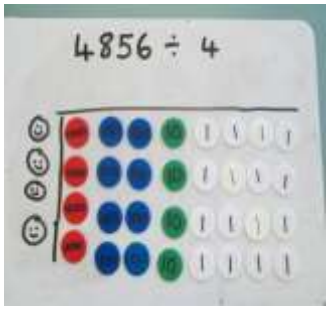
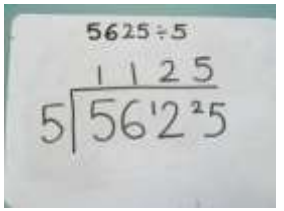
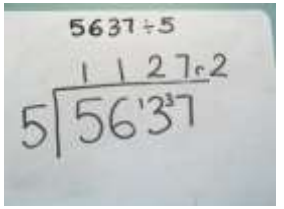
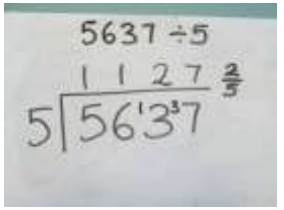
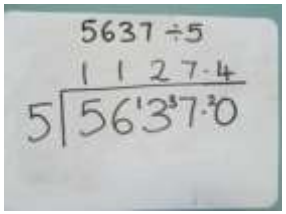
Year group	Foundations	Rapid Recall	Mental calculation	Objective	Method	Practical methods	Pictorial/written methods	Vocabulary
Y1	Count back in 2's Count back in 10's. Halves up to 10. Count back in 5's. Half multiples of 10. How many 2's? 5's? 10's?	Chanting of counting in 2s, 5s and 10s	Explore halving numbers through odd and even numbers.	Consolidation of EYFS Solve one-step problems involving division in practical contexts Concept of division as both grouping and sharing Find simple fractions of objects, numbers and quantities in practical contexts.	Practical / recorded using ICT Informal written methods Horizontal recording	Objects, Multilink, Lego, beads, bead strings, Numicon, whiteboards, role play.   	Pictorial representations 20÷2=10 	Group, pairs, left over, share, equal, half/halve, same, count out, share out, left, left over

Year group	Foundations	Rapid Recall	Mental calculation	Objective	Method	Practical methods	Pictorial/written methods	Vocabulary
Y2	Division facts 2x table. Division facts 10x table. Halves up to 20. Division facts 5x table. Count back in 3's. Review division facts (2x, 5x and 10x tables).	Know division facts for 2, 5 and 10 times tables	TU ÷ 2	Consolidation of Y1 Recall and use division facts for the 2, 5 and 10 tables, including recognising odd and even numbers Calculate mathematical statements for division within the multiplication tables and write them using the (÷) and (=) signs Know that division is not commutative i.e. cannot be done in any order. Solve problems involving division, using materials, arrays, mental methods, and division facts, including problems in contexts Recognise, find, name and write fractions 1/4, 1/3, 1/2 and 3/4 of a set of objects or quantity	Practical Informal written methods Horizontal recording	Number lines, number tracks, hundred squares, multilink, counters, bead strings. 15 ÷ 3 = 5   6 ÷ 3 = 2 	Use arrays: 15÷3=5  Picture representations: 	Group, pairs, left over, share, equal, half/halve, same, count out, share out, left, left over Groups of, times smaller, shorter etc, repeated subtraction, array, row, column, halve share, share equally, one each, two each, three each… group in pairs, threes… tens, equal groups of, divide, divided by, divided into,

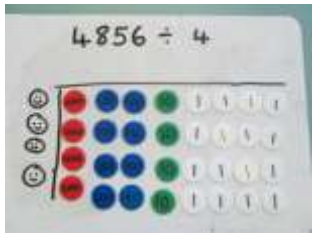
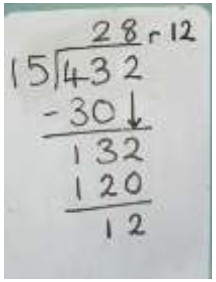
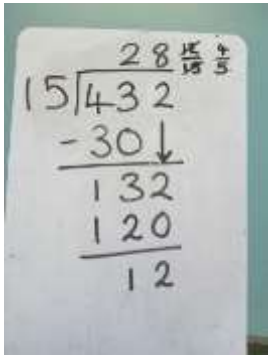
Year group	Foundations	Rapid Recall	Mental calculation	Objective	Method	Practical methods	Pictorial/written methods	Vocabulary
Y3	Review division facts (2x, 5x and 10x tables). Division facts 4x table. Halve 2 digit numbers. Division facts 8x table. Division facts 3x table. Division facts (6 x table) or review others.	As previous with increasing fluency Know division facts for 3, 4 and 8 multiplication tables	TU / HTU 2	Consolidation of Y2 Recall and use division facts for the 3, 4 and 8 multiplication tables Write and calculate mathematical statements for division using the multiplication tables that they know using mental and progressing to formal written methods Solve problems, including missing number problems, involving division, including positive integer scaling problems Recognise that tenths arise from dividing one-digit numbers or quantities by 10	Practical Informal written methods Horizontal recording Formal written method	Practical division using place value counters or dienes 63 ÷ 3 = 21    	TU ÷ U Partioning 63÷3=21 60÷3=20 3÷3=1 Formal written method – short division (no, exchange, no remainders)  1 ÷ 10 = 1/10 	Group, pairs, left over, share, equal, half/halve, same, count out, share out, left, left over groups of, times smaller, shorter etc, repeated subtraction, array, row, column, halve share, share equally, one each, two each, three each… group in pairs, threes… tens, equal groups of, divide, divided by, divided into Division, share, groups of, sets of

Year group	Foundations	Rapid Recall	Mental calculation	Objective	Method	Practical methods	Pictorial/written methods	Vocabulary
Y4	Division facts (4x and 8x table). 10 times smaller. Division facts (3x, 6x and 12x tables). Halve larger numbers and decimals. Division facts (3x and 9x tables). Division facts (7x and 11x tables). Division facts (6x and 12x tables).	Derive and recall facts up to the 10 times table	Numbers up to 1000 ÷ 10/100 (whole number answers and understand the effect Halves of TU / HTU numbers and multiples of 10 or 100	Consolidation of Y3 Recall division facts for multiplication tables up to 10 × 10 Use place value and known and derived facts to divide mentally for example 600 ÷ 3 = 200 can be derived from 2 x 3 = 6 Practise to become fluent in the formal written method of short division with exact answers Recognise that hundredths arise when dividing a one- or two-digit number by 100 and dividing by dividing tenths by 10 Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in	Practical Formal written method	Dienes, place value counters  Practical division using place value counters or dienes 339 ÷ 3 = 113  338÷3 =112r2 	TU ÷ U, then HTU ÷ U Formal written method – short division (no exchange, first without, then with remainders)    	Group, pairs, left over, share, equal, half/halve, same, count out, share out, left, left over, groups of, times smaller, shorter etc, repeated subtraction, array, row, column, halve share, share equally, one each, two each, three each… group in pairs, threes… tens, equal groups of, divide, divided by, divided into Division, share, groups of, sets of

				the answer as ones, tenths and hundredths Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number eg 4/5 of 25 = 20				Exchange, factor, inverse, divisible by

Year group	Foundations	Rapid Recall	Mental calculation	Objective	Method	Practical methods	Pictorial/written methods	Vocabulary
Y5	Division facts (4x and 8x tables). 100, 1000 times smaller. Division facts (3x, 6x and 12x tables). Partition to divide mentally. Halve larger numbers and decimals. Division facts (3x and 9x tables). 100, 1000 times smaller. Division facts (11x and 7x tables).	As previous with increasing fluency Divide whole numbers by 10, 100 and 1000	Divide using factors of the divisor (eg ÷8 by ÷2 and ÷4) Divide numbers by 10/100/1000 (describe the effect) Halves of U.t/0.th	Consolidation of Y4 Multiply and divide numbers mentally, drawing upon known facts 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 Divide whole numbers and those involving decimals by 10, 100 and 1,000 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	Practical Formal written method	Practical division using place value counters or dienes 	ThHTU ÷ U with and without remainders expressed as fractions and decimals    	Group, pairs, left over, share, equal, half/halve, same, count out, share out, left, left over, groups of, times smaller, shorter etc, repeated subtraction, array, row, column, halve share, share equally, one each, two each, three each… group in pairs, threes… tens, equal groups of, divide, divided by, divided into Division, share, groups of, sets of, exchange, factor, inverse, divisible by

	Partition decimals to divide mentally. Review division facts (6x and 12x tables). Halve larger numbers and decimals.			Solve problems involving division, and a combination of all 4 operations, including understanding the meaning of the equals sign Solve problems involving division, including scaling by simple fractions and problems involving simple rates Interpret non-integer answers to division by expressing results in different ways according to the context, including with remainders, as fractions, as decimals or by rounding (for example, 98 ÷ 4 = 98/4 = 24 r 2 = 24 $\frac{1}{2}$ = 24.5 ≈ 25).				Divisibility Divisible by

Year group	Foundations	Rapid Recall	Mental calculation	Objective	Method	Practical methods	Pictorial/written methods	Vocabulary
Y6	Division facts up to 12 x 12. Partition to divide mentally. Halve larger numbers and decimals. Division facts (up to 12 x 12). Partition to divide mentally. Halve larger numbers and decimals.	Derive ÷ facts involving multiples of 10/100 (eg 240 ÷ 30) and decimals (eg 4.8 ÷ 6)	Divide using factors of the divisor (eg ÷15 by ÷5 and ÷3) TU ÷ U U.t ÷ U Integer 1000/100/10	Consolidation of Y5 Application of all prior skills learnt to increase fluency 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 Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context	Practical Informal written methods Formal written method	Practical division using place value counters or dienes 	ThHTU ÷ TU with remainders expressed as fractions and decimals Formal written method – long division  	groups of, times smaller, shorter etc, repeated subtraction, array, row, column, halve share, share equally, one each, two each, three each… group in pairs, threes… tens, equal groups of, divide, divided by, divided into Division, share, groups of, sets of, exchange, factor, inverse, divisible by, divisibility

				Use written division methods in cases where the answer has up to 2 decimal places Divide proper fractions by whole numbers (for example, 1/3 ÷ 2 = 1/6) Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375 = 3/8]