Simonside 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.

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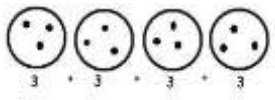
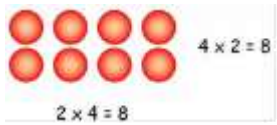
Y1	Count in 2's Count in 10's Doubles up to 10 Count in 5's Double multiples of 10 Count in 2's, 5's and 10's	Consolidation of EYFS Chanting of counting in 2s, 5s 10s Double pairs to 10, then 20		Consolidation of EYFS Begin to understand multiplication through grouping small quantities, Solve one-step 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,

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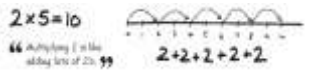
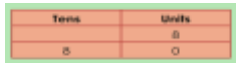
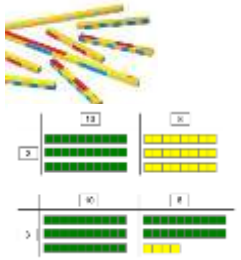
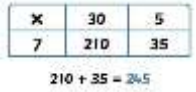
Y2	2 x table 10 x table Doubles up to 20 and multiples of 5. 5 x table Count in 3's. 2x , 5x and 10x tables.	Count in 2s, 5s and 10s Derive multiples of 2, 5 & 10. Relate to x facts (and derive related facts) Understand that halving is the inverse of doubling and derive and recall doubles of all numbers 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) 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).	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 =  Multiplying by 10 using place value Grid Method 10 2 5	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

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 corresponding inverses, including doubling and halving, to estimate and check calculations	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 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).	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  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, multiplication, product

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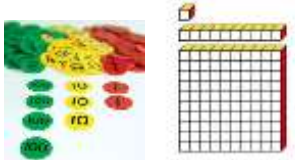
Y4	4x, 8x tables. 10 times bigger. 3x, 6x and 12x tables. Double larger numbers and decimals. 3x and 9x tables. 11x and 7x tables.	Derive and recall facts to 10 x 10 Count in multiples of 6, 7, 9, 25 and 1000 Recognise and use factor pairs and commutativity in mental calculations.	Numbers up to 1000 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. 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

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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 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.	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
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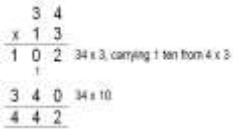
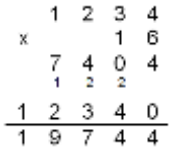
20	800	40
3	120	6	 And recording as: 800 120 40 + 6 966 Moving on to a more formal method:  Moving further to more complex numbers: 	Chanting/ counting in 2s. count on in…, lots of, groups of, pattern, odd, even, every other, how many times, multiple of, sequence, times, multiply, multiplied by, multiple 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 Factor, prime, prime factor

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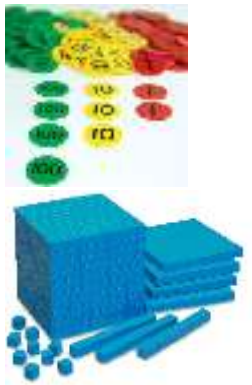
Y6	Multiplication facts up to 12x12 Partition to multiply mentally. Double larger numbers and decimals	Use facts up to 10 x 10 to derive facts involving multiples of 10/100 (eg 80 x 30) and decimals (eg 0.8 x 7) Derive squares of numbers to 12 x 12 Derive corresponding squares of multiples of 10.	TU 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. 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)	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: $\frac{3}{5}$ (x3) = $\frac{9}{15}$ Multiplying fractions $\frac{1}{2} \times \frac{3}{4} = \frac{3}{8}$ (multiply numerators) (multiply denominators) 2 x 8 = 16	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, factor, prime, prime factor Common denominator