Year	1	2	3	4	5	6
National Curriculum	Pupils should be taught to: • solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.	Pupils should be taught to: • recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers • calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs • show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot • solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.	Pupils should be taught to: • recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables • write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods • solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.	Pupils should be taught to: • recall multiplication and division facts for multiplication tables up to 12 × 12 • use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers • recognise and use factor pairs and commutativity in mental calculations • multiply two-digit and three-digit numbers by a one-digit number using formal written layout • 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.	Pupils should be taught to: • 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 • multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers • 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 • multiply and divide whole numbers and those involving decimals by10, 100 and 1000 •recognise and use square numbers and cube numbers, and the notation squared (2) and cubed (3) • solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes • solve problems involving all four operations and a combination of these, including understanding the meaning of the equals sign • solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.	Pupils should be taught to: • multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication • divide numbers up to 4 digits by a two-digit whole number using the formal written method of 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 • perform mental calculations, including with mixed operations and large numbers • identify common factors, common multiples and prime numbers • use their knowledge of the order of operations to carry out calculations involving the four operations • solve problems involving addition, subtraction, multiplication and division. • use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.
Chris Quigley Essentials Curriculum **Milestone Indicators Only**	M1- • <u>Methods-</u>Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) signs. -Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot. -Solve problems involving multiplication and division using mental methods. • <u>Checking-</u>Use known multiplication facts to check the accuracy of calculations. • <u>Complexity</u>-Solve one-step (two-step at greater depth) problems involving multiplication and division. • <u>Using multiplication and division facts</u> -Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables. -Recognise odd and even numbers. -Use multiplication and division facts to solve problems. NB-Solving problems.		M2- • <u>Methods</u>-Multiply two-digit and three-digit numbers by a one-digit number using formal written layout. -Use place value, and known and derived facts to multiply and divide mentally, including multiplying by 0 and 1, dividing by 1, multiplying together three numbers. -Recognise and use factor pairs in mental calculations. • <u>Checking-</u>Recognise and use the inverse relationship between multiplication and division and use this to check calculations and solve missing number problems. • <u>Complexity</u>- Solve problems involving multiplying and dividing, 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). • <u>Using multiplication and division facts</u>- Recall multiplication and division facts for multiplication tables up to 12 x 12. NB-Solving Problems, Measures and Fractions.		M3- • <u>Complexity</u>- Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign. -Solve problems involving multiplication and division including scaling by simple fractions and problems involving simple rates. -Use knowledge of the order of operations to carry out calculations involving the four operations. • <u>Methods</u>- Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method for multiplication. -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 numbers, 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. -Perform mental calculations, including with mixed operations and large numbers. • <u>Checking-</u>Estimate and use inverse operations and rounding to check answers to a calculation. • <u>Using multiplication and division facts-</u>Identify common factors, common multiples and prime numbers. -Multiply and divide 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). NB-Solving Problems, Fractions, Statistics, Measures and Algebra.	

Two Gates Calculation Policy | Multiplication

Developing conceptual understanding

Concrete understanding-
2 frogs on each lily pad.
3 x 2 = 6

Visual Maths Pathways

Visual Maths Language:
T- Towers of Ten
U-Units or ones

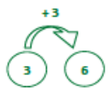
Visual Maths:

Making Groups

2 x 3 = 6

Times Table Patterns

2 x 3 = 6

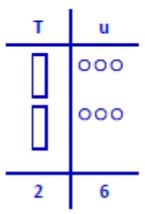


Written Methods

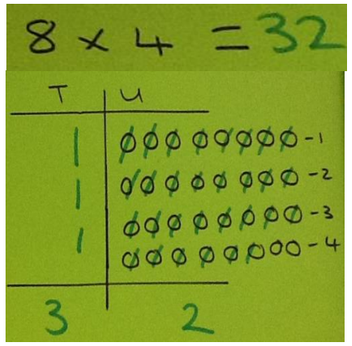
Column Addition

Double 13

	T	u
	1	3
+	1	3
	2	6



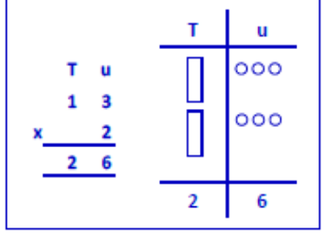
Visual Maths:

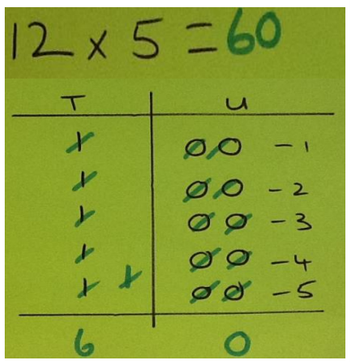


Column Multiplication

Double 13

	T	u
	1	3
x		2
	2	6





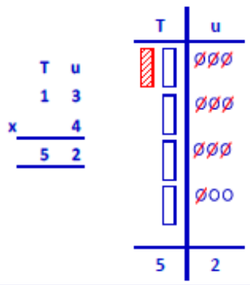
Visual Maths:

	T	u
	1	3
x		4
	5	2
	1	

Column Multiplication I

13 x 4 =

	T	u
	1	3
x		4
	5	2



Splitting I

7 x 7 = 49

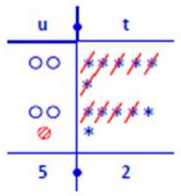
7 x 7 = 49
5 x 7 = 35
2 x 7 = 14 +
49

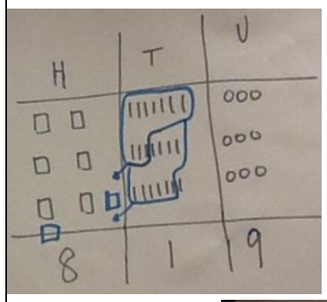
Visual Maths:

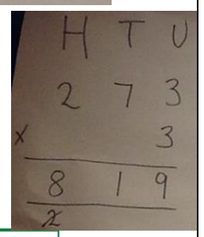
	U	t
	2	6
x		2
	5	2
	1	

Column Multiplication II

2.6 x 2 =







Splitting II

35 x 7 = 245

35 x 7 = 245
30 x 7 = 210
5 x 7 = 35 +
245

Written method:

243
x 6
1458
2 1

Extended Column Multiplication

12 x 32 =

H	T	u	
	1	2	
x	3	2	
	2	4	(2 x 12)
3	6	0	(30 x 12)
3	8	4	

Extended Splitting

12 x 32 =

12 x 32 =
10 x 32 = 320
2 x 32 = 64 +
384

Written method:

243
x 36
1458
7290
+ 8748
1

Written method:

5172
x 38
41376
151
+ 155160
2
196536
1