

Cleobury Mortimer Primary School

Calculation policy

Based on the NCETM 5 Big Ideas – representation of structure

Progression in Addition

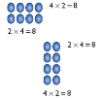
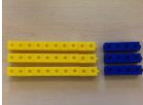
Year	1	2	3	4	5	6
Written Methods	Read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs	Add and subtract two two-digit numbers using concrete objects, pictorial representations progressing to formal written methods $\begin{array}{r} 40 + 8 \\ 20 + 6 \\ \hline 60 + 14 = 74 \\ 1 \end{array}$	Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction $\begin{array}{r} 423 \\ + 88 \\ \hline 511 \\ 1 \end{array}$	Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition where appropriate $\begin{array}{r} 2458 \\ + 596 \\ \hline 3054 \\ 111 \end{array}$	Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)	Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
With jottings ... or in your head	Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$	Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: * a two-digit number and ones * a two-digit number and tens * two two-digit numbers * adding three one-digit numbers	Add and subtract numbers mentally, including: * a three-digit number and ones * a three-digit number and tens * a three-digit number and hundreds	Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	Add and subtract numbers mentally with increasingly large numbers	Perform mental calculations, including with mixed operations and large numbers
Just know it!	Represent & use number bonds and related subtraction facts within 20 Add and subtract one-digit and two-digit numbers to 20, including zero	Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100				

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Progression in Multiplication

Year	1	2	3	4	5	6						
Written Methods		Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals (=) signs 	Write and calculate mathematical statements for \div using the x tables they know progressing towards formal written methods, using practical equipment. 	Multiply two-digit and three-digit numbers by a <table border="1" style="margin: 10px auto;"> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;">40</td> <td style="text-align: center;">3</td> </tr> <tr> <td style="text-align: center;">6</td> <td style="background-color: #00ff00; text-align: center;">240</td> <td style="background-color: #0000ff; text-align: center;">18</td> </tr> </table> one-digit number using grid method	X	40	3	6	240	18	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 $\begin{array}{r} 243 \\ \times 6 \\ \hline 2058 \\ 1 \end{array}$	Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication $\begin{array}{r} 243 \\ \times 36 \\ \hline 7290 \\ 1458 \\ \hline 8748 \\ 1 \end{array}$
X	40	3										
6	240	18										
With jottings ... or in your head	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	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	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 methods	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 and divide numbers mentally drawing upon known facts Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers establish whether a number up to 100 is prime	Perform mental calculations, including with mixed operations and large numbers						
Just know it!	Count in multiples of twos, fives and tens	Recall and use \times and \div facts for the 2, 5 and 10 \times tables, including recognising odd and even numbers.	Recall and use \times and \div facts for the 3, 4 and 8 times tables.	Recall \times and \div facts for \times tables up to 12×12 .	Recall prime numbers up to 19 know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)							

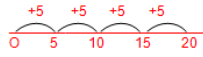



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Progression in Division

Year	1	2	3	4	5	6
Written Methods		Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals (=) signs	Write and calculate mathematical statements for \div using the \times tables they know . 	Write and calculate mathematical statements for \div using the \times tables  they know progressing to additive chunking on the ENL	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 $194 \div 6$ $\begin{array}{r} 32 \\ 6 \overline{)1912} \\ \underline{18} \\ 11 \\ \underline{12} \\ 0 \end{array}$ $192 \div 6 = 32$	Divide numbers up to 4-digits by a two-digit whole number using the formal written method of short division where appropriate for the context 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
With jottings ... or in your head	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	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	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 methods	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 and divide numbers mentally drawing upon known facts Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	Perform mental calculations, including with mixed operations and large numbers
Just know it!	Count in multiples of twos, fives and tens	Recall and use \times and \div facts for the 2, 5 and 10 \times tables, including recognising odd and even numbers.	Recall and use \times and \div facts for the 3, 4 and 8 times tables	Recall \times and \div facts for \times tables up to 12×12 .	Recall prime numbers up to 19 know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers	