



HILLSBOROUGH
NURSERY & PRIMARY SCHOOL

Number Multiplication and division policy

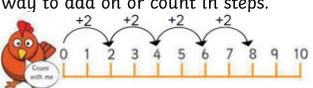
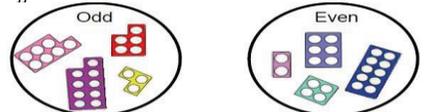
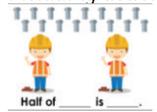
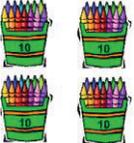
Progression of skills overview

Number: Multiplication and Division						
Multiplication and Division Facts						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	count in multiples of twos, fives and tens	count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward	count from 0 in multiples of 4, 8, 50 and 100	count in multiples of 6, 7, 9, 25 and 1000	count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000	
		recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers	recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	recall multiplication and division facts for multiplication tables up to 12×12		
Mental Calculation						
				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	multiply and divide numbers mentally drawing upon known facts	perform mental calculations, including with mixed operations and large numbers
		show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot		recognise and use factor pairs and commutativity in mental calculations	multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $\frac{3}{8}$)
Written Calculation						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

		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 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	multiply two-digit and three-digit numbers by a one-digit number using formal written layout	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 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 one-digit number using the formal written method of short division and interpret remainders appropriately for the context	-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
						use written division methods in cases where the answer has up to two decimal places
Properties of Numbers: Factors, Multiples, Prime, Square and Cube Numbers						
				recognise and use factor pairs and commutativity in mental calculations (repeated)	identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.	identify common factors, common multiples and prime numbers use common factors to simplify fractions; use common multiples to express fractions in the same denomination
					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	
Inverse operation, Estimating and Checking answers						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

			estimate the answer to a calculation and use inverse operations to check answers	estimate and use inverse operations to check answers to a calculation		use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy
Problem Solving						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Solve problems, including doubling, halving and sharing	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	solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	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	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	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	Use knowledge of the order of operations to carry out calculations involving the four operations.
					solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates	solve problems involving addition, subtraction, multiplication and division

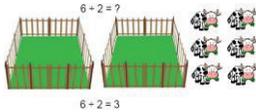
Year 1.

NC Objective	Learning Objectives	Pre-learning	Methods from Calculation Policy	Key Questions for GDS
<p>Count in multiples of twos, fives and tens</p>	<p>Count in multiples of 2 Count in multiples of 5 Count in multiples of 10</p> <p>Vocabulary Multiply Divide Counting Multiples Sharing Grouping</p>	<p>Revisit place value policy</p>	<p>Use concrete objects to enable a secure understanding on the concept.</p>  <p>Number lines can also support children when they multiply, as a way to add on or count in steps.</p>  <p>Children could use a counter, a finger or a pencil to help them 'hop' along the number line.</p> <p>They should begin to look at counting backwards in these steps as well.</p> <p>When counting in 2's, children may start to recognise the difference in structure between odd and even numbers.</p> 	<p>What number is missing in this pattern?</p> <p>23, 33, ____, 53, 63. 42, 43, 44, ____, 46</p> <p>If I count in 2's starting at 8, will I say the number 15?</p> <p>If I count in 10's, will I say the number 130? How do you know?</p>
<p>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</p>	<p>Solve simple problems involving multiplication (repeated addition) to 20.</p> <p>Solve simple problems involving division (sharing) to 20</p> <p>Vocabulary Double half multiply grouping share array</p>	<p>Children should be able to solve problem including doubling, halving and sharing.</p>   <p>Double the amount below</p>	<p>By grouping or sharing small quantities, children should begin to gain some understanding of multiplication and division.</p> <p>At this stage, they should be solving simple problems using repeated addition, although the language of multiplication will also be introduced.</p>  <p>There are 10 crayons in each box. How many are there altogether?</p> <p>$10 + 10 + 10 + 10 = 40$ crayons There 4 groups of 10 $10 \times 4 = 40$ 10 multiplied by 4 is 40</p>  <p>How much money do I have?</p> <p>$5 + 5 + 5 + 5 + 5 = 25p$ The are 5 lots of 5p $5 \times 5 = 25$</p>	<p>There are a number of trees on the school playground. Each tree drops five leaves each day. How many trees are there if we find 25 leaves on the ground each day?</p> <p>4 girls share out red and green apples. Each has 2 red and 3 green apples. How many apples were there to start with?</p>

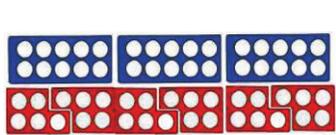
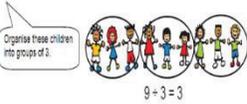
Children should become familiar with concept of division through sharing and grouping concrete objects equally.

Can you share the cows *equally* between the two fields?

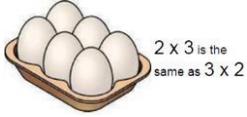
Sharing



Grouping



Arrays will also be used to help children visualise and understand multiplication and division.



3x4 is the same as 4x3

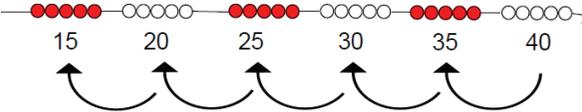
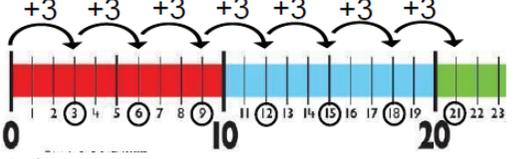
These everyday items, arranged in rows and columns, highlights an important multiplication fact to the children: that multiplication can be done in any order (commutative).

10 shared into 2 groups equal 5



With my 50p pocket money I bought chocolate bars for 5p each. I have 20p left. How many chocolate bars did I buy?

Year 2.

NC Objective	Learning Objectives	Pre-learning	Methods from Calculation Policy	Key Questions for GDS
<p>Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward</p>	<p>Count in steps of 2, 3, and 5 from 0.</p> <p>Count in steps of 2, 3 and 5 in tens from any number.</p> <p>Count forward or backward from any number.</p> <p><u>Vocabulary</u> once, twice, three times ... ten times repeated addition divide, divided by, divided into , share, share equally left, left over one each, two each, three each ... ten each</p>	<p>Revisit place value policy</p>	<p>Children will continue to practise counting in steps of 2,5 and 10, so that they become increasingly fluent at doing so. They will also be expected to count backwards from a given number in these steps.</p> <p>Number line</p>  <p>Furthermore, they must now be able to count up from 0 in threes.</p>  <p>Other support</p>  <p>A clock face can help to support counting in 5's whilst money (2p, 5p, 10p, 20p, 50p) can be a great way to practise counting in other intervals.</p>  <p style="text-align: center;">20 40 60 80</p> <p>Knowledge of the 2 times table will help children to count up to 20 as well.</p>	<p>Harry has made a sequence of numbers using six number cards. Here are three of the cards: <i>can you think of two sequences Harry could have made?</i></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; background-color: #d9534f; color: white; padding: 5px; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">10</div> <div style="border: 1px solid black; background-color: #8e44ad; color: white; padding: 5px; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">20</div> <div style="border: 1px solid black; background-color: #3498db; color: white; padding: 5px; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">30</div> </div>

Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognizing odd and even numbers

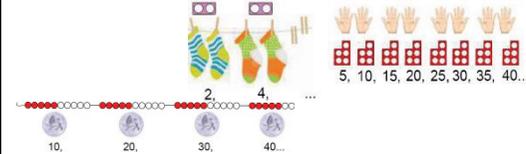
Recite the 2, 5 and 10x table
Recognise that $\times 2$ is the same as doubling and $\div 2$ is the same as halving.

Recognise even numbers.

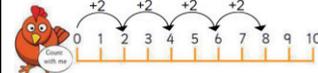
Recognise odd numbers.

Vocabulary
groups of times
multiplication table
multiplication fact,
division fact
group in pairs, threes
... tens
row,

Use concrete objects to enable a secure understanding on the concept.



Number lines can also support children when they multiply, as a way to add on or count in steps.



Children could use a counter, a finger or a pencil to help them 'hop' along the number line.

They should begin to look at counting backwards in these steps as well.

When counting in 2's, children may start to recognise the difference in structure between odd and even numbers.



The children should now be able to recall from memory, multiplication facts for the 2, 5- and 10-times tables. They could use this knowledge to solve a variety of missing number problems.

$$7 \times 2 = \square \quad \square \times 2 = 14$$

$$7 \times \square = 14 \quad \square \times \square = 14$$

Children should also start to recognise patterns in different multiplication tables.

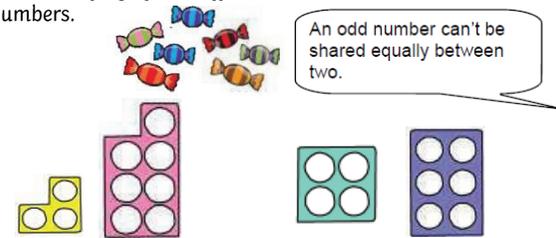


Which of these numbers are in the 5 times table?
How do you know?

The 5 times table is half the 10 times table. So to find 6×5 , I could work out 6×10 and then halve it!

5 times table	10 times table
$1 \times 5 = 5$	$1 \times 10 = 10$
$2 \times 5 = 10$	$2 \times 10 = 20$
$3 \times 5 = 15$	$3 \times 10 = 30$
$4 \times 5 = 20$	$4 \times 10 = 40$
$5 \times 5 = 25$	$5 \times 10 = 50$
$6 \times 5 = 30$	$6 \times 10 = 60$
$7 \times 5 = 35$	$7 \times 10 = 70$
$8 \times 5 = 40$	$8 \times 10 = 80$
$9 \times 5 = 45$	$9 \times 10 = 90$
$10 \times 5 = 50$	$10 \times 10 = 100$
$11 \times 5 = 55$	$11 \times 10 = 110$
$12 \times 5 = 60$	$12 \times 10 = 120$

The use of numicon can help children to build internal, visual structures of numbers, and thus elicit a much more secure understanding of the difference between odd and even numbers.



Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.

Set out multiplication calculations in any order e.g. 2×8 will give the same answer as 8×2 .

Children should have been practicing their 2's ... times table

Recap sharing...

By creating and looking at arrays, children will begin to recognise the inverse relationship between multiplication and division.



$$3 \text{ groups of } 4 = 3 \times 4 = 12$$

$$4 \text{ groups of } 3 = 4 \times 3 = 12$$

$$12 \text{ divided into } 4 \text{ groups} = 12 \div 4 = 3$$

$$12 \text{ divided into } 3 \text{ groups} = 12 \div 3 = 4$$

Spot the odd one out.

- a) 13, 19, 25, 28, 33.
- b) 4, 8, 12, 15, 16
- c) 35, 40, 44, 50, 55
- d) 30, 40, 50, 60, 71, 80.

Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.

Set out multiplication calculations in any order e.g. 2×8 will give the same answer as 8×2 .

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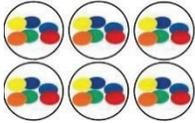
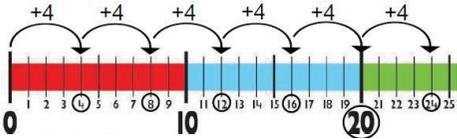
$$3 \text{ groups of } 4 = 3 \times 4 = 12$$

$$4 \text{ groups of } 3 = 4 \times 3 = 12$$

$$12 \text{ divided into } 4 \text{ groups} = 12 \div 4 = 3$$

$$12 \text{ divided into } 3 \text{ groups} = 12 \div 3 = 4$$

Write four number sentences to link the numbers 5, 6 and 30.

	Set out division calculations in a set order e.g. $20 \div 5 = 4$ cannot be set out as $5 \div 20 = 4$		Eventually, children should be able to answer questions like "If $12 \times 2 = 24$.What is $24 \div 2$?"	
Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals ($=$) signs	Calculate mathematical statements for multiplication and division	None	<p>Children should continue to use grouping or number line to calculate other unknown multiplications, developing their understanding of multiplication as repeated addition.</p> <p style="text-align: center;">Concrete</p> <div style="display: flex; align-items: center;"> <div style="flex: 1;"> $6 \times 6 = ?$ 6 groups of 6 $6 + 6 + 6 + 6 + 6 + 6 = 36$ $6 \times 6 = 36$ </div> <div style="flex: 1; text-align: center;">  </div> </div> <p style="text-align: center;">Pictorial</p> <div style="text-align: center;">  </div> <div style="text-align: right; margin-top: 10px;"> $6 \times 4 = ?$ 6 lots of 4 $4 + 4 + 4 + 4 + 4 + 4 = 24$ $6 \times 4 = 24$ </div>	
solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	Solve problems involving multiplication and division	<p>By grouping or sharing small quantities, children should begin to gain some understanding of multiplication and division.</p> <p>At this stage, they should be solving simple problems using repeated addition, although the language of multiplication will also be introduced.</p>	<p>Remind pupils of the term inverse as it relates to addition and subtraction.</p> <p>Explain a similar principle relates to multiplication and division.</p> <p>Revise 2, 5- and 10-times tables.</p> <p>Then go on to ask questions such as, 'How many 5s in 25?' 'How many 2s in 14?'</p>	<p>Chocolate bars cost 10p each or you could buy 3 bars for 25p</p> <p>How many bars could Javed buy if he had a £1 to spend?</p> <p>If Javed needed to buy 8 bars, how much will it cost him?</p>
	<u>Vocabulary</u> Grouping			

Division
 Multiply
 Solve
 Inverse operation



There are 10 crayons in each box. How many are there altogether?
 $10 + 10 + 10 + 10 = 40$ crayons
 There are 4 groups of 10
 $10 \times 4 = 40$
 10 multiplied by 4 is 40

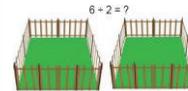


How much money do I have?
 $5 + 5 + 5 + 5 + 5 = 25$ p
 There are 5 lots of 5p
 $5 \times 5 = 25$

Children should become familiar with concept of division through sharing and grouping concrete objects equally.

Can you share the cows *equally* between the two fields?

Sharing



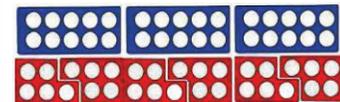
$6 \div 2 = ?$
 $6 \div 2 = 3$



Grouping

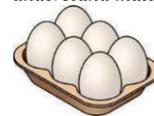


Organise these children into groups of 3.
 $9 \div 3 = 3$



How many 5s are there in 30?

Arrays will also be used to help children visualise and understand multiplication and division.



2×3 is the same as 3×2



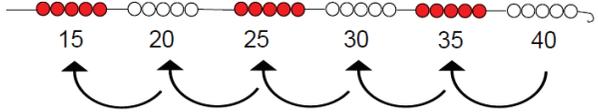
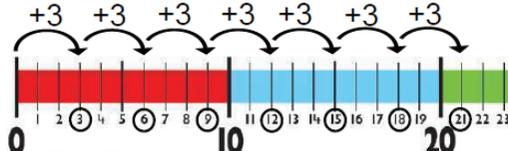
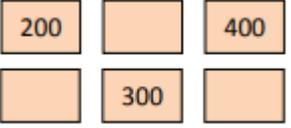
3×4 is the same as 4×3

These everyday items, arranged in rows and columns, highlights an important multiplication fact to the children: that multiplication can be done in any order (commutative).

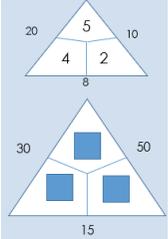
Use practical examples to explain how the inverse works in relation to multiplication and division. Get pupils working in pairs with apparatus to explain to each other how the principle works.

Cassie has 4 bags with 5 sweets in each, Rachel has 5 bags with 4 sweets in each.
 How many do they have each?
 Can you split the sweets into different numbers of bags so they both still have the same number?

Year 3.

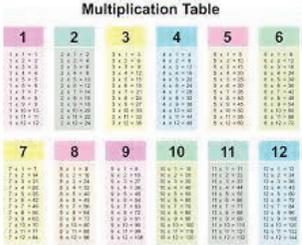
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<p>count from 0 in multiples of 4, 8, 50 and 100</p>	<p>Count from 0 in multiples of 4, 8, 50 and 100</p> <p><u>Vocabulary</u> factor product remainder</p>	<p>Children will continue to practise counting in steps of 2, 5 and 10, so that they become increasingly fluent at doing so. They will also be expected to count backwards from a given number in these steps.</p> <p>Number line</p>  <p>Furthermore, they must now be able to count up from 0 in threes.</p>  <p>Other support</p>  <p>A clock face can help to support counting in 5's whilst money (2p, 5p, 10p, 20p, 50p) can be a great way to practise counting in other intervals.</p> <p style="text-align: center;">20 40 60 80</p>	<p>Adding 10 rapidly to a number of TU and HTU numbers. Taking away 10 rapidly from a number of TU and HTU numbers. Adding 100 rapidly to a number of TU and HTU numbers. Taking away 100 rapidly from a number of HTU numbers.</p> <p>Create a circle with a small group of pupils and starting with one pupil they have to move around adding 4 or 8 to a given number as rapidly as possible. This idea could be developed so as to create a competition between two or three small groups.</p> <p>This could also be done with adding or subtracting 50 or 100 from given numbers.</p> <p>Continue these sequences: 1422.....30.....38....4654....62 78....70....62....54....46....38 23....73....123....173....223....273 736....686....636....686....586</p>	<p>Use the number cards to make a sequence. <i>Can you make more than one sequence?</i></p>  <p>Complete the following sequences:</p> <table border="1" data-bbox="1825 742 2161 790"> <tr> <td>16</td> <td>24</td> <td></td> <td></td> <td>56</td> <td>64</td> <td>72</td> <td>80</td> </tr> </table> <table border="1" data-bbox="1825 805 2161 853"> <tr> <td>99</td> <td>91</td> <td></td> <td></td> <td>67</td> <td>51</td> <td>43</td> <td></td> </tr> </table> <table border="1" data-bbox="1825 869 2161 917"> <tr> <td>5</td> <td></td> <td>21</td> <td>25</td> <td></td> <td>37</td> <td>45</td> <td></td> <td>53</td> <td>61</td> </tr> </table>	16	24			56	64	72	80	99	91			67	51	43		5		21	25		37	45		53	61
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<p>recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables</p>	<p>Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables</p>	<p>The children should now be able to recall from memory, multiplication facts for the 2, 5- and 10-times tables. They could use this knowledge to solve a variety of missing number problems.</p>	<p>Count on and back in 3s, 4s and 8s starting from 0. Count on and back in 3s, 4s and 8s starting from any given number below 10.</p>	<p>Putting the digits 3, 4 and 8 into the empty boxes, <i>how many different calculations can you make?</i></p>																										

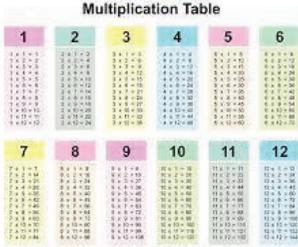
	<p><u>Vocabulary</u> Times table</p>	<p> $7 \times 2 = \square$ $\square \times 2 = 14$ $7 \times \square = 14$ $\square \times \bigcirc = 14$ </p> <p>Children should also start to recognise patterns in different multiplication tables.</p> <p>Which of these numbers are in the 5 times table? How do you know?</p> <p>The 5 times table is half the 10 times table. So to find 6×5, I could work out 6×10 and then halve it!</p> <p>5 times table</p> <table border="1"> <tr><td>1 x 5 = 5</td></tr> <tr><td>2 x 5 = 10</td></tr> <tr><td>3 x 5 = 15</td></tr> <tr><td>4 x 5 = 20</td></tr> <tr><td>5 x 5 = 25</td></tr> <tr><td>6 x 5 = 30</td></tr> <tr><td>7 x 5 = 35</td></tr> <tr><td>8 x 5 = 40</td></tr> <tr><td>9 x 5 = 45</td></tr> <tr><td>10 x 5 = 50</td></tr> <tr><td>11 x 5 = 55</td></tr> <tr><td>12 x 5 = 60</td></tr> </table> <p>10 times table</p> <table border="1"> <tr><td>1 x 10 = 10</td></tr> <tr><td>2 x 10 = 20</td></tr> <tr><td>3 x 10 = 30</td></tr> <tr><td>4 x 10 = 40</td></tr> <tr><td>5 x 10 = 50</td></tr> <tr><td>6 x 10 = 60</td></tr> <tr><td>7 x 10 = 70</td></tr> <tr><td>8 x 10 = 80</td></tr> <tr><td>9 x 10 = 90</td></tr> <tr><td>10 x 10 = 100</td></tr> <tr><td>11 x 10 = 110</td></tr> <tr><td>12 x 10 = 120</td></tr> </table> <p>The use of numicon can help children to build internal, visual structures of numbers, and thus elicit a much more secure understanding of the difference between odd and even</p> <p>An odd number can't be shared equally between two.</p>	1 x 5 = 5	2 x 5 = 10	3 x 5 = 15	4 x 5 = 20	5 x 5 = 25	6 x 5 = 30	7 x 5 = 35	8 x 5 = 40	9 x 5 = 45	10 x 5 = 50	11 x 5 = 55	12 x 5 = 60	1 x 10 = 10	2 x 10 = 20	3 x 10 = 30	4 x 10 = 40	5 x 10 = 50	6 x 10 = 60	7 x 10 = 70	8 x 10 = 80	9 x 10 = 90	10 x 10 = 100	11 x 10 = 110	12 x 10 = 120	<p>Create small groups where they have to count on in 3s, 4s and 8s, backwards and forwards. If they do not respond within 2 seconds then they drop out. Aim for an eventual winner in each group.</p> <p>Chant x3; x4 and x8 tables on a regular basis. Provide opportunities for pupils to write out tables as well as chanting them; Quick recall of the x3; x4 and x8 tables out of order;</p> <p>Work on inverses, eg, how many 3s in 27? etc.</p> <p>Calculate the following</p> <p> $4 \times 5 = 20$ $20 \div 2 = 10$ $6 \times 10 = 60$ $25 \div 5 = 5$ </p>	<p></p> <p>Which gives the largest answer?</p> <p>Which gives the smallest answer?</p> <p>Sally and Katie want to share sweets out equally between them. They can buy bags of 17, 18 or 21 sweets.</p> <p>Which bag should they buy? What other packs of sweets could they buy?</p>
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<p>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</p>	<p>Write and calculate mathematical statements for multiplication and division</p>	<p>Practice year group times table</p>	<p>Demonstrate how to set out a multiplication of a 2-digit number by 2, 3, 4, 5 or 8. Talk to the children about multiplying a single digit by 3, 4 or 8 and then multiply the equivalent 10s number by the 3, 4 or 8. What do they notice?</p> <p> $3 \times 8 =$ $30 \times 8 =$ What do you notice? </p>	<p>Look at the example below and then find the missing numbers in the triangle beneath it.</p>																								

	<p><u>Vocabulary</u> Multiply Divide Inverse operation Solve Word problem Prove</p>		<p>$4 \times 4 = 16$ $40 \times 4 = 160$ What do you notice?</p> <p>$24 \times 5 = 120$ $76 \times 8 =$ Introduce a formal method-column method</p> <p>2-digit by 1-digit Multiplication</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> $\begin{array}{r} 32 \\ \times 3 \\ \hline 96 \end{array}$ <p>No regrouping/carry</p> </div> <div style="text-align: center;"> $\begin{array}{r} \overset{2}{6}7 \\ \times 3 \\ \hline 201 \end{array}$ <p>With regrouping/carry</p> </div> </div>																
<p>estimate the answer to a calculation and use inverse operations to check answers</p>	<p>Estimate the answer to a calculation and use inverse operations to check answers</p> <p><u>Vocabulary</u> Estimate Calculate Solve Approximate Estimation</p>	<p>Explain the principle that helps us to be able to estimate appropriately.</p> <p>Use oral examples of estimating how far certain things are or how long things will take.</p> <p>Pupils should understand that a good estimate will help them know if their calculations are likely to be correct.</p>	<p>They should also understand what a poor estimate is like and how it could lead to confusion.</p> <p>Re-introduce the term inverse to pupils so that can see the relationship between addition and subtraction and also multiplication and division.</p> <p>Which is the most sensible estimate?: Tick as appropriate</p> <table border="1" data-bbox="1272 1018 1709 1177"> <thead> <tr> <th>calculation</th> <th>1st estimate</th> <th>2nd estimate</th> </tr> </thead> <tbody> <tr> <td>$23 + 65$</td> <td>100</td> <td>90</td> </tr> <tr> <td>$120 - 67$</td> <td>60</td> <td>90</td> </tr> <tr> <td>$310 + 112$</td> <td>420</td> <td>500</td> </tr> <tr> <td>$450 - 129$</td> <td>400</td> <td>320</td> </tr> </tbody> </table>	calculation	1 st estimate	2 nd estimate	$23 + 65$	100	90	$120 - 67$	60	90	$310 + 112$	420	500	$450 - 129$	400	320	<p>Look for the nearest 10 Look at the following calculation: $328 + 158$. If you look at the nearest 10 value then you could say that the answer to this calculation is close to $330 + 160$ which is 490. 490 could therefore be a reasonable estimate.</p> <p>Now find a reasonable estimate for the following using the same method.</p> <div style="display: flex; justify-content: space-between;"> <div> $268 + 174$ $591 + 338$ $720 - 381$ </div> <div> $626 + 274$ $532 + 558$ $691 - 458$ </div> </div> <p>Bar Models Find the missing number and then write the four number sentences that these bar models shows:</p>
calculation	1 st estimate	2 nd estimate																	
$23 + 65$	100	90																	
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<p>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</p>	<p>Solve problems, including missing number problems</p> <p><u>Vocabulary</u> Estimate Group Share Objects Calculate</p>	<p><u>Introduce the RUCSAC method</u></p> <p>Use example questions to model when solving</p>	<p>Read a question carefully and identify the key information needed to solve it. Draw or explain the problem to know what it is asking. Identify the calculation needed to do. Identify the most efficient method and carry out the calculation. Check my answer using the inverse or an estimate. Answer the question in context. (£.p etc.)</p> <p>Roger is laying tiles. He has 84 tiles altogether. How many complete rows of tiles can he make?</p>  <p>$84 \div 10 = 8$ with 4 left out Roger can make 8 rows of tiles.</p> <p><u>Also introduce the RUCSAC method</u></p>	<p>Sam is planting onions in the vegetable plot in his garden. He arranges the onions into rows of 4 and has two left over. He then arranges them into rows of 3 and has none left over. How many onions might he have had? Explain your reasoning</p>								

Year 4.

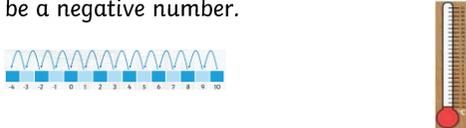
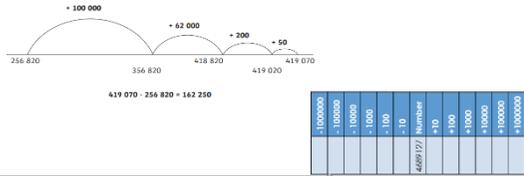
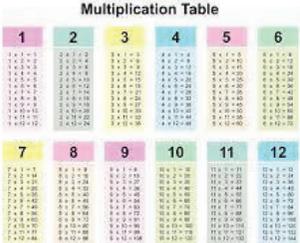
NC Objective	Learning Objectives	Pre-learning	Methods from Calculation Policy	Key Questions for GDS
Count in multiples of 6, 7, 9, 25 and 1000	Count in multiples of 6, 7, 9, 25 and 1000	Children will continue counting from 0 in multiples of 4, 8, 50 and 100	Focus on 6, 7, 9- and 10-times tables. Check understanding by asking questions related to tables out of order. Now check inverses by asking how many 6s, 7s or 9s in 36, 42 or 81 respectively. Count rapidly forwards and backwards in 10, 100 and 1000s, then in 25s. Provide pupils with regular 'test' to check their rapid recall of table facts.	What is wrong with these sequences of numbers? 950, 975, 1000, 1250 2006, 4006, 6006, 7006, 8006
	<u>Vocabulary</u> Multiples	Use examples and activities to secure understanding.	<u>Continue the sequence</u> 17, 24, 31, 38.... 67, 58, 49, 40.... 125, 150, 175, 200.... 19, 25, 31, 37, 43.... 1400, 1300, 1200, 0.... 3700, 3800, 3900....	
Recall multiplication and division facts for multiplication tables up to 12 × 12	Recall multiplication and division facts for multiplication tables up to 12 × 12	Start by ensuring pupils are confident and secure with their times tables 3, 4 and 8.	Start with a quick recall of the x4 and x8 tables. Introduce the 9x table showing how the ones figure reduces as the tens figure increases and how the sum of the digits is divisible by 9. Chant the x9 table and write them out. Now introduce the 6x and 7x tables. Pupils should chant them and write them down and make every effort to learn the inverses as well as respond out of order. Finally, introduce the x11 and x12 tables and look for the obvious patterns.	Find three possible values for \bullet and \blacktriangle. $\bullet \times \blacktriangle = 24$ I am thinking of 2 secret numbers where the sum of the numbers is 16 and the product is 48. What are my secret numbers?
	<u>Vocabulary</u> inverse square, squared cube, cubed	<p style="text-align: center;">Multiplication Table</p> 		

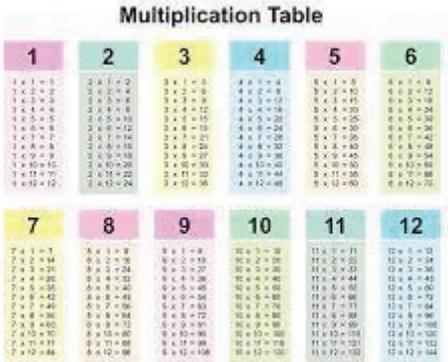
				
<p>Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers</p>	<p>Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1.</p> <p style="text-align: center;"><u>Vocabulary</u> Multiply Divide Inverse relationship Known facts</p>	<p>Recap place value concepts and times table facts</p>	<p>Pupils should be encouraged to know all their times tables to x12.</p> <p>They should practise regularly and be able to respond instantaneously to questions related to times tables; they should do so when asked out of order and they should know inverse questions also.</p> <p>Explain what happens when something is multiplied by x0 and by x1.</p> <p>Use rapid recall cards to help pupils improve speed.</p>	<p>Always, sometimes, never</p> <p>An even number that is divisible by 3 is also divisible by 6.</p> <p>Harvey has written a number sentence. $13 \times 0 = 0$ He says, 'I can change one number in my number sentence to make a brand new multiplication.' <i>Is he correct?</i> <i>Which number should he change?</i> <i>Explain your reasoning.</i></p>
<p>Recognise and use factor pairs and commutativity in mental calculations</p>	<p>Recognise and use factor pairs and commutativity in mental calculations</p> <p style="text-align: center;"><u>Vocabulary</u> Multiply Divide Inverse relationship Known facts</p>	<p>By creating and looking at arrays, children will begin to recognise the inverse relationship between multiplication and division.</p>  <p>3 groups of 4 = $3 \times 4 = 12$ 4 groups of 3 = $4 \times 3 = 12$ 12 divided into 4 groups = $12 \div 4 = 3$ 12 divided into 3 groups = $12 \div 3 = 4$</p> <p>Eventually, children should be able to answer questions like "If $12 \times 2 = 24$. What is $24 \div 2$?"</p>	<p>Introduce the term square as it relates to square numbers. Also, introduce the symbol (2). Use the term 'factor pair' with pupils and get them to rapidly recall a few factor pairs. Play a game of rapid recall using numbers between 1 and 144. Show a number and the pupils have to think of a factor pair. Similarly, show the factor pair and the pupils have to think of the number. Practise x tables for all numbers up to 12; practise them out of order; and, practise inverses. Introduce the term 'commutative' and explain it.</p>	<p>Place <, > or = in these number sentences to make them correct:</p> <p>50×4  4×50 4×50  40×5 200×5  3×300</p> <p>Explain how many ways you could complete the calculations below.</p> 

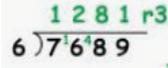
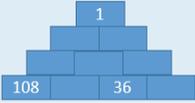
			$7 \times 5 = \overset{35}{\square} = 5 \times \overset{7}{\square}$	$\square \times \square = 45$
Multiply two-digit and three-digit numbers by a one-digit number using formal written layout	Multiply two-digit and three-digit numbers by a one-digit number using formal written layout	<p>Demonstrate how to set out a multiplication of a 2-digit number by 2, 3, 4, 5 or 8. Talk to the children about multiplying a single digit by 3, 4 or 8 and then multiply the equivalent 10s number by the 3, 4 or 8.</p> <p><i>What do they notice?</i></p> <p>$3 \times 8 =$ $30 \times 8 =$ What do you notice?</p> <p>$4 \times 4 =$ $40 \times 4 =$ What do you notice?</p> <p>$24 \times 5 =$ $76 \times 8 =$</p> <p>Introduce a formal method-column method</p>	<p>Set out, using the columnar system, a multiplication of a 2-digit number by x2; x3; x4; x5; x6; x7; x8; or x9</p> <p>Move on to demonstrate the multiplication of a 3-digit number by a single digit.</p>	<p>Miss Wood orders some new whiteboard pens for Year 5 and 6. There are 160 children in Year 5 and 6.</p> <p><i>If she orders 6 boxes of 27 pens, will she have enough? Show your calculation.</i></p>
	<p><u>Vocabulary</u></p> <p>Multiply</p> <p>Divide</p> <p>Inverse operation</p> <p>Calculate</p> <p>Solve</p>	<p><u>2-digit by 1-digit Multiplication</u></p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; text-align: center;"> $\begin{array}{r} 32 \\ \times 3 \\ \hline 96 \end{array}$ <p><small>No regrouping/carry</small></p> </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> $\begin{array}{r} 67 \\ \times 3 \\ \hline 201 \end{array}$ <p><small>With regrouping/carry</small></p> </div> </div>	$\begin{array}{r} 327 \\ \times 4 \\ \hline 1308 \end{array}$	
Estimate and use inverse operations to check answers to a calculation		See addition policy		
	<u>Vocabulary</u>			

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	Solve problems involving multiplying and adding.	Read a question carefully and identify the key information needed to solve it. Draw or explain the problem to know what it is asking. Identify the calculation needed to do. Identify the most efficient method and carry out the calculation. Check my answer using the inverse or an estimate. Answer the question in context. (£.p etc.)	Read a question carefully and identify the key information needed to solve it. Draw or explain the problem to know what it is asking. Identify the calculation needed to do. Identify the most efficient method and carry out the calculation. Check my answer using the inverse or an estimate. Answer the question in context	Miss Smith estimates $399 \times 60 = 240000$ Was she right to do that? Explain why.
	<u>Vocabulary</u> Inverse operation Calculation Multiply Divide	<u>RUCSAC method where possible</u>	Solve the following Harry buys 6 chocolate bars, one chocolate bar costs 54p. How much does Harry spend? a) Write a number sentence to represent the problem. b) Solve the problem	In a box there are red and yellow cubes. For every 5 red cubes there are 3 yellow cubes. Hannah says 'If I have more than 10 red cubes, I will definitely have more than 10 yellow cubes.' Do you agree? Convince me.

Year 5.

NC Objective	Learning Objectives	Pre-learning	Methods from Calculation Policy	Key Questions for GDS
<p>Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000</p>	<p>Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000</p> <p style="text-align: center;">Vocabulary Count forward Count backward Powers of 10</p>	<p>Use a number line with pupils. The number line will be from -10 to +10. Get pupils to count in ones starting from a negative number and emphasising the zero. Use a number line with and without negative numbers and show how counting on is a move to the right and how counting back is a move to the left. Talk about the way we record temperature in Celsius. On very cold days our recording could be a negative number.</p> 	<p>As a class count on in powers of 10, 100, 1000 from any given number. Then count back in 10, 100, 1000 from a given number. Move on to counting forwards and backwards in 10,000; 100,000 and 1,000,000 from any given number. Help pupils to have rapid recall when adding or subtracting up to 1000000 to a given number. Create a system of rapid recall and chanting to help pupils with their mental agility. Move on then to add or subtract in powers of 10 rapidly from numbers with up to 7 digits.</p> 	<p>Temperature falls by about 1oC for every 100 metres height gain. Abigail is standing on top of a mountain at 900 metres above sea level. The temperature is – 3 oC. Abigail walks down the mountain to sea level.</p> <p style="color: green;">What should she expect the temperature to be?</p>
<p>Identify all multiples and factors, including finding all factors pairs of a number, & common factors of two numbers.</p>	<p>Identify all multiples and factors of any number.</p> <p style="text-align: center;">Vocabulary Factors Pairs of factors Multiples Pairs of multiples Common factors</p>	<p>Start by ensuring pupils are confident and secure with their times tables to x12.</p> 	<p>Pupils should be able to answer a times table question out of order and also deal with the inverse. Remind pupils of the term factor and what it stands for.</p> <p>Take any multiplication example from the times table, ie, $6 \times 8 = 48$ and break down the factors, ie, $3 \times 2 \times 2 \times 2 \times 2 = 48$</p> <p>Pupils need to be confident about all factors to 100.</p>	<p>Sally is thinking of a number. She says 'My number is a multiple of 3. It is also 3 less than a multiple of 4.'</p> <p>Find three different numbers that could be Sally's number.</p>

<p>Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers</p>	<p>Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers</p>	<p>As above</p>	<p>Introduce the concept of a prime number and help pupils to establish full understanding of the term.</p> <p>Use the term composite as it relates to numbers that are not prime numbers.</p> <p>Check that pupils know all prime numbers to 19 by chanting them regularly alongside their times tables</p> <p>Describe a prime number. List all prime numbers to 20. Describe a composite number. List 5 composite numbers between 20 and 50.</p>	<p>Is it always, sometimes or never true that prime numbers are odd?</p>
	<p>Vocabulary As above</p>			
<p>Establish whether a number up to 100 is prime and recall prime numbers up to 19</p>	<p>As above</p>	<p>As above</p>	<p>As above</p>	
	<p>As above</p>			
<p>Multiply and divide numbers mentally drawing upon known facts</p>	<p>Multiply and divide numbers mentally drawing upon known facts.</p>	<p>Start by ensuring pupils are confident and secure with their times tables to x12.</p> 	<p>$8 \times 6 = 48$. Use this to help you find the answers to the number sentences: $48 \div 6 = 6 \times 80 =$</p>	<p>40 cupcakes cost £3.60, how much do 20 cupcakes cost? How much do 80 cupcakes cost? How much do 10 cupcakes cost?</p> <p>If $8 \times 24 = 192$, how many other pairs of numbers can you write that have the product of 192?</p>
	<p>Vocabulary Multiply Divide Times table</p>			

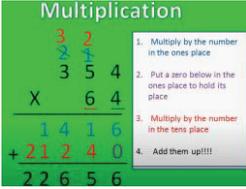
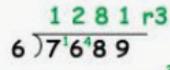
<p>Multiply numbers up to 4 digits by a 1-digit number using a formal written method including long multiplication for 2-digit numbers.</p>	<p>Multiply numbers up to 4 digits by a 1-digit number using a formal written method.</p>	<p>Remind pupils about multiplying by 10 and show what happens when you multiply by 100.</p> <p>Set out, using the columnar system, a multiplication of a 2-digit number by x2; x3; x4; x5; x6; x7; x8; or x9</p> <p>Move on to demonstrate the multiplication of a 3-digit number by a single digit.</p> $\begin{array}{r} 327 \\ \times 4 \\ \hline 1308 \end{array}$	<p>Their times tables knowledge needs to be very secure to enable them to be successful. Remind pupils of the learning already done on multiplying 3- and 4-digit numbers by a single digit number.</p> <p>The main difference here is that pupils are moving on to multiplying by 2 digits.</p> <p>Multiply 4 Digits By 1 Digits</p> $\begin{array}{r} 111 \\ 2345 \times 3 \\ \hline 7035 \end{array}$ <p>Multiply 2 digits by a 2-digit number.</p> 	<p>Using the digits 1, 2, 3 and 4 in any order in the bottom row of the number pyramid, how many different totals can you make? What is the smallest/ largest total?</p> 
<p>Divide numbers up to 4-digits by a 1-digit number using the formal written method of short division and interpret remainders appropriately for the context.</p>	<p>Divide numbers up to 4-digits by a 1-digit number using the formal written method.</p>	<p>Set out, using the columnar system, a division of a 2-digit number by x2; x3; x4; x5; x6; x7; x8; or x9 no remainder</p> <p>Move on to demonstrate the division of a 3-digit number by a single digit (no remainder).</p> <p>Begin with divisions that divide equally with no remainder.</p> $\begin{array}{r} 218 \\ 3 \overline{) 654} \\ \underline{6} \\ 0 \\ \underline{0} \\ 0 \end{array}$	<p>Remind pupils of the learning already done on dividing 2- and 3-digit numbers by a single digit number.</p> <p>The main difference here is that pupils are moving on to dividing larger numbers, with and without remainders.</p> <p>432 ÷ 5 becomes</p> $\begin{array}{r} 86 \text{ r}2 \\ 5 \overline{) 432} \\ \underline{40} \\ 32 \\ \underline{30} \\ 2 \end{array}$ <p>Answer: 86 remainder 2</p> 	<p>Look at the tower below. When dividing the two bricks next to each other it gives your number on the brick above. Fill in the missing numbers.</p> 
<p>Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000</p>	<p>Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000</p>	<p>Pupils should be encouraged to know all their times tables to x12.</p>	<p>There is a need to ensure that levels of understanding about place value are good enough to show pupils the quick method of multiplying and dividing by 10, 100 and 1000.</p>	<p>Claire says 'When you multiply a number by 10 you just add a nought and</p>

	<p>Vocabulary Decimals Whole numbers Place value</p>	<p>They should practise regularly and be able to respond instantaneously to questions related to times tables; they should do so when asked out of order and they should know inverse questions also.</p> <p>Explain what happens when something is multiplied by x0 and by x1.</p> <p>Use rapid recall cards to help pupils improve speed.</p>	<p>Work on rapid responses to multiplying and dividing by 10, in the first instance.</p> <p>Pupils sit in groups of 4 to 6 and respond very rapidly to a given number by multiplying by 10, then 100 and finally 1000. They then divide by 10, 100 and 1000.</p>	<p>when you multiply by 100 you add two noughts.'</p> <p>Do you agree? Explain your answer.</p>
<p>Recognise and use square numbers and cube numbers, and the notation for squared (\square) and cubed (cube)</p>	<p>Recognise and use square numbers and cube numbers.</p>		<p>Introduce the term squared to pupils. In effect it is a number multiplied by itself.</p> <p>Get pupils to chant out all the squared numbers between 1 and 100.</p> <p>Show cards to see how quickly pupils respond to knowing the square of numbers between 1 and 10.</p> <p>Know the relationship between a square and a square root. (although square root is not mentioned in NC it is appropriate to mention it here as the inverse of a square number).</p> <p>Move on to do similar activities with cubed numbers. Work out: $6^2 = 6 \times 6 = 36$ $3^3 = 3 \times 3 \times 3 = 27$ 4 squared = $4 \times 4 = 16$ 8 cubed = $8 \times 8 \times 8 = 512$</p>	<p>Last year my age was a square number. Next year it will be a cube number. How old am I? How long must I wait until my age is both a square number and a cube?</p> <p>The answer to a cubed number is 216. What's the root number?</p>
	<p>Vocabulary Squared number Cubed number</p>			
<p>Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes</p>	<p>Solve problems involving multiplication and division</p>	<p>Covered above Visit multiples and factors</p>	<p>Covered above Visit multiples and factors</p>	<p>Luke and Nigel have £57.40 between them. Luke has £4.80 more than Nigel. How much do they each have?</p>

Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign		Covered above	_____ Covered above	
Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates				

Year 6.

<u>NC Objective</u>	<u>Learning Objectives</u>	<u>Pre-learning</u>	<u>Methods from Calculation Policy</u>	<u>Key Questions for GDS</u>
Identify common factors, common multiples & prime numbers.	Identify common factors, common multiples & prime numbers.	Identify multiples and factors. Remind pupils of the term factor and what it stands for. Introduce the concept of a prime number and help pupils to establish full understanding of the term.	Much of this unit builds on previous learning but we now need to heighten levels of confidence amongst pupils. Ensure pupils are confident with terms such as 'prime numbers'; 'factors' and 'multiples'. Part of the focus of the unit should be on rapid response – indicating confidence. a) List the first 5 multiples of 7 b) Write down all the factors of 24 c) What is the highest common factor of 24 and 36?	Nancy is double her sister's age. They are both older than 20 and younger than 50. They are both multiples of 7. How old are they? Clare's age is a multiple of 7 and 3 less than a multiple of 8. How old is Clare?
	<u>Vocabulary</u> Multiples Factors Common factors Common multiples Pairs of factors Prime numbers	Use the term composite as it relates to numbers that are not prime numbers. Check that pupils know all prime numbers to 19 by chanting them regularly alongside their times tables.		
Perform mental calculations, including with mixed operations and large numbers I am confident in my knowledge of all times tables to x 12. I am confident with my knowledge of addition and subtraction bonds to 100.	Deal with larger numbers in multiplications by relating back to my knowledge of times tables, e.g. if $7 \times 5 = 35$ then $70 \times 5 = 350$. Use my knowledge of addition and subtraction facts to 100 to work out larger calculations, e.g. $27 + 73 = 100$ then $270 + 730 = 1000$	Revise the standard basic skills that pupils ought to know, including all times tables to x12, including inverses and rapid response out of order.	Work out the missing number: $5419 + 2000 = 9836 - \underline{\quad}$ Work out the missing number: $200 \times \underline{\quad} = 750 + \underline{\quad}$	Anwar says "If I know all of my times tables up to 12×12 then I can solve any numbers that are powers of 10 too e.g. $700 \times 8 =$ " Is he correct? Explain why
	<u>Vocabulary</u> Solve Problem solving Times table Mental calculation			
Multiply multi-digit number up to 4 digits by a 2-digit number using the formal written	Use formal method of multiplication of ThHTU x TU	Their times tables knowledge needs to be very secure to enable them to be successful.	The most important part of this unit is to get pupils to set out their calculation in the columnar system.	Craig says "250 ends in a zero therefore, when multiplying, I can only make

<p>method of long multiplication</p>	<p><u>Vocabulary</u> Multiply Product Divide Inverse operation</p>	<p>Remind pupils of the learning already done on multiplying 3- and 4-digit numbers by a single digit number.</p> <p>The main difference here is that pupils are moving on to multiplying by 2 digits.</p> <p>Multiply 4 Digits By 1 Digits</p> $\begin{array}{r} 111 \\ 2345 \times 3 \\ \hline 7035 \end{array}$ <p>Multiply 2 digits by a 2-digit number.</p> 	<p>Their times tables knowledge needs to be very secure to enable them to be successful.</p>  <p>Decimals</p> <p>Remind children that the single digit belongs in the unit column. Line up the decimal points in the question and the answer.</p> $\begin{array}{r} 3.19 \\ \times 8 \\ \hline 25.52 \end{array}$	<p>250 by multiplying by 5 or 10." <i>Do you agree?</i> <i>How many ways can you find to disprove this?</i></p>
<p>Divide numbers up to 4-digits by a 2-digit number using the formal written method of short division, where appropriate, interpreting remainders according to the context.</p> <p>Divide numbers up to 4-digits by a 2-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.</p>	<p>Divide numbers up to 4-digits by a two-digit whole number using the formal written method</p> <p><u>Vocabulary</u> Multiply Product Divide Inverse operation</p>	<p>Remind pupils of the learning already done on dividing 2- and 3-digit numbers by a single digit number.</p> <p>The main difference here is that pupils are moving on to dividing larger numbers, with and without remainders.</p> <p>Begin with divisions that divide equally with no remainder.</p> $\begin{array}{r} 218 \\ 4 \overline{) 872} \end{array}$ <p>Move onto divisions with a remainder</p> $\begin{array}{r} 86 \text{ r}2 \\ 5 \overline{) 432} \end{array}$ <p>Answer: 86 remainder 2</p> 	<p>Help pupils to set out their work correctly so that they are able to follow the same system whenever they are dividing by a 2-digit number.</p> <p>Talk about different ways of dealing with remainders and effectively explain to them what a remainder is.</p> <p>Remainders could be expressed as: simply, what is left; a fraction or rounded to the nearest whole.</p> <p>432 ÷ 5 becomes</p> $\begin{array}{r} 86 \text{ r}2 \\ 5 \overline{) 432} \end{array}$ <p>Answer: 86 remainder 2</p> <p>496 ÷ 11 becomes</p> $\begin{array}{r} 45 \text{ r}1 \\ 11 \overline{) 496} \end{array}$ <p>Answer: 45 $\frac{1}{11}$</p> $\begin{array}{r} 107 \\ 49 \overline{) 5243} \end{array}$	<p>A class were using place value counter to complete the calculation 112 ÷ 4. One child arranged her counters like this. <i>What mistake has she made?</i> <i>Can you show me how to do it correctly?</i></p> <p>A 4-digit number divided by a 2-digit number gives an answer of 241. <i>What could the two numbers have been?</i></p>
<p>Use knowledge of the order of operations to carry out calculations involving the four operations.</p>	<p>Mentally: Use all 4 operations</p>	<p><u>Recap</u> Addition + Subtraction -</p>	<p>-Introduce the term BODMAS (Brackets; of; division; multiplication; addition and</p>	<p>Which calculation is the odd one out? 753 × 18</p>

	<p>Calculate a problem using at least 2 operations</p> <p>Calculate 2-step problems Explain the order to solve calculations</p> <p>Solve calculations in correct order</p>	<p>Multiplication X Division</p>	<p>subtraction) as a way of determining the order of operations. - Huge expectation that by Year 6 pupils are secure with basic number facts which will include addition and subtractions which cross 100, 1000, etc.</p> <p>$4(72 \div 9) \times (1923 - 382)$ Add brackets to make this calculation correct; $25 + 10 - 3 \times 20 - 15 = 20$ Sarah had 7 bags with 5 sweets in each. She added one more to each bag. Circle the calculation below that shows the correct working out. $7(5 + 1) = 42$ $7 \times 5 + 1 = 36$ $7 \times 5 + 1 = 42$</p>	<p>$(75 \cdot 3 \times 3) \times 6$ $753 + 753 \div 5 \times 4$ $7 \cdot 53 \times 1800$ $753 \times 2 - 753 \times 0 \cdot 2$ $750 \times 1 \cdot 8 + 3 \times 1 \cdot 8$</p> <p>Explain your reasoning.</p> <p>Write different number sentences using the digits 3, 4, 5 and 8 before the equals sign that use: - one operation - two operations, no brackets - two operations, brackets</p>
<p>Solve problems involving addition, subtraction, multiplication and division</p>	<p>Solve problems involving addition, subtraction, multiplication and division</p> <p><u>Vocabulary</u> Estimation Accuracy Solve Approximate</p>	<p>Covered above</p>	<p>Covered above</p>	<p>Two numbers have a difference of 2.38. The smaller number is 3.12.</p> <p>What is the bigger number?</p> <p>Two numbers have a difference of 2.3. They are both less than 10. What could the numbers be?</p>
<p>Use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy</p>	<p>Use estimation to check answers to calculations Round numbers to work out an estimate to a calculation. Gauge how close or far away my answer is from my estimate.</p> <p>Check my answer makes sense in the context of the question. E.g. 0.31 in a question related to money means 31p not £31.</p>	<p>Help pupils with the concept of 'estimation' by using information wisely.</p> <p>Recognise the role that 'rounding' has in estimating.</p> <p>Recognise how the most valuable digit is very important when it comes to estimating.</p>	<p>After understanding the concept of estimation, children should be able to</p> <p>Hannah goes to the shop. She has got a £5.00 note. As she goes around the shop she estimates how much she has spent to make sure she has enough money. Below is a list of what Hannah bought estimate what she has spent has she got enough? Chocolate bar- 79p Can of pop- 65p Magazine- £1.50 Crisps- 45p Puzzle book - £1.80</p>	<p>Two numbers have a difference of 2.3. To the nearest 10, they are both 10.</p> <p>What could the numbers be?</p> <p>Do the following estimates sound about right?</p> <p>Explain your reasoning.</p>

	<p>Vocabulary Estimation Accuracy Solve Approximate</p>	<p>Good estimating will depend to a large extent on the basic knowledge of individuals.</p> <p>Explore the idea of alternatives as part of estimation.</p>	<p>Would it be better for Hannah to overestimate or underestimate her answer?</p> <p>Explain why</p>	<ol style="list-style-type: none"> 1. Last month the energy costs in my lab were £560. I estimate that my energy costs per year will be £7000. 2. Today I ate a 30g packet of crisps at morning break time, as I always do, so I estimate that I eat almost 11kg of crisps a year. 3. My round trip to work each day is about 22 miles, but I can claim mileage from work. I estimate that I can claim for 8000 miles each year.
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