

ST THOMAS MORE CATHOLIC PRIMARY SCHOOL

CALCULATION POLICY



THE MISSION OF OUR SCHOOL IS:





*Christ is the centre of our school community
where we live, love and learn together*

The Calculation Policy at St Thomas More was devised in consultation with staff, the LEA Numeracy Consultant and used guidance given in the New Primary Framework (2007). The policy was agreed by all staff members on 16th January and was presented to governors on 5th March 2008.

Our aim is to ensure all pupils leave St Thomas More with an efficient, reliable, compact written method of calculation for each operation; that they can use with confidence to tackle calculations that cannot be carried out mentally.

Addition

Addition: Pre Written Calculation	Stage: 1	Focus of years; Rec & Yr1
<p>To be able to calculate with numbers young children must develop secure understanding of our number system. Much of the calculation must be done physically with objects, number lines and diagrams.</p> <p>Work must introduce basic vocabulary, focus on addition pairs to 10, numbers to 20, addition problem solving e.g. finding missing numbers.</p>	<p>Make tallies to record objects/numbers and simple sums.</p> <p>◆◆◆ → → 3</p> <p>◆◆ + ◆◆◆◆ =</p> <p> + = </p> <p>Use number sentences to explain totals of two groups (pictures/objects and tallies)</p> <p>◆◆ + ◆◆◆◆ =</p> <p>2 + 4 = 6</p> <p>Use given number line/objects to count on and in response to solving a number sentence.</p> <p>9+2 =</p> <p>3+6+5=</p>	

<p>Addition: The empty number line.</p>	<p>Stage: 2 Focus of years; Rec & Yr1 - Yr6</p>
<p>Children need to be able to partition numbers in ways other than into tens and ones to help them make multiples of ten by adding in steps.</p> <p>The empty number line helps to record the steps on the way to calculating the total.</p> <p>It is a very useful tool and should be used by all year groups. Higher up the school pupils should recognise this is an efficient way of adding a small number to larger ones and can also support mental calculations involving rounding and decimals.</p> <p>Secure mental maths strategies are needed to;</p> <ul style="list-style-type: none"> ◆ Know addition pairs to 10 ◆ Be able to partition tens and units ◆ Count in tens/ones from any number. 	<p>Steps in addition can be recorded on a number line. The steps often bridge through a multiple of 10 or 100.</p> <p>$8 + 7 = 15$</p>  <p>$48 + 36 = 84$</p>  <p>or</p>  <p>or:</p>  <ul style="list-style-type: none"> ◆ Use your ruler to draw a line. ◆ Add the numbers from your sum. ◆ Jumps go above the line. ◆ Numbers go below. ◆ Add the jumps together to find the total.

<p>Addition: Partitioning</p>	<p>Stage:3 Focus of; Yr1 & Yr2</p>
<p>Children must have secure mental maths strategies to</p> <ul style="list-style-type: none"> ◆ Recall all addition facts to $9 + 9$ and complements in 10; ◆ Be able to partition tens and units ◆ Count in tens/ones from any number. ◆ Add multiples of 10 (such as $60 + 70$) <p>Partitioning both numbers into tens and ones mirrors the column method where ones are placed under ones and tens under tens.</p> <p>Children should be working with 2 digit numbers and begin to cross one hundred by the end of Yr2. Higher ability children and those above Yr2 can extend this method to mixed digit and 3 digit numbers.</p>	<p>Partitioned numbers are written under one another:</p> $\begin{array}{r} 25 \\ +36 \\ \hline \end{array} = \begin{array}{r} 20 + 5 \\ 30 + 6 \\ \hline 50 + 11 = 61 \end{array}$ $\begin{array}{r} 47 \\ +76 \\ \hline \end{array} = \begin{array}{r} 40 + 7 \\ 70 + 6 \\ \hline 110 + 13 = 123 \end{array}$ <p>Always add units first!</p> <p>Put the digits in the right place. (Tens in the tens column, units in the units column)</p>

Addition: Expanded Column Method	Stage:4 Focus of years; Yr3 & Yr4
<p>Children must have secure mental maths strategies to</p> <ul style="list-style-type: none"> ◆ add a series of one-digit numbers, such as $5 + 8 + 4$; ◆ add multiples of 10 (such as $60 + 70$) or of 100 (such as $600 + 700$) using the related addition fact, $6 + 7$, and their knowledge of place value; ◆ partition two-digit and three-digit numbers into multiples of 100, 10 and 1 e.g $345 = 300 + 40 + 5$ <p>The expanded method leads children to a more compact and efficient method. First mentally add the units, then add the tens. Finally add the partial totals together. Explain that we consistently the unit digits first to avoid confusion when we move onto the next step.</p> <p>The addition of the tens in the calculation $47 + 76$ is described in the words 'forty plus seventy equals one hundred and ten', stressing the link to the related fact 'four plus seven equals eleven'.</p> <p>Extend to adding three T U numbers, two HTU and Th HTU to HTU .</p>	<p>$47 + 76 =$</p> <p>Write the numbers in columns.</p> <p>Adding the units first:</p> $\begin{array}{r} 47 \\ + 76 \\ \hline 110 \\ 123 \end{array}$ <p>Always add the units first. Keep the digits in the right place! (Tens in a column, units in a column.)</p>

Addition: Column Method	Stage: 5 Focus of years; Yr5 & Yr6
<p>In this method, recording is reduced further. Carry digits are recorded below the line, using the words 'carry ten' or 'carry one hundred', not 'carry one'.</p> <p>Extend to adding three two-digit numbers, two three-digit numbers and numbers with different numbers of digits.</p> <p>Column addition remains efficient when used with larger whole numbers and decimals. Once learned, the method is quick and reliable.</p>	$\begin{array}{r} 47 \\ + 76 \\ \hline 123 \\ \cancel{11} \end{array} \quad \begin{array}{r} 258 \\ + 87 \\ \hline 345 \\ \cancel{11} \end{array} \quad \begin{array}{r} 366 \\ + 458 \\ \hline 824 \\ \cancel{11} \end{array}$ <p>Always add units first! Keep the digits in the right place. Always carry under the line, you can cross it off when you have counted it!</p>

Subtraction

Subtraction: Pre Written Calculations	Stage: 1 Focus of years; Rec & Yr1
<p>Calculations must be done physically with objects, number lines and diagrams.</p> <p>Work must introduce basic vocabulary, focus on subtracting by taking away, first using numbers to 10 then to 20. Simple problem solving e.g. there are 6 sweets I eat three, how many are left?</p> <p style="color: red;">To subtract successfully children must have secure mental maths to;</p> <p style="color: red;">Orally count back from 20 unaided</p> <p style="color: red;">Use a given number line and square.</p> <p style="color: red;">recall all addition and subtraction facts to 20</p>	<p>Record subtractions in their own way, eg crossing out.</p> <p style="text-align: center;">⊗⊗⊗⊗ ○○ ○○ ○</p> <p>Use objects and pictures to illustrate a number story.</p> <p>$9 - 4 = 5$</p> <p>Solve simple number story eg $8 - 3 =$</p> <p>By orally counting back or using a given number line.</p> <ul style="list-style-type: none"> ◆ Put the biggest number in my head ◆ Count the jumps back. <p>Or</p> <ul style="list-style-type: none"> ◆ Put my finger on the biggest number, ◆ Count the jumps back <p style="color: blue;">Never count the number you start on!</p>

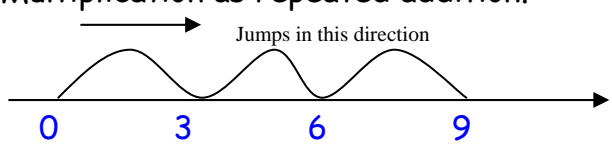
Subtraction: The Empty Number line	Stage: 2 Focus of years; Yr1 - Yr6
<p>The empty number line helps to record or explain the steps in mental subtraction.</p> <p>Counting back is useful when taking away a small number from a bigger number especially when bridging tens, e.g. $54 - 7$. calculation</p> <p>Counting up from the smaller to the larger number to find the difference is a very effective method of subtraction for many children.</p> <p>For example solve $74 - 27$ by counting up from 27 to 74 in steps totalling 47.</p> <p>The number of jumps needed will decrease, as their mental calculations become more efficient.</p> <p>Yr1 & Yr2 - Numbers to 100</p> <p>Yr3 & Yr4 - Numbers to 1000</p> <p>Yr5 & Yr6 - Numbers to 10,000 & Decimal Numbers (1dp) It is not very efficient for 2dp calculations.</p>	<p>Record steps in subtraction on a number line. If it is a big number take away a small number count back. $54 - 7 =$</p> <div style="text-align: center;"> </div> <p>For everything else count on, especially if the numbers are close. $74 - 27 =$</p> <div style="text-align: center;"> </div> <ul style="list-style-type: none"> ◆ Use your ruler to draw a line. ◆ Start with your smallest number on the left. ◆ Jumps go above the line. ◆ Numbers go below. ◆ When you reach your biggest number stop and add together the total of jumps. This total is the difference/answer. <p>$3+40+4 = 47$ so $74-27 = 47$</p> <p>As mental strategies develop;</p> <div style="text-align: center;"> </div>

Subtraction: Partitioning	Stage:3 Focus of; Yr1 &Yr2
<p>Subtraction can be recorded using partitioning.</p> <p>Partition the numbers into tens and units; put tens over tens and units over units. Subtract the units first and then the tens using mental counting. After the partitioned totals need to be recombined. Focus on numbers to 100.</p> <p>Higer ability children should develop methods to cope with decomposition. (Sums where the units can not be subtracted)</p> <p>Children should be encouraged to partition the numbers in different ways. For example in 74 -29 partition the 74 into 60 + 14 to help them carry out the subtraction.</p> <p>To subtract successfully children must have secure mental maths to;</p> <p>Count back in tens and ones.</p> <p>Use number line and hundred squares for support.</p> <p>Recall all addition and subtraction facts to 20</p> <p>Subtract multiples of 10 (such as 100 - 70) using the related subtraction fact,10 - 7, and their knowledge of place value;</p> <p>Partition two-digit in different ways (e.g. partition 74 into 70 + 4 or 60 + 14).</p>	<p>Subtraction can be recorded using partitioning:</p> $74 - 23 =$ $\begin{array}{r} 70 + 4 \\ - 20 + 3 \\ \hline 50 + 1 = 51 \end{array}$ <ul style="list-style-type: none"> ◆ Partition the numbers. ◆ Put the digits in the right place. (Tens in the tens column, units in the units column) ◆ Always subtract units first! ◆ Put the total back together. $74 - 29 =$ $\begin{array}{r} 60 + 14 \\ - 20 + 9 \\ \hline 40 + 5 = 45 \end{array}$

Subtraction: Expanded Column Method	Stage:4 Focus of; Yr3 &Yr4
<p>By end of yr 4 children should be able to cope with decomposition by adjusting hundreds, tens and units.</p> <p>To subtract successfully children must have secure mental maths to:</p> <p>Count back mentally in hundreds, tens and ones.</p> <p>Recall all addition and subtraction facts to 20</p> <p>Subtract multiples of 10 (such as 160 - 70) using the related subtraction fact, 16 - 7, and their knowledge of place value;</p> <p>Partition two-digit and three-digit numbers into multiples of one hundred, ten and one in different ways (e.g. partition 74 into 70 + 4 or 60 + 14).</p>	<ul style="list-style-type: none"> ◆ Partitioned numbers and write them under one another. ◆ Make sure digits are in the right place. (Tens in the tens column, units in the units column) ◆ Always subtract units first! ◆ If units or tens won't subtract partition numbers in a different way. ◆ Put the total back together <p>Example: 74 - 27</p> $\begin{array}{r} \overset{60}{\cancel{70}} + \overset{14}{4} \\ - 20 + 7 \\ \hline 40 + 7 \end{array}$ <p>Example: 741 - 367</p> $\begin{array}{r} \overset{600}{\cancel{700}} + \overset{130}{\cancel{40}} + \overset{11}{4} \\ - 300 + 60 + 7 \\ \hline 300 + 70 + 4 \end{array}$

Subtraction: Column Method	Stage:5 Focus of; Yr5 & Yr6
<p>Children are moved on from the expanded method to the more compact method.</p> <p>Children should be extend to adding two-digit numbers, three-digit numbers, four digit numbers and numbers with different numbers of digits. They should also be able to use method with decimals to 2dp.</p> <p>Always start by subtracting the units, then the tens, then the hundreds. Refer to subtracting the tens, for example, say 'sixty take away forty', not 'six take away four' or we 'exchange 1 hundred for 10 tens' not 'borrow a...' Children should be encouraged to look out for problems (ie where they will need to adjust) before they begin calculation.</p>	<ul style="list-style-type: none"> ◆ Partitioned numbers and write them under one another. ◆ Make sure digits are in the right place. (Tens in the tens column, units in the units column) ◆ Always subtract units first! ◆ If units or tens won't subtract adjust the numbers. ◆ Put the total back together $\begin{array}{r} 563 \\ - 241 \\ \hline 322 \end{array}$ <p>Examples;</p> <ol style="list-style-type: none"> 1) No adjustment needed. 2) Adjust the hundreds, 563 - 271, 3) Adjust from the hundreds to the tens and the tens to the units. 563 - 278, 4) Dealing with zeros when adjusting. Adjustment needs to be done in two stages. 503 - 278,

Multiplication

Multiplication: Pre written calculation	Stage: 1 Focus of; Rec
<p>Calculation must be done physically with objects, number lines and diagrams.</p> <p>Multiplication is a higher order operation that can only be taught once the child has a secure grasp of number and addition.</p> <p>'How many lots of' Counting in 2's. Some higher ability children may progress onto counting in 5's and 10's</p>	<p>Oral counting and number rhymes.</p> <p>Organising objects into groups of...</p> <p>Counting objects in 2's, 3's and 4's (to 20)</p> <p>Solving simple problems using objects/diagrams. E.g. How many eyes on 3 snowmen?</p>
Multiplication: Informal jottings	Stage:2 Focus of years;1&2
<p>Children will use objects, pictures, number lines and hundred square to support the development of their mental multiplication. They must understand multiplication as repeated addition and as an array. They must develop the vocabulary associated with multiplication.(groups of, times, multiply, lots of, twice, double,etc)</p> <p>Recognise problems that need to be solved by multiplication. E.g. Katy has 5 dolls. Mary has twice as many. How many dolls does Mary have?</p> <p>At this stage children must be able to Count on and back orally. Know their 2's, 5's &10's times table. Count on and back in 3's and 4's.</p>	<p>Multiplication as repeated addition.</p>  <p>0 3 6 9</p> <p> = 3+3+3+3 or 5 lots of 3 or 5x3</p> <p>Multiplication as an array</p> <p>••••</p> <p>•••• 4 x 3 =12</p> <p>••••</p> <p>3x 4 =12</p> <p>Record simple multiplication in a number sentence. 5 x 4 = 20</p> <p>Recognise symbols for missing numbers in multiplication. 6 X □ = 12</p> <p>Recognise simple multiplication problems. How many wheels are there on 5 cars?</p>

Multiplication: Partitioning & Basic grid	Stage:3 Focus of Yr 3														
<p>Children will be introduced to the distributive law. (Not its name) in yr3 to help them solve mental multiplication, This allows numbers to be partitioned and multiplied separately to form partial products. These are then added to find the total product.</p> <p>The grid method links distributive law and mental method. Place the number with the most digits in the left-hand column of the grid so that it is easier</p> <p>To multiply successfully, children need to be able to:</p> <ul style="list-style-type: none"> ◆ partition number into multiples of ten and one; ◆ Know their 2's 3's, 4's 5's 6's and 10's. ◆ work out products such as 70×5, using the related fact 7×5 and their knowledge of place value, ◆ add two or more single-digit numbers mentally; ◆ add multiples of 10 (such as $60 + 70$) <p>use an efficient method of extended column addition.</p>	<p>Partition hard mental calculations into parts. For example when they use their knowledge of the 2, 5 and 10 times-tables to work out multiples of 7:</p> <p>○○○○○○○○ ○○○○○○...○○ ○○○○○○○○ ○○○○○○...○○ ○○○○○○○○ ○○○○○○...○○</p> <p>$7 \times 3 = (5 \times 3) + (2 \times 3)$ $= 15 + 6$ $= 21$</p> <p>or $13 \times 3 = (10 \times 3) + (3 \times 3)$ $= 30 + 9$ $= 39$</p> <p>Grid method. $36 \times 7 =$</p> <table border="1" data-bbox="774 828 957 1052"> <tr><td>X</td><td>7</td></tr> <tr><td>30</td><td>210</td></tr> <tr><td>6</td><td>42</td></tr> <tr><td></td><td>2</td></tr> <tr><td></td><td>50</td></tr> <tr><td></td><td>200</td></tr> <tr><td>=</td><td>252</td></tr> </table> <div data-bbox="1021 824 1484 1243" style="border: 1px solid black; padding: 5px;"> <ul style="list-style-type: none"> ◆ Draw grid with ruler. ◆ Partition numbers into tens & units. ◆ Multiply each part. ◆ Add the products together using extended column method to find total. </div>	X	7	30	210	6	42		2		50		200	=	252
X	7														
30	210														
6	42														
	2														
	50														
	200														
=	252														

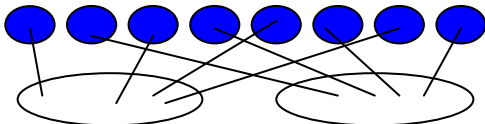

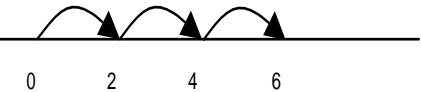
Multiplication: Grid method for TU by TU	Stage: 4 Focus of Yr 4																																								
<p>Extend grid method taught in year 3 to include TU \times TU, asking children to estimate first.</p> <p>To multiply successfully, children need to be able to:</p> <ul style="list-style-type: none"> ◆ recall all multiplication facts to 10×10; ◆ partition numbers ◆ work out products such as 70×5, using the related facts and place value; ◆ add two numbers mentally ◆ add multiples of 10 or of 100 ($600 + 700$) ◆ add numbers using the extended column method. 	<p>56×27 is approximately $60 \times 30 = 1800$.</p> <table border="1" data-bbox="997 1433 1524 1724"> <tr><td>\times</td><td>20</td><td>7</td><td></td></tr> <tr><td>50</td><td>1000</td><td>350</td><td>1000</td></tr> <tr><td>6</td><td>120</td><td>42</td><td>350</td></tr> <tr><td></td><td></td><td></td><td>120</td></tr> <tr><td></td><td></td><td></td><td>42</td></tr> <tr><td></td><td></td><td></td><td>2</td></tr> <tr><td></td><td></td><td></td><td>110</td></tr> <tr><td></td><td></td><td></td><td>400</td></tr> <tr><td></td><td></td><td></td><td>1000</td></tr> <tr><td></td><td></td><td></td><td>1512</td></tr> </table> <div data-bbox="774 1720 1332 2049" style="border: 1px solid black; padding: 5px;"> <ul style="list-style-type: none"> ◆ Draw grid with a ruler. ◆ Partition each number into tens and units. ◆ Multiply each part. ◆ Add the products together using extended column method to find the total. </div>	\times	20	7		50	1000	350	1000	6	120	42	350				120				42				2				110				400				1000				1512
\times	20	7																																							
50	1000	350	1000																																						
6	120	42	350																																						
			120																																						
			42																																						
			2																																						
			110																																						
			400																																						
			1000																																						
			1512																																						

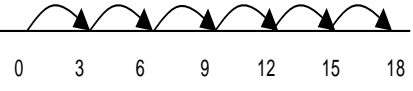
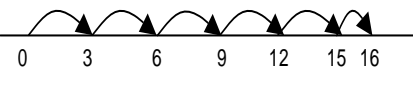
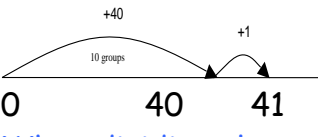
Multiplication: Grid method for \times HTU	Stage: 5	Focus of Yr 5																			
<p>Estimate first. Start with the grid method. Place the number with the most digits in the left-hand column of the grid so that it is easier to add the partial products. To become more compact partitioned totals are added in rows mentally before written addition.</p> <p>To multiply successfully, children need to be able to:</p> <ul style="list-style-type: none"> ◆ Recall all multiplication facts to 12×12; ◆ Partition numbers into hundred, ten and units; ◆ Use tables facts to find multiples of 10, 20 30 etc. ◆ Add two numbers mentally using of place value; ◆ Add multiples of 10 & 100 using addition fact, $6 + 7$, <p>Add combinations of whole numbers using the column method.</p>	<p>286×29 is approximately $300 \times 30 = 9000$.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>\times</td> <td>20</td> <td>9</td> <td></td> </tr> <tr> <td>200</td> <td>4000</td> <td>1800</td> <td>5800</td> </tr> <tr> <td>80</td> <td>1600</td> <td>720</td> <td>2320</td> </tr> <tr> <td>6</td> <td>120</td> <td>54</td> <td>174</td> </tr> <tr> <td></td> <td></td> <td></td> <td>8294</td> </tr> </table> <p style="text-align: right;">1</p> <ul style="list-style-type: none"> ◆ Draw grid with ruler. ◆ Partition each number. ◆ Multiply each part. ◆ Add totals along the rows in you head. ◆ Add these totals using column method. 	\times	20	9		200	4000	1800	5800	80	1600	720	2320	6	120	54	174				8294
\times	20	9																			
200	4000	1800	5800																		
80	1600	720	2320																		
6	120	54	174																		
			8294																		

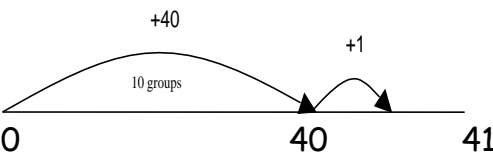
Multiplication: Column method	Stage: 6	Focus of Yrs 5 & 6																											
<p>Only after children are secure in partitioning multiplication through the grid method they will be encouraged to move on to the Column Method. Answers should always be estimated to check accuracy. Units calculated first.</p> <p>By this stage all mental maths strategies need to be secure as this method highlights the need for children to be able to add a multiple of 10 or 100 to a two-digit or three-digit number mentally</p> <p>Children should be able to use the column method to multiply 2 digit by 1 digit numbers, 2 digit by 2 digit numbers and 3 digit by 2 digit numbers, also 1 digit numbers by decimals (2dp)</p> <p>If, after practice, children cannot use the compact method without making errors, they should return to the grid method.</p>	<p>38×7 is approximately $40 \times 7 = 280$</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: right;">38</td> <td></td> </tr> <tr> <td style="text-align: right;">$\times 7$</td> <td></td> </tr> <tr> <td style="text-align: right;">$\hline 266$</td> <td></td> </tr> <tr> <td style="text-align: right;">5</td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p>Say $7 \times 8 = 56$, put the 6 in the units and carry the 50, then 7×30</p> </div> <p>56×27 is approximately $60 \times 30 = 1800$.</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: right;">56</td> <td></td> </tr> <tr> <td style="text-align: right;">$\times 27$</td> <td></td> </tr> <tr> <td style="text-align: right;">$\hline 392$</td> <td>(56×7)</td> </tr> <tr> <td style="text-align: right;">$\hline 1120$</td> <td>(56×20)</td> </tr> <tr> <td style="text-align: right;">$\hline 1512$</td> <td></td> </tr> </table> <p>286×29 is approximately $300 \times 30 = 9000$.</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: right;">286</td> <td></td> </tr> <tr> <td style="text-align: right;">$\times 29$</td> <td></td> </tr> <tr> <td style="text-align: right;">$\hline 2574$</td> <td>(286×9)</td> </tr> <tr> <td style="text-align: right;">$\hline 5720$</td> <td>(286×20)</td> </tr> <tr> <td style="text-align: right;">$\hline 8294$</td> <td></td> </tr> </table>	38		$\times 7$		$\hline 266$		5		56		$\times 27$		$\hline 392$	(56×7)	$\hline 1120$	(56×20)	$\hline 1512$		286		$\times 29$		$\hline 2574$	(286×9)	$\hline 5720$	(286×20)	$\hline 8294$	
38																													
$\times 7$																													
$\hline 266$																													
5																													
56																													
$\times 27$																													
$\hline 392$	(56×7)																												
$\hline 1120$	(56×20)																												
$\hline 1512$																													
286																													
$\times 29$																													
$\hline 2574$	(286×9)																												
$\hline 5720$	(286×20)																												
$\hline 8294$																													

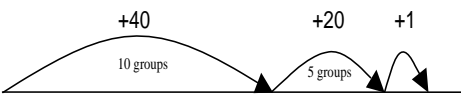
Division

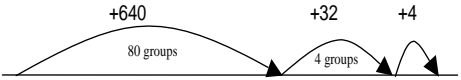
Division: Pre Written Calculation	Stage: 1 Focus of Rec & Yr 1
<p>In the foundation stages and early years much of the calculation must be done physically with objects, number lines and diagrams.</p> <p>Introduction to the basic vocabulary of division E.g. share, share equally, how many are left? Half.</p>	<p>Real life and role play contexts of sharing. e.g Cutting a cake, sharing toys.</p> <p>Splitting up counters into equal groups e.g. How many groups of 5 can you make with 15 counters?</p>

Division: Informal jottings	Stage: 2 Focus of Yr 1 & Yr 2								
<p>To divide successfully children must be able to;</p> <p>Say 2's, 5's & 10's times table.</p> <p>Count on and back in 3's and 4's.</p> <p>Through use of practical activities children develop the vocabulary of division and understand division as sharing equally and grouping, they will recognise remainders as those that are left or those that don't fit into a group. They must also understand division as the inverse of multiplication. Children may wish to make their own drawings to record their working. They must be able to record divisions in number sentences and recognise problems that require a division for the solution. E.g. There are 20 children and they sit at tables of 4. How many tables will be needed?</p>	<p>Make own jottings to solve division problem. By sharing 2 sweets are shared between 2 people Eg $8 \div 2 =$</p> <div style="text-align: center;">  </div> <p style="text-align: center;">4</p> <p>or By grouping $6 \div 3 =$</p> <div style="text-align: center;">  </div> <p><u>\div = signs and missing numbers</u></p> <table style="width: 100%; border: none;"> <tr> <td style="padding-right: 20px;">$6 \div 2 = \square$</td> <td>$\square = 6 \div 2$</td> </tr> <tr> <td style="padding-right: 20px;">$6 \div \square = 3$</td> <td>$3 = 6 \div \square$</td> </tr> <tr> <td style="padding-right: 20px;">$\square \div 2 = 3$</td> <td>$3 = \square \div 2$</td> </tr> <tr> <td style="padding-right: 20px;">$\square \div \nabla = 3$</td> <td>$3 = \square \div \nabla$</td> </tr> </table> <p><u>Using number lines.</u></p> <p>Grouping – There are 6 sweets. How many people can have 2 each? (How many 2's make 6?)</p> <div style="text-align: center;">  </div>	$6 \div 2 = \square$	$\square = 6 \div 2$	$6 \div \square = 3$	$3 = 6 \div \square$	$\square \div 2 = 3$	$3 = \square \div 2$	$\square \div \nabla = 3$	$3 = \square \div \nabla$
$6 \div 2 = \square$	$\square = 6 \div 2$								
$6 \div \square = 3$	$3 = 6 \div \square$								
$\square \div 2 = 3$	$3 = \square \div 2$								
$\square \div \nabla = 3$	$3 = \square \div \nabla$								

Division: Number line T U by U	Stage: 3 Focus of Yr 3
<p>Children must understand and use the vocabulary of division for example in $18 \div 3 = 6$, 18 is the dividend, 3 is the divisor and 6 is the quotient. Remainder is the amount left over.</p> <p>To be successful at division children must have secure mental strategies to</p> <ul style="list-style-type: none"> ◆ Recall multiplication facts for 2's, 3's, 4's 5's 6's & 10's. ◆ Partition numbers in different ways using tables facts. ◆ Use knowledge of place value to find multiples of 10 and 100 facts. <p>Eg $4 \times 7 = 28$ so $40 \times 7 = 280$.</p> <ul style="list-style-type: none"> ◆ Have instant recall of division facts for the corresponding tables. <p>Children will be encouraged to make larger jumps to be more efficient in their methods, and recognise remainders.</p>	<p>$\div =$ signs and missing numbers</p> <p>Continue missing number equations.</p> <p>Understand division as sharing and grouping</p> <p>$18 \div 3$ can be modelled as: Sharing 18 shared between 3 is the same as Grouping - How many 3's make 18?</p>  <p>Remainders</p> <p>$16 \div 3 = 5 \text{ r}1$</p> <p>Sharing - 16 shared between 3, how many left over? Grouping - How many 3's make 16, how many left over? e.g.</p>  <p>$41 \div 4 = 10 \text{ r}1$</p>  <p>When dividing always start from zero and count up in groups to the target number.</p>

Division: Chunking TU by U	Stage: 4 Focus of Yr 4
<p>To be successful at division children must have secure mental strategies to</p> <ul style="list-style-type: none"> ◆ Recall multiplication facts 10×10 ◆ Use knowledge of place value to find multiples of 10 and 100 facts. <p>Eg $4 \times 7 = 28$ so $40 \times 7 = 280$.</p> <ul style="list-style-type: none"> ◆ Have instant recall of division facts for the corresponding tables. ◆ Use multiplication and division fact to mentally find remainders of numbers to 100. ◆ Subtract multiples of 10 and 100 from any number. <p>To move children from number line to chunking draw the line vertically. Some children (LA or SEN) may consolidate the line method and not move on to chunking.</p>	<p>$\div =$ signs and missing numbers</p> <p>Continue using a range of equations with appropriate numbers.</p> <p>Sharing and grouping with or without remainders</p> <p>$41 \div 4 = 10 \text{ r}1$</p>  <p>Pencil and paper procedures</p> <p>$72 \div 5$ lies between $50 \div 5 = 10$ and $100 \div 5 = 20$</p> $\begin{array}{r} 72 \\ - 50 \quad (10 \text{ groups}) \text{ or } (10 \times 5) \\ \hline 22 \\ - 20 \quad (4 \text{ groups}) \text{ or } (4 \times 5) \\ \hline 2 \end{array}$ <p>Answer : 14 remainder 2</p>

Division: Chunking HTU & TU by U	Stage: 5 Focus of Yr 5
<p>To be successful children must be able to;</p> <ul style="list-style-type: none"> ◆ Recall multiplication facts 12×12 ◆ Partition numbers in different ways using tables facts. ◆ Find multiples of 10 and 100 using tables. <p>Eg $4 \times 7 = 28$ so $40 \times 7 = 280$.</p> <ul style="list-style-type: none"> ◆ Instant recall of division facts ◆ Use multiplication and division fact to mentally find remainders of numbers to 100. ◆ Subtract multiples of 10 and 100 from any number. <p>By this stage all children should be secure using the standard pencil and paper procedures.</p> <p>Known number facts that may aid the child can be written jotted down to help.</p>	<p><u>Sharing and grouping with remainders</u></p> <p>Continue to understand division as both sharing and grouping</p> <p>Quotients expressed as fractions or decimal fractions</p> <p>$61 \div 4 = 15 \frac{1}{4}$ or 15.25</p>  <p><u>Pencil and paper procedures</u></p> <p>$256 \div 7$ lies between $210 \div 7 = 30$ and $280 \div 7 = 40$</p> $\begin{array}{r} 256 \\ - \underline{70} \quad (10 \text{ groups}) \quad \text{or} \quad (10 \times 7) \\ 186 \\ - \underline{140} \quad (20 \text{ groups}) \quad \text{or} \quad (20 \times 7) \\ 46 \\ - \underline{42} \quad (6 \text{ groups}) \quad \text{or} \quad (6 \times 7) \\ 4 \quad (36 \text{ groups}) \quad \text{or} \quad (36) \end{array}$ <p>Answer 36 r 4</p>

Division: Chunking HTU by TU	Stage: 6 Focus of Yr 6
<p>To be successful at division children must have secure mental strategies to</p> <ul style="list-style-type: none"> ◆ Recall multiplication facts 10×10 ◆ Partition numbers in different ways using tables facts. ◆ Find multiples of 10 and 100 using tables facts. <p>Instant recall of division facts Use multiplication and division fact to mentally find remainders of numbers to 100.</p> <ul style="list-style-type: none"> ◆ Subtract multiples of 10 and 100 from any number. <p>As children become more efficient with mental recall of tables their methods will become more compact.</p> <p>When calculating with decimals children will be encouraged to take the decimal out, complete the calculation and put the decimal back in.</p>	<p><u>Sharing and grouping and remainders</u></p> <p>Continue to understand division as both sharing and grouping</p> <p>Quotients expressed as fractions or decimal fractions</p> <p>$676 \div 8 = 84.5$</p>  <p><u>Pencil and paper procedures</u></p> <p>$977 \div 36$ is approximately $1000 \div 40 = 25$</p> $\begin{array}{r} 977 \\ - \underline{360} \quad (10 \text{ groups}) \\ 617 \\ - \underline{360} \quad (10 \text{ groups}) \\ 257 \\ - \underline{180} \quad (5 \text{ groups}) \\ 77 \\ - \underline{72} \quad (2 \text{ groups}) \\ 5 \end{array} \qquad \begin{array}{r} 977 \\ \underline{720} \quad (20 \text{ groups}) \\ 257 \\ \underline{180} \quad (5 \text{ groups}) \\ 77 \\ \underline{72} \quad (2 \text{ groups}) \\ 5 \end{array}$ <p>Answer: $27 \frac{5}{36}$</p>