

# ST STEPHEN'S CHURCH OF ENGLAND PRIMARY SCHOOL



## WRITTEN CALCULATION GUIDELINES

### KEY STAGE 1 AND KEY STAGE 2

Expectations: Foundation - Stage 1    Year 1 - Stage 2 - 3    Year 2 - Stage 3 - 4

Year 3 Stage 5 - 6    Year 4 - Stage 6 - 7    Year 5 - Stage 7 - 8    Year 6 - Stage 8 - 9



## Written Calculation Guidelines

	ADDITION +	SUBTRACTION -	MULTIPLICATION X	DIVISION ÷
S T A G E O N E	Practical activities for counting objects and combining sets  Counting on using practical apparatus  Counting on using a number track  Mostly Mental calculation With informal jottings Teacher recording	Practical demonstrations of 'taking away'  Counting on using practical apparatus  Counting on using a number track  Mostly mental calculations with informal jottings	Counting in steps of 2 and 10  Jumping along a number track	Practical activities to share objects equally. Eg sharing 10 biscuits on two plates.

	ADDITION +	SUBTRACTION -	MULTIPLICATION X	DIVISION ÷
S T A G E T W O	<p>Practical activities for counting objects and combining sets</p> <p>Counting on using practical apparatus</p> <p>Counting on using a number track</p> <p>All above using 1 digit and 2 digit numbers up to 20</p> <p>Mostly Mental calculation With informal jottings Teacher recording</p>	<p>Practical demonstrations of 'taking away'</p> <p>Counting on using practical apparatus</p> <p>Counting on using a number track</p> <p>All above using 1 digit and 2 digit numbers up to 20</p> <p>Mostly mental calculations with informal jottings</p>	<p>Counting in steps of 2 and 10</p> <p>Jumping along a number track with numbers up to 20</p>	<p>Practical activities to share objects equally. Eg sharing 10 biscuits shared on two plates using numbers up to 20</p>

	ADDITION +	SUBTRACTION -	MULTIPLICATION X	DIVISION ÷
S T A G E T H R E E	<p>Practical activities for counting objects and combining sets and counting on.</p> <p>Counting on using a number track then number line up to 100.</p> <p>Record simple mental additions in a number sentence. Eg (A) <math>2+3+</math> (B) <math>5+3+1=9</math></p> <p>Begin to record 'jumps' in ones, on a number line.</p> <p>Introduce formal methods:</p> $\begin{array}{r} \text{TU} \\ + \text{U} \\ \hline \end{array}$	<p>Practical activities to 'take away' and count on.</p> <p>Records simple subtraction in a number sentence.</p> <p><math>6-2=4</math></p> <p>Begin to record 'jumps' in ones on a number line.</p> <p>Use number lines to count on when numbers are big eg. <math>54 - 50</math>. Count back on a number when a smaller number is involved eg. <math>54 - 4</math></p> <p>Introduce formal methods:</p> $\begin{array}{r} \text{TU} \\ - \text{U} \\ \hline \end{array}$	<p>Counting in 2's, 5's and 10's. Begin to count in steps of 3.</p> <p>Practical activities using pairs of objects, coins, body parts etc. to count in multiples.</p> <p>Using number tracks or grids to look at patterns of multiples.</p> <p>Introduce multiplications as repeated additions on a number line</p> <p>Counting on marked, then unmarked lines in appropriate multiples. Eg <math>4 \times 3 = 12</math></p> $\begin{array}{r} +3 \ +3 \ +3 \ +3 \\ 0 \ 3 \ 6 \ 9 \ 12 \end{array}$	<p>Practical activities to share objects equally.</p> <p>Counting on in jumps of 1'2, 2's, 5's and 10's.</p> <p>Counting on, on marked then unmarked number lines in appropriate multiples.</p> <p>Teacher begins to model simple calculations.</p> <p><math>10 \div 2 = 5</math></p> <p>Begin to understand division as repeated addition</p> <p>Pictorial representation using arrays. Eg <math>12 \div 3 = 4</math></p> $\begin{array}{r} +3 \ +3 \ +3 \ +3 \\ 0 \ 3 \ 6 \ 9 \ 12 \end{array}$



	ADDITION +	SUBTRACTION -	MULTIPLICATION X	DIVISION ÷
S	Continue to develop addition as combining sets and counting on.	Record subtractions in a number sentence.	Practical activities to make sets of objects.	Begin to understand division as repeated addition
T	Use formal written methods	Introduce formal methods:	Vocabulary of double, multiply, groups of lots of etc.	Pictorial representation using arrays
A	$\begin{array}{r} \text{TU} \\ + \text{U} \\ \hline \end{array}$	$\begin{array}{r} \text{TU} \\ - \text{U} \\ \hline \end{array}$	Pictorial representation using arrays	Eg $12 \div 3 = 4$
G			e.g. $3 \times 4$	$\begin{array}{r} +3 \quad +3 \quad +3 \quad +3 \\ 0 \quad 3 \quad 6 \quad 9 \quad 12 \end{array}$
E	$\begin{array}{r} \text{TU} \\ + \text{TU} \\ \hline \end{array}$	With borrowing	Introduce multiplications as repeated additions on a number line	Counting on, on marked, then unmarked number lines in appropriate multiples. Using numbers up to 100.
F			Counting on marked, then unmarked lines in appropriate multiples.	Introduce the sign and record division facts as a number sentence.
O	Crossing the tens.		e.g. $4 \times 3$	Division facts corresponding to the 2 and 10 times tables.
U			$\begin{array}{r} +3 \quad +3 \quad +3 \quad +3 \\ 0 \quad 3 \quad 6 \quad 9 \quad 12 \end{array}$	Introduce division with remainders on a number line.
R			Introduce the x sign and record in a sentence	

	ADDITION +	SUBTRACTION -	MULTIPLICATION X	DIVISION ÷
S	Reinforce formal methods as Stage 4.	Reinforce formal methods as Stage 4.	As stage four but move onto:	As stage four but move onto quickly:
T	Use formal written methods	Use formal written methods	Introduce formal methods of multiplication (including the ladder method as a replacement of grid method):	Introduce formal methods of division:
A	$\begin{array}{r} \text{TU} \\ + \text{U} \\ \hline \end{array}$	$\begin{array}{r} \text{TU} \\ - \text{U} \\ \hline \end{array}$		
G			$\begin{array}{r} \text{TU} \\ \times \text{U} \\ \hline \end{array}$	$\begin{array}{r} \underline{22} \\ 4 \overline{)88} \end{array}$
E	$\begin{array}{r} \text{TU} \\ + \text{TU} \\ \hline \end{array}$	$\begin{array}{r} \text{TU} \\ - \text{TU} \\ \hline \end{array}$		Without remainders.
F			Without crossing the tens.	
I	Crossing the tens.	With borrowing.		
V	Move onto:	Move onto:		
E	$\begin{array}{r} \text{HTU} \\ + \text{HTU} \\ \hline \end{array}$	$\begin{array}{r} \text{HTU} \\ - \text{HTU} \\ \hline \end{array}$		
	Crossing the tens.	With borrowing.		



	ADDITION +	SUBTRACTION -	MULTIPLICATION X	DIVISION ÷
S T A G E  S I X	<p>Vertical standard method with carrying.</p> <p>Th HTU +<u>HTU</u> _____</p> <p>Link checking answers (Inverse operation)</p>	<p>Consolidate 36 - 17 + 19</p> <p>Vertical standard method with exchange</p> <p>Th HTU -<u>HTU</u> _____</p> <p>Link checking answers (Inverse operation)</p>	<p>Continue to refine formal methods of multiplication (including the ladder method as a replacement of grid method)::</p> <p>TU <u>x U</u> _____</p> <p>Crossing the tens and including decimals.</p>	<p>Continue to refine formal methods of division.</p> <p><u>22</u> 4 88</p> <p>With remainders.</p>

	ADDITION +	SUBTRACTION -	MULTIPLICATION X	DIVISION ÷
S T A G E  S E V E N	<p>Continue to refine formal written methods of addition:</p> <p>Th HTU + <u>ThHTU</u> _____</p> <p>Extend to decimals</p> <p>£ 6.72 <u>£+ 8.56</u> <u>£15.28</u> 1</p> <p>Link checking answers (Inverse operation)</p>	<p>Continue to refine formal written methods of addition:</p> <p>Th HTU - <u>ThHTU</u> _____</p> <p>Extend to decimals</p> <p>611 1 72.5 km <u>4.6 km</u> <u>67.9 km</u></p> <p>Link checking answers (Inverse operation)</p>	<p>Continue to refine formal methods of multiplication (including the ladder method as a replacement of grid method):</p> <p>HTU <u>x U</u> _____</p> <p>Crossing the tens and including decimals.</p>	<p>Continue to refine formal methods of division.</p> <p><u>222</u> 4 888</p> <p>With remainders.</p>

	ADDITION +	SUBTRACTION -	MULTIPLICATION X	DIVISION ÷
S	Develop methods from Stage 7 start with: HTU + HTU	Reinforce methods from Stage 6	Develop standard written method to ThHTU X U	Continue standard written method for division
T		HTU - HTU		
A	Then: ThHTU + HTU Then: ThHTU + ThHUT	$\begin{array}{r} 41 \\ 754 \\ - 228 \\ \hline 526 \end{array}$	e.g. $\begin{array}{r} 2146 \\ \underline{\phantom{00}3} \\ 6438 \\ 1 \end{array}$	ThHTU ÷ U written as
G	Refine standard written method, with carrying for			$\begin{array}{r} 1121 \\ 4 \overline{) 4484} \end{array}$
E	numbers up to <b>tens of thousands</b> .	Then $\begin{array}{r} 614 \\ 754 \\ - 286 \\ \hline 468 \end{array}$	Extend to standard written method for TU x TU	
E	$\begin{array}{r} 12587 \\ + 12475 \\ \hline 241062 \end{array}$	HTU - HTU	$\begin{array}{r} 72 \\ \times 38 \\ \hline 576 \\ 2160 \\ \hline 2736 \end{array}$	Continue without remainders then with remainders
I	$\begin{array}{r} 3587 \\ + 675 \\ \hline 4262 \end{array}$	ThHTU - HTU		$\begin{array}{r} 32 \text{ r } 4 \\ 6 \overline{) 196} \end{array}$
G	$\begin{array}{r} 1 \\ 111 \end{array}$			
H		$\begin{array}{r} 8 \text{ } 13 \text{ } 1 \\ \text{£}9.42 \\ - \text{£}6.78 \\ \hline \text{£}2.64 \end{array}$	Introduce decimals to one decimal place	Reinforce standard written method.
T			Eg $\begin{array}{r} 4.9 \\ \times 3 \\ \hline 14.7 \\ 2 \end{array}$	Introduce HTU ÷ TU
				$\begin{array}{r} 17 \text{ r } 19 \\ 31 \overline{) 546} \\ \underline{31} \phantom{00} \\ 236 \\ \underline{217} \\ 19 \end{array}$

	ADDITION +	SUBTRACTION -	MULTIPLICATION X	DIVISION ÷
S T A G E  N I N E	<p>Continue to develop standard written method. Extend method to numbers with any number of digits</p> $\begin{array}{r} 6584 \\ + 5848 \\ \hline 12432 \\ 111 \end{array}$ <p>Extend to decimals (refer to strategy)</p>	<p>Continue to develop standard written method. Extend method to numbers with any number of digits.</p> <p>ThHTU - ThHTU</p> $6467 - 2684 =$ $\begin{array}{r} 531 \\ 6467 \\ - 2684 \\ \hline 3783 \end{array}$ <p>Extend to decimals</p> $324.9 - 7.25 +$ $\begin{array}{r} 11 \\ 324.90 \\ - 7.25 \\ \hline 317.65 \end{array}$ <p>14.24 - 8.7 =</p> $\begin{array}{r} 013\ 1 \\ 14.24 \\ - 8.7 \\ \hline 5.54 \end{array}$	<p>Continue to develop standard written method with carrying to ThHTU x U</p> $\begin{array}{r} 4346 \\ \underline{\phantom{0}8} \\ 34768 \\ 234 \end{array}$ <p>Then HTU x TU</p> $\begin{array}{r} 352 \\ \times 27 \\ \hline 2464 \\ 7040 \\ \hline 9504 \\ 1 \end{array}$ <p>Extend to decimals with up to two decimal places</p> $\begin{array}{r} 3.52 \\ \times 2.7 \\ \hline 2464 \\ 7040 \\ \hline 9.504 \\ 1 \end{array}$	<p>Extend to decimals:</p> $87.5 \div 7$ $\begin{array}{r} 12.5 \\ 7\ 87.5 \end{array}$ <p>Including decimal answers:</p> $\begin{array}{r} 12.428 \\ 7\ 87.000 \end{array}$

