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 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 and division including using their knowledge of factors and multiples, squares and cubes • solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign • solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.	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- • Methods-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. • Checking-Use known multiplication facts to check the accuracy of calculations. • Complexity-Solve one-step (two-step at greater depth) problems involving multiplication and division. • Using multiplication and division facts -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- • Methods-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. • Checking-Recognise and use the inverse relationship between multiplication and division and use this to check calculations and solve missing number problems. • Complexity- 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). • Using multiplication and division facts- Recall multiplication and division facts for multiplication tables up to 12 x 12. NB-Solving Problems, Measures and Fractions.		M3- • Complexity- 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. • Methods- 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. • Checking-Estimate and use inverse operations and rounding to check answers to a calculation. • Using multiplication and division facts-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.	

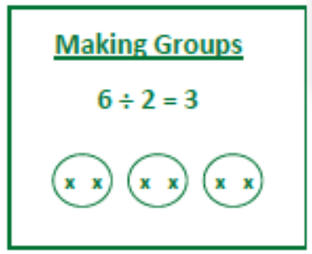
Developing conceptual understand-ing

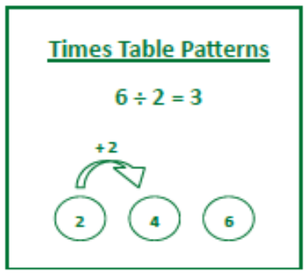
6 ÷2 = 3 by sharing into 2 groups and by grabbing groups of 2.

Visual Maths Pathways

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

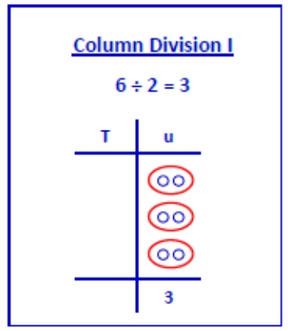
Visual Maths:

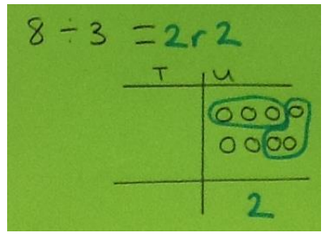


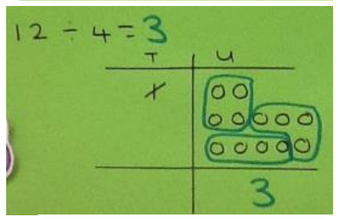


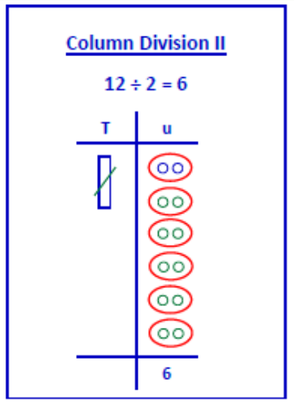
Written Methods

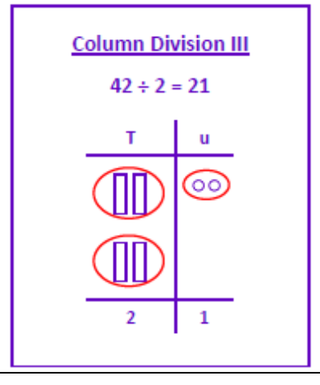
Visual Maths:











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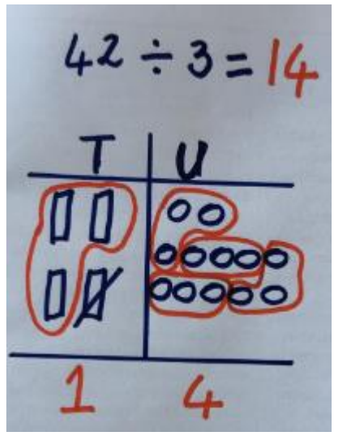

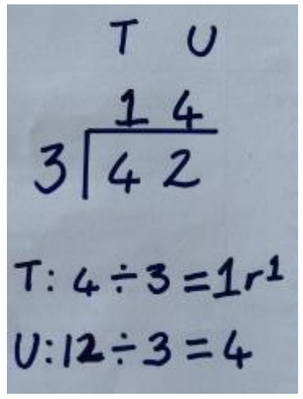

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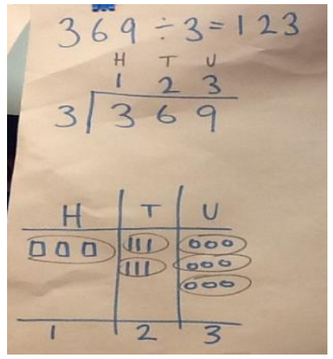
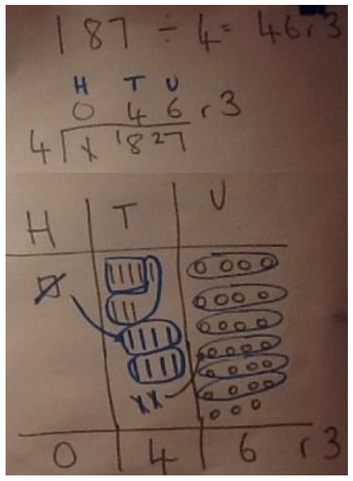




Written Method:

$$\begin{array}{r} 3\ 2 \\ 6\overline{)1\,9^{1}2} \end{array}$$

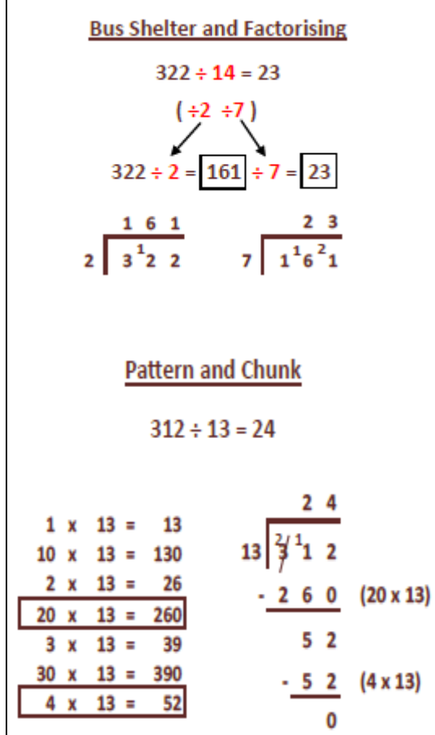
192 ÷ 6
= 32

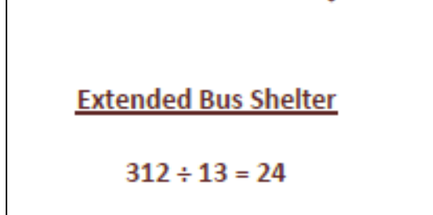
432 ÷ 5 becomes

$$\begin{array}{r} 8\ \ 6\ r2 \\ 5\overline{)4\,3^{3}2} \end{array}$$

Answer: 86 remainder 2

Visual Maths:





Written Method:

1358 ÷ 4 =

$$\begin{array}{r} 0\,4\,5\,2\ r2 \\ 3\overline{)1^{1}1^{1}3^{1}5\,8} \end{array}$$

Long division

432 ÷ 15 becomes

$$\begin{array}{r} \ \ 2\ \ 8\ \ r\,12 \\ 1\ 5\overline{)4\ 3\ 2} \\ \underline{3\ 0\ 0} \\ 1\ 3\ 2 \\ \underline{1\ 2\ 0} \\ 1\ 2 \end{array}$$

Answer: 28 remainder 12

Expressing remainders as fractions:

432 ÷ 15 becomes

$$\begin{array}{r} \ \ 2\ \ 8 \\ 1\ 5\overline{)4\ 3\ 2} \\ \underline{3\ 0\ 0} \quad 15\times20 \\ 1\ 3\ 2 \\ \underline{1\ 2\ 0} \quad 15\times8 \\ 1\ 2 \end{array}$$

$\frac{\cancel{12}}{\cancel{15}} = \frac{4}{5}$

Answer: $28\frac{4}{5}$

Expressing remainders as a decimal:

432 ÷ 15 becomes

$$\begin{array}{r} \ \ 2\ \ 8\cdot 8 \\ 1\ 5\overline{)4\ 3\ 2\cdot 0} \\ \underline{3\ 0} \\ 1\ 3\ 2 \\ \underline{1\ 2\ 0} \\ 1\ 2\ 0 \\ \underline{1\ 2\ 0} \\ 0 \end{array}$$

Answer: 28·8

142 ÷ 4 = 35·5 r2

$$\begin{array}{r} 0\,3\,5\cdot 5\ r2 \\ 4\overline{)1^{1}4^{2}2\cdot{}^{2}0} \end{array}$$

2/4 = 1/2 = 0.5