

Saint Eithne's Primary School



Numeracy Calculations Handbook Guidance for Staff and Parents

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Overview and Purpose of **Numeracy Calculations Handbook**

This handbook is to be used to ensure the consistent approach to the teaching of the four operations in numeracy. It will outline clearly the teaching strategies and methods used within each Key Stage and year group.

It can be used to help inform numeracy planning and provides an insight into the teaching that has occurred in prior year groups.

This handbook can also be used by parents in the support of teaching the four operations and as an aid to providing help and support to their children with their homework.

Section A

Breakdown of Addition and Subtraction

This table outlines the level of Place Value/Addition and Subtraction that is taught within each year group.

<u>Year Group</u>	<u>Level/Content</u>
Primary 1	Working to 10 (initially)
Primary 2	Working to 20 (initially)
Primary 3	Working to 99 (extend to 999)
Primary 4	Working to 999
Primary 5	Working to 9, 999
Primary 6	Working to 99, 999 (initially)
Primary 7	Working to 99, 999 (initially)

Section B

Multiplication Tables

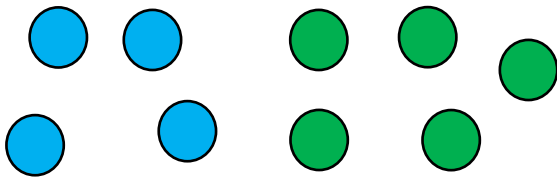
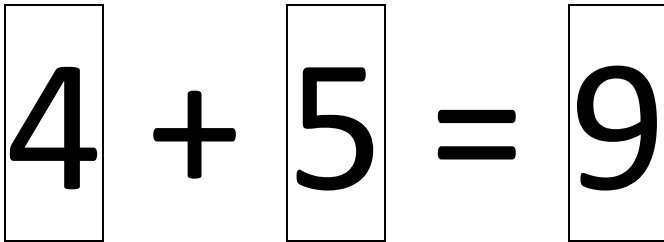

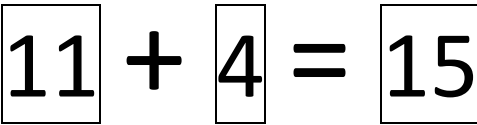

This table outlines the level of multiplication that is taught within each year group.

<u>Year Group</u>	<u>Level/Content</u>
Primary 1	Counting in 2s
Primary 2	Counting in 2s, 5s and 10s
Primary 3	2, 5 and 10 multiplication tables
Primary 4	2, 3, 4, 5 and 10 multiplication tables
Primary 5	2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12 multiplication tables
Primary 6	2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12 multiplication tables
Primary 7	2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12 multiplication tables

Primary 1

Addition


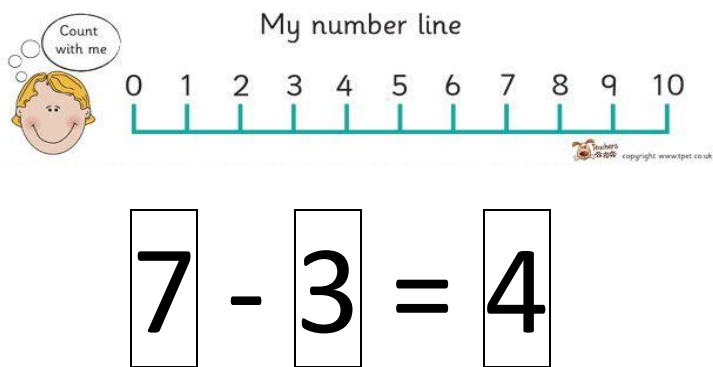

Approaches and strategies used for teaching addition

<u>Pictorial Addition</u>	
	<p>Initially addition</p> <p>a) within 5 b) within 10</p> <p>Practical and oral work</p> <p>adding within 5/10</p>
<u>Number Sentence</u>	
	<p>Initially children complete each number sentence by placing digit cards in each box before progressing to writing the numbers themselves.</p>
<u>Use of a Number Line</u>	
<p>★ Counting On Number Lines</p> <p>🐸 Number Line 0-20</p>  	<p>In Term 3 the children begin to add within 20 using a number line.</p> <p>Number sentences continue to be written horizontally.</p>
<u>Use of 100 Square</u>	
	<p>Children in Primary 1 are introduced to the hundred square and practise counting to 100. Practise counting in 2s, 5s and 10s.</p>
<u>Language of Addition used in Primary One</u>	
<p>Add</p> <p>Plus</p> <p>Altogether</p> <p>Makes</p> <p>Equal</p> <p>One more</p> <p>Two more</p>	

Primary 1

Subtraction

Approaches and strategies used for teaching subtraction

<u>Practical Subtraction</u>	
	Practical and oral work subtracting within 5 initially. Move on to subtracting within 10 in Term 3
<u>Number Sentence</u>	
$\boxed{5} - \boxed{3} = \boxed{2}$	Initially children complete the number sentence by placing digit cards in each box before progressing to writing the numbers themselves. Practical materials also used by children at this stage.
<u>Use of a Number Line</u>	
	The children practise counting backwards within 10 using a number line. Number sentences continue to be written horizontally.
<u>Use of 100 Square</u>	
	Children in Primary 1 have been introduced to the hundred square and practise counting backwards from 10.


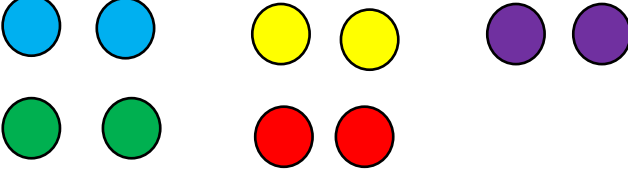
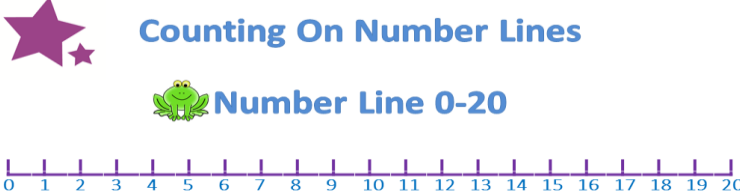

Language of Subtraction used in Primary One

Take away
Subtract
Minus
Leaves
How many left?
One less
Two less

Primary 1

Multiplication

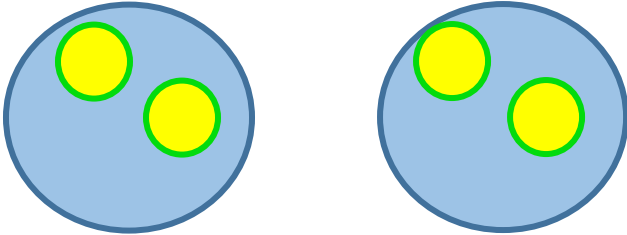
Approaches and strategies used for teaching multiplication.

<u>Pictorial Multiplication</u>	
	Oral work counting in 2s within 10
<u>Practical Multiplication</u>	
	Making sets of 2
<u>Use of a Number Line</u>	
	Counting in 2s up to 20 using a number line
<u>Use of 100 Square</u>	
	Children in Primary 1 are introduced to the hundred square and practise counting to 100 in steps of 2, 5 and 10.
<u>Language of Multiplication used in Primary One</u>	
Makes sets of 2 Make lots of 2 Makes groups of 2 Count in 2s, 5s, 10s	

Primary 1

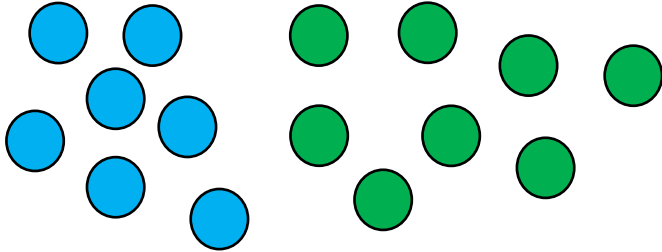



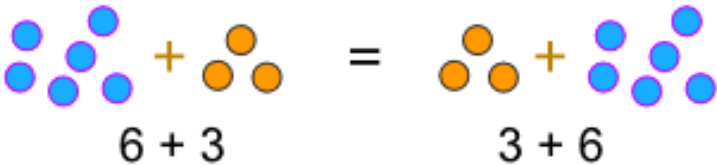
Division

Approaches and strategies used for teaching division.

<u>Practical Division</u>	
	Making sets of 2 Sharing between 2
<u>Language of Division used in Primary One</u>	
Share between 2 Sets of 2 Groups of 2 Equal	

Addition

Approaches and strategies used for teaching addition

<u>Pictorial Addition</u>	
	<p><u>Term 1</u></p> <p>Combining sets to 10/15</p> <p><u>Term 2</u></p> <p>Extend addition – within 20</p>
<u>Number Sentence</u>	
$\boxed{7} + \boxed{8} = \boxed{15}$	
<u>Use of a Number Line</u>	
<p>★ Counting On Number Lines</p> <p> Number Line 0-20</p>  $\boxed{11} + \boxed{4} = \boxed{15}$	<p>Children are taught to move to the right when adding using a number line.</p>  <p>Practise counting in 2s – odd/even numbers</p>
<u>The Commutative Law</u>	
 $6 + 3 = 3 + 6$	<p>Children are introduced to the commutative property of addition (within 10)- for example children learn that 6 + 3 is the same as 3 + 6</p>

Use of 100 Square

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100





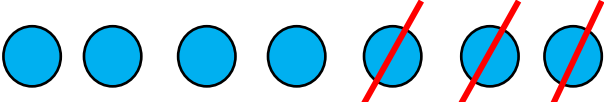
Use of 100 square to
practise counting in
2s to 20
5s to 100
10s to 100

Language of Addition used in Primary Two

Add
Plus
Altogether
Makes
Equal
More than
Total
How many?

Subtraction

Approaches and strategies used for teaching subtraction

Use of a Number Line	
 Counting On Number Lines  Number Line 0-20 	<p>Children practise counting backwards from different starting points. Use number line to link counting back to subtraction.</p> <p>Move to the left when counting backwards.</p> 
Practical Subtraction	
	<p>Using a variety of practical equipment to practise subtraction within 10 initially.</p> <p>In Term 3, children subtract within 20.</p>
Number Sentence	
$\boxed{7} - \boxed{3} = \boxed{4}$	<p>Children will have had experience of using the subtraction symbol in practical activities.</p> <p>In Term 2b, children will carry out shopping activities and games requiring giving out change from 15p/20p.</p>

Use of 100 Square



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100


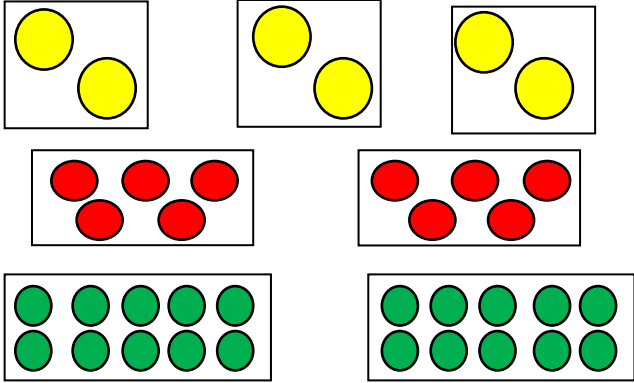
- Children practise counting backwards in 1s, 2s, 5s and 10s from 20/50/100
- Practise counting backwards in 1s from different starting points within 100.

Language of Subtraction used in Primary Two

Minus
Subtracting
Take away
Less than
Fewer
Difference
Difference between

Multiplication

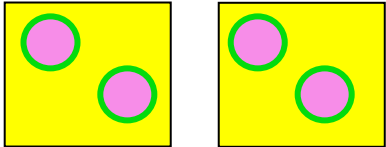
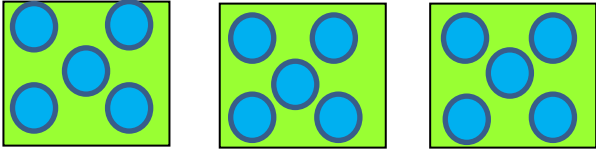
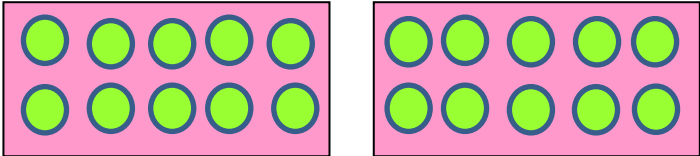
Approaches and strategies used for teaching multiplication.

<u>Pictorial Multiplication</u>	
<p>2 4 6 8 10 12 14 16 18 20</p> <p>5 10 15 20 25 30 35 40 45 50</p> <p>10 20 30 40 50 60 70 80 90 100</p>	Counting in sets of 2,5 and 10
<u>Use of 100 Square</u>	
	<p>Use of 100 square to practise counting in</p> <p>2s to 20</p> <p>5s to 100</p> <p>10s to 100</p>
<u>Practical Multiplication</u>	
	Making sets of 2, 5 and 10
<u>Language of Multiplication used in Primary Two</u>	
<p>Makes sets of 2</p> <p>Make lots of 2</p> <p>Makes groups of 2</p> <p>Count in 2s, 5s, 10s</p>	

Primary 2



Division

Approaches and strategies used for teaching division.

<u>Practical Division</u>	
  	Making sets of 2/5/10 Sharing between 2/5/10
<u>Language of Division used in Primary Two</u>	
Share between 2, 5, 10 Sets of 2, 5, 10 Equal sets Equal groups	

Addition

Approaches and strategies used for teaching addition

Use of 100 Square	
	<ul style="list-style-type: none"> Counting in 2s (odd/even) Counting in 10s from any starting point eg 13, 23, 33 Adding on the 100 square within a decade Adding on the 100 square bridging a ten. Introducing the concept of adding by sweeping from right to left from 10 across to 11, 20 across to 21, 30 across to 31 etc
Addition Patterns	
<div style="text-align: center;"> $1 + 3 = 4$ </div> <div style="display: flex; align-items: center; justify-content: center;">  <div style="margin-left: 20px;"> $11 + \square = 14$ </div> </div> <div style="text-align: center; margin-top: 20px;"> $21 + 3 = \square$ </div>	<p>Children explore extended addition patterns</p> <p>a) practically using Tens and Units apparatus</p> <p>b) written - horizontally</p>
Horizontal/Vertical Addition of 3 Numbers	
<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div> $7 + 1 + 3 = 11$ </div> <div style="text-align: center;"> $\begin{array}{r} 7 \\ 1 \\ + 3 \\ \hline 11 \end{array}$ </div> </div>	<p>Children add together 3 single digit numbers. They are encouraged to look for values that can be paired eg 2 numbers that add to 10, doubles.</p>

Vertical Addition without Regrouping	
$ \begin{array}{r} \text{T U} \\ 54 \\ + 23 \\ \hline 77 \end{array} $	<p>Vertical addition without regrouping is introduced in Term 1B. We reinforce with the children that when we are adding we always begin by adding the UNITS and then the TENS.</p> <p>Children move on to adding three 2-digit numbers without regrouping.</p>
Vertical Addition of HTU without Regrouping	
$ \begin{array}{r} \text{H T U} \\ 314 \\ + 265 \\ \hline 579 \end{array} $	<p>We reinforce with the children that when we are adding we always begin by adding the UNITS, then the TENS and then the HUNDREDS. (up to 999)</p>
Vertical Addition with Regrouping	
$ \begin{array}{r} \text{T U} \\ 48 \\ + 3\textcolor{red}{1}5 \\ \hline 83 \end{array} $	<p>Remind the children that when we are adding we always begin by adding the UNITS and then the TENS.</p> <p>When we regroup, it is carried to the <u>right</u> of the bottom TENS digit.</p> <p>The sum is laid out as shown on the left.</p>
Language of Addition Used in Primary Three	
<p>Add</p> <p>Plus</p> <p>Altogether</p> <p>Makes</p> <p>Equal</p> <p>More than</p> <p>Total</p> <p>How many?</p> <p>Increase</p> <p>Greater than</p>	

Subtraction

Approaches and strategies used for teaching subtraction.

Use of 100 Square

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

- Counting back in 1s, 2s, 5s, 10s
- Counting back in 10s from any starting point eg 63, 53, 43, 33
- Subtracting on the 100 square bridging a ten.
- Introducing the concept of subtracting by sweeping from left up to right from;
 - 21 across and up to 20
 - 31 across and up to 30
 - 41 across and up to 40.
- Subtracting 10 from any given number.
- Subtract 11, 21
- Subtract 9, 19

Subtraction Patterns

$$\begin{aligned}
 6 - 3 &= 3 \\
 16 - 3 &= 13 \\
 26 - 3 &= 23 \quad \text{etc}
 \end{aligned}$$

Children explore subtraction patterns





Horizontal Subtraction

$$57 - 6 = 51$$

<u>Vertical Subtraction</u>	
$\begin{array}{r} \text{T U} \\ 54 \\ - 23 \\ \hline 31 \end{array}$ $\begin{array}{r} \text{£ } 7.34 \\ - \text{£ } 2.12 \\ \hline \text{£ } 5.22 \end{array}$	<p>Vertical subtraction without exchange.</p> <p>We reinforce with the children that when we are subtracting we always begin by subtracting the UNITS and then the TENS.</p> <p>Extend to subtraction of HTU – without exchanging.</p> <p>Include money amounts in subtraction.</p>
<u>Language of Subtraction used in Primary Three</u>	
<p>Minus</p> <p>Subtracting</p> <p>Take away</p> <p>Less than</p> <p>Fewer</p> <p>Decrease</p> <p>Difference</p> <p>Difference between</p>	

Multiplication

Approaches and strategies used for teaching multiplication.

Use of 100 Square	
	Counting in 2s, 3s, 4s, 5s and 10s
From sets to Multiplication	
  $3 + 3 = 6$  $3 + 3 = 6$ $2 \times 3 = 6$	<p>1. Practise making and drawing sets Eg 2 sets of 3 2 sets of 9 etc</p> <ul style="list-style-type: none"> Adding the sets - we say 2 sets of 3 is the same as $3 + 3 = 6$ So 2 sets of 3 is 6 Introduce the multiplication sign $2 \times 3 = 6$ Repeat this activity for 2 sets of 1, 2, 3, 4, 12
Language of Multiplication used in Primary Three	
<p>Makes sets of 2 Make lots of 2 Makes groups of 2 Count in 2s, 3s, 4s, 5s, 10s Multiply Multiplication</p>	

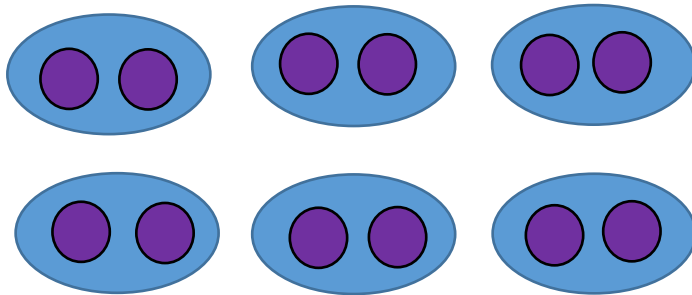
Primary 3

Division

Approaches and strategies used for teaching division.

The concept of division is taught through the practical processes of grouping and sharing.

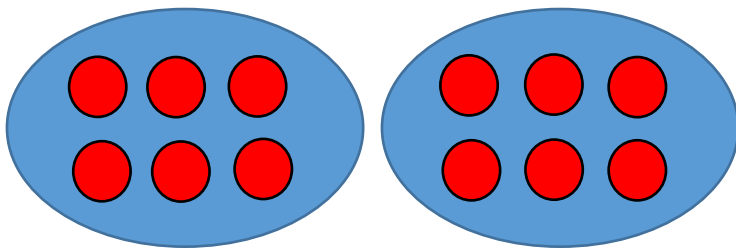
Grouping



$12 \text{ divided by } 2 = 6$

Make groups of 2.
How many groups are there?
Answer = 6

Sharing



$12 \text{ divided by } 2 = 6$

Make 2 groups.
How many in each group?
Answer = 6

Language of Division used in Primary Three

Share between 2, 5, 10
Sets of 2, 5, 10
Equal sets
Equal groups

Addition

Approaches and strategies used for teaching addition

Use of the 100 Square	
	<ul style="list-style-type: none"> Counting forward 10/ multiples of 10. Starting at any given number. Use expanded notation to add two 2-digit numbers $23 + 45 = 20 + 40 + 3 + 5$
Vertical addition of TU without Regrouping	
$\begin{array}{r} \text{T U} \\ 54 \\ + 23 \\ \hline 77 \end{array}$	<p>Revision of Vertical addition without regrouping (within 100)</p> <p>We reinforce with the children that when we are adding we always begin by adding the UNITS and then the TENS.</p>
Vertical Addition Of TU with Regrouping	
$\begin{array}{r} \text{T U} \\ 59 \\ + 23 \\ \hline 82 \end{array}$	<p>Reminder - always begin by adding the UNITS and then the TENS. (within 100)</p> <p>When we regroup and carry, it is carried to the <u>right</u> of the bottom TENS digit.</p>
Vertical Addition Of HTU without Regrouping	
$\begin{array}{r} \text{H T U} \\ 354 \\ + 431 \\ \hline 785 \end{array}$	<p>We reinforce with the children that when we are adding we always begin by adding the UNITS, then the TENS and then the HUNDREDS. (up to 999)</p>

Vertical Addition Of HTU with Regrouping

a) One regrouping

$$\begin{array}{r} \text{H T U} \\ 354 \\ +438 \\ \hline 792 \end{array}$$

$$\begin{array}{r} \text{H T U} \\ 481 \\ +293 \\ \hline 774 \end{array}$$

b) Two regroupings

$$\begin{array}{r} \text{H T U} \\ 375 \\ +439 \\ \hline 814 \end{array}$$


Remind the children that when we are adding we always begin by adding the UNITS and then the TENS and then the HUNDREDS. When we regroup, it is carried to the right of the bottom TENS or HUNDREDS digit. Example sums are laid out as shown on the left. Addition to 999.

Language of Addition Used in Primary Four

Add
Plus
Altogether
Makes
Equal
More than
Total
How many?
Increase
Greater than

Subtraction

Approaches and strategies used for teaching subtraction

Use of the 100 square	
	<ul style="list-style-type: none"> Subtract 10 from any given number. Subtract a multiple of 10 from any given number Subtract a 2-digit number from a 2-digit number 46 – 24 First subtract 2 tens Then count back 4 units
Vertical subtraction of TU without Exchanging	
$\begin{array}{r} \text{T U} \\ 54 \\ - 23 \\ \hline 31 \end{array}$	<p>Revision of Vertical subtraction without regrouping (within 100) We reinforce with the children that when we are subtracting we always begin by subtracting the UNITS and then the TENS.</p>
Vertical Subtraction Of TU with Exchanging (within 100)	
$\begin{array}{r} \text{T U} \\ \overset{4}{\cancel{5}} \overset{1}{3} \\ - 29 \\ \hline 24 \end{array} \qquad \begin{array}{r} \text{T U} \\ \overset{4}{\cancel{5}} \overset{1}{0} \\ - 34 \\ \hline 16 \end{array}$	<p>Reminder – always begin by subtracting the UNITS and then the TENS. The sum is set out as shown on the left. The “exchanged” value is always written to the top left of the digit on the top line of the sum.</p>
Vertical Subtraction Of HTU without Exchanging	
$\begin{array}{r} \text{H T U} \\ 784 \\ - 261 \\ \hline 523 \end{array}$	<p>We reinforce with the children that when we are subtracting we always begin by subtracting the UNITS, then the TENS and then the HUNDREDS. (up to 999)</p>

Vertical Subtraction Of HTU with Exchanging

a) One exchange

$$\begin{array}{r}
 \text{H T U} \\
 3 \text{ } 4 \text{ } 14 \\
 - 1 \text{ } 3 \text{ } 8 \\
 \hline
 2 \text{ } 1 \text{ } 6
 \end{array}$$

$$\begin{array}{r}
 \text{H T U} \\
 4 \text{ } 7 \text{ } 10 \\
 - 2 \text{ } 4 \text{ } 3 \\
 \hline
 2 \text{ } 3 \text{ } 7
 \end{array}$$

b) Two exchanges

$$\begin{array}{r}
 \text{H T U} \\
 7 \text{ } 8 \text{ } 15 \text{ } 10 \\
 - 4 \text{ } 8 \text{ } 2 \\
 \hline
 3 \text{ } 7 \text{ } 8
 \end{array}$$

Remind the children that when we are subtracting we always begin by subtracting the UNITS and then the TENS and then the HUNDREDS. Sums are set out as shown on the left. When we exchange , the new value is always written to the top left of the digit on the top line of the sum.
Subtraction within 999.

Language of Subtraction used in Primary Four

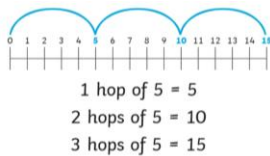
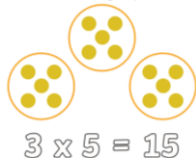
Minus
Subtracting
Take away
Less than
Fewer
Decrease
Difference
Difference between

Primary 4

Multiplication

Approaches and strategies used for teaching multiplication.

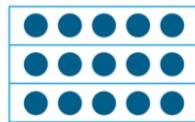
Making sets/Using Arrays/Repeated Addition of 2/3/4/5/10



$$3 \times 5 = 15$$

$$5+5+5=15$$

$$3 \times 5 = 15$$



$$3 \times 5 = 15$$

We make sets of numbers and use the process of repeated addition and arrays to reinforce multiplication.

Multiplication Grids for 2/3/4/5/10

2 times table $2 \times 0 = 0$ $2 \times 1 = 2$ $2 \times 2 = 4$ $2 \times 3 = 6$ $2 \times 4 = 8$ $2 \times 5 = 10$ $2 \times 6 = 12$ $2 \times 7 = 14$ $2 \times 8 = 16$ $2 \times 9 = 18$ $2 \times 10 = 20$ $2 \times 11 = 22$ $2 \times 12 = 24$	3 times table $3 \times 0 = 0$ $3 \times 1 = 3$ $3 \times 2 = 6$ $3 \times 3 = 9$ $3 \times 4 = 12$ $3 \times 5 = 15$ $3 \times 6 = 18$ $3 \times 7 = 21$ $3 \times 8 = 24$ $3 \times 9 = 27$ $3 \times 10 = 30$ $3 \times 11 = 33$ $3 \times 12 = 36$	4 times table $4 \times 0 = 0$ $4 \times 1 = 4$ $4 \times 2 = 8$ $4 \times 3 = 12$ $4 \times 4 = 16$ $4 \times 5 = 20$ $4 \times 6 = 24$ $4 \times 7 = 28$ $4 \times 8 = 32$ $4 \times 9 = 36$ $4 \times 10 = 40$ $4 \times 11 = 44$ $4 \times 12 = 48$	5 times table $5 \times 0 = 0$ $5 \times 1 = 5$ $5 \times 2 = 10$ $5 \times 3 = 15$ $5 \times 4 = 20$ $5 \times 5 = 25$ $5 \times 6 = 30$ $5 \times 7 = 35$ $5 \times 8 = 40$ $5 \times 9 = 45$ $5 \times 10 = 50$ $5 \times 11 = 55$ $5 \times 12 = 60$	10 times table $10 \times 0 = 0$ $10 \times 1 = 10$ $10 \times 2 = 20$ $10 \times 3 = 30$ $10 \times 4 = 40$ $10 \times 5 = 50$ $10 \times 6 = 60$ $10 \times 7 = 70$ $10 \times 8 = 80$ $10 \times 9 = 90$ $10 \times 10 = 100$ $10 \times 11 = 110$ $10 \times 12 = 120$
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MULTIPLICATION												
x	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

We use these types of multiplication grids to reinforce the multiplication facts.

Language of Multiplication used in Primary Four

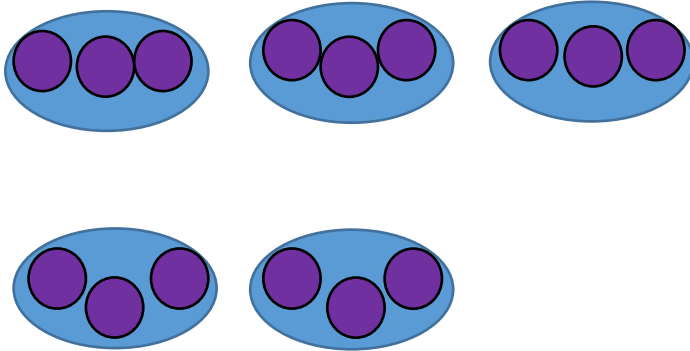
Sets
Lots
Groups
Array
Multiply
Multiplication
Repeated addition
Product

Division

Approaches and strategies used for teaching division.

The concept of division is revisited through the practical processes of grouping and sharing.

Grouping



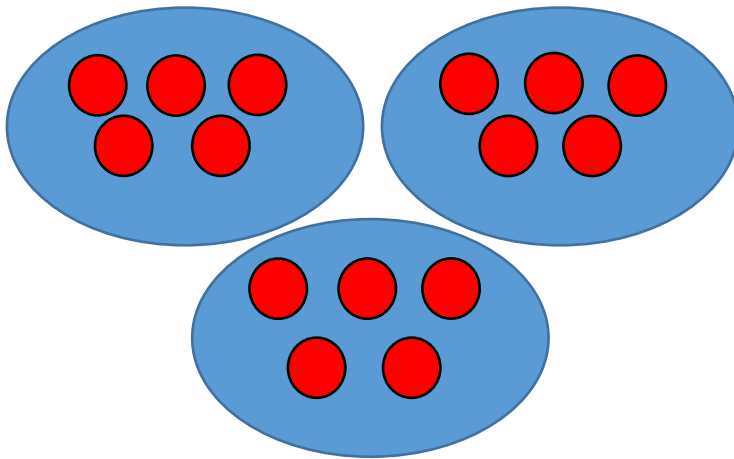
In Primary 4, the division symbol (\div) is introduced

15 divided by 3 = 5
 $15 \div 3 = 5$

Make groups of 3.
How many groups are there?

Answer = 5

Sharing



15 divided by 3 = 5
 $15 \div 3 = 5$

Make 3 groups.
How many in each group?

Answer = 5

Repeated Subtraction



$15 \div 3 = 5$

Count back in steps of 3
to find out how many
times 3 can be
subtracted from 15.

Answer = 5

The Bus Stop Method

$$2 \overline{) 84}$$

$$2 \overline{) 84} \quad \text{Do the 8 first, } 8 \div 2 = 4$$

$$2 \overline{) 84} \quad \text{Then do the 4, } 4 \div 2 = 2$$

The bus top method for formal division is introduced in Primary 4.

Remainders are also introduced in Primary 4

Language of Division used in Primary Four

Division
Divide
Share
Equal sets
Equal sharing
Repeated subtraction
Remainder

Addition

Approaches and strategies used for teaching addition

Vertical addition of THTU without/ with Regrouping		
One regrouping	$ \begin{array}{r} \text{TH HT U} \\ 3 \ 5 \ 9 \ 1 \\ + 2 \ 3 \ 2 \ 4 \\ \hline 5 \ 9 \ 1 \ 5 \end{array} $	<p>We reinforce with the children that when we are adding we always begin by adding the UNITS, then the TENS, then the HUNDREDS and then the THOUSANDS. When we carry, it is carried to the <u>right</u> of the number on the bottom line of the sum.</p> <p>Example sums shown on the left.</p> <p>Addition to 9999</p>
Two regroupings	$ \begin{array}{r} \text{TH HT U} \\ 3 \ 5 \ 9 \ 8 \\ + 2 \ 3 \ 2 \ 4 \\ \hline 5 \ 9 \ 2 \ 2 \end{array} $	<p>In Term 3, addition is extended to 99,999 with up to 4 regroupings.</p>
Three regroupings	$ \begin{array}{r} \text{TH H TU} \\ 3 \ 8 \ 9 \ 7 \\ + 2 \ 3 \ 7 \ 4 \\ \hline 6 \ 2 \ 7 \ 1 \end{array} $	
Language of Addition Used in Primary Five		
<p>Add</p> <p>Plus</p> <p>Altogether</p> <p>Makes</p> <p>Equal</p> <p>More than</p> <p>Total</p> <p>How many?</p> <p>Increase</p> <p>Greater than</p>		

Subtraction

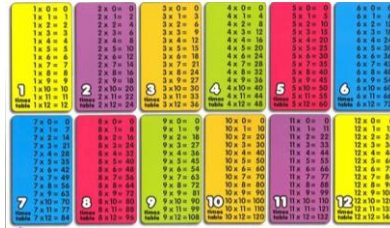
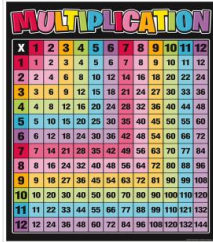
Approaches and strategies used for teaching subtraction

Vertical Subtraction of THTU with Exchanging	
<p>Two exchanges</p> $ \begin{array}{r} \text{Th H T U} \\ \text{2} \cancel{3} \text{1} \text{5} \text{3} \cancel{4} \text{1} \text{0} \\ - 1 \ 8 \ 2 \ 7 \\ \hline 1 \ 7 \ 1 \ 3 \end{array} $ <p>Four exchanges</p> $ \begin{array}{r} \text{TTH TH H T U} \\ \text{4} \cancel{5} \text{14} \text{5} \cancel{13} \text{4} \cancel{12} \cancel{3} \text{1} \text{0} \\ - 2 \ 8 \ 7 \ 4 \ 6 \\ \hline 2 \ 6 \ 6 \ 8 \ 4 \end{array} $	<p>Remind the children that when we are subtracting we always begin by subtracting the UNITS, then the TENS, then the HUNDREDS and then the THOUSANDS</p> <p>Example sums are set out as shown on the left.</p> <p>When we exchange, the new value is always written to the top left of the digit on the top line of the sum.</p> <p>Subtraction within 9999, initially. Extend beyond 9999.</p>
Language of Subtraction used in Primary Five	
<p>Minus Subtracting Take away Less than Fewer Decrease Difference Difference between</p>	

Multiplication

Approaches and strategies used for teaching multiplication.

Multiplication Grids



We use these types of multiplication grids to reinforce the process of multiplication and recall of multiplication facts.

Grid Method

$$24 \times 7 = 168$$

×	20	4
7	140	28

$$140 + 28 = 168$$

1. Draw a grid and write the partitioned numbers across the top. (20, 4)
2. Multiply each of the partitioned numbers. (20 x 7, 4 x 7)
3. Add the products
 $140 + 28 = 168$

Column Method

$$\begin{array}{r} 24 \\ \times 7 \\ \hline 168 \end{array}$$

1. Write the numbers above each other.
2. Multiply $4 \times 7 = 28$
3. Write down 8 and carry 2.
4. Multiply $2 \times 7 = 14$
5. Add carried 2
 $14 + 2 = 16$

Language of Multiplication used in Primary Five

Multiply
Multiplication
Repeated addition
Product
Opposite of Division
Inverse of Division

Division

Approaches and strategies used for teaching division.

Short Division

2 digit division – no remainder

$$78 \div 6 = 13$$

1 remainder left over

Division is taught using the bus stop method, with and without remainders.

3 digit division – no remainder

$$186 \div 6 = 31$$

no groups of 6 can be made

3 digit division – with remainder

$$189 \div 6 = 31 \text{ r } 3$$

no groups of 6 can be made

Remainder 3 left over

Language of Division used in Primary Five

Division
Divide
Share
Split
Equal sets
Equal sharing
Repeated subtraction
Remainder
Divisible by
Opposite of multiplication
Inverse of multiplication

Addition

Approaches and strategies used for teaching addition.

Vertical addition with Regrouping	
$ \begin{array}{r} \text{TTH TH HT U} \\ 5 \quad 7 \quad 8 \quad 9 \quad 7 \\ + 2 \quad 3 \quad 7 \quad 4 \quad 6 \\ \hline 8 \quad 1 \quad 6 \quad 4 \quad 3 \\ \hline \end{array} $	<p>Initially revise addition to 9999 Extend addition beyond 9999 with regrouping Primary 7 – addition to any value We reinforce with the children that when we are adding we always begin by adding the UNITS, then the TENS, then the HUNDREDS and then the THOUSANDS. When we carry, it is carried to the right of the number on the bottom line of the sum. An example sum is laid out as shown on the left.</p>
Addition of Decimal Numbers	
$ \begin{array}{r} 23.361 \\ 9.080 \\ 59.770 \\ + 21.320 \\ \hline 93.511 \end{array} $	<p>In Primary 6 and 7 children add several decimal numbers of increasing complexity. It is essential that decimal points are aligned vertically when adding. Empty decimal places can be filled with a zero to show the value in each column.</p>
Language of Addition Used in Primary Six and Seven	
<p>Add Plus Altogether Makes Equal More than Total How many? Increase Greater than</p>	

Subtraction

Approaches and strategies used for teaching subtraction.

<u>Vertical Subtraction with Exchanging</u>	
<p>TTH TH H T U</p> $ \begin{array}{r} \overset{4}{\cancel{5}} \overset{11}{2} \overset{13}{\cancel{4}} \overset{10}{1} \overset{1}{5} \\ - \quad 2 \quad 3 \quad 7 \quad 4 \quad 6 \\ \hline 2 \quad 8 \quad 6 \quad 6 \quad 9 \end{array} $	<p>Initially revise subtraction to 9999 before extending subtraction beyond 9999 with exchanging</p> <p>Primary 7 – subtraction to any value</p> <p>We reinforce with the children that when we are subtracting we always begin by subtracting the UNITS, then the TENS, then the HUNDREDS and then the THOUSANDS.</p> <p>When we exchange, the new value is always written to the top left of the digit on the top line of the sum.</p> <p>The sum is laid out as shown on the left.</p>
<u>Subtraction of Decimal Numbers</u>	
<p>23.391 – 11.7</p> $ \begin{array}{r} \overset{2}{\cancel{23}} \overset{1}{.} \overset{13}{3} \overset{9}{9} \overset{1}{1} \\ - \quad 1 \quad 1 \quad . \quad 7 \quad 0 \quad 0 \\ \hline 1 \quad 1 \quad . \quad 6 \quad 9 \quad 1 \end{array} $	<p>When subtracting decimal numbers all place value columns, including those beyond the decimal point, should be correctly aligned. Empty decimal places can be filled with a zero to show the place value of each column.</p>
<u>Language of Subtraction used in Primary Six and Seven</u>	
<p>Minus Subtracting Take away Less than Fewer Decrease Difference Difference between</p>	

Multiplication

Approaches and strategies used for teaching Multiplication.

<u>Vertical Multiplication</u>	
<p>537 x 8</p> $ \begin{array}{r} 537 \\ \times 8 \\ \hline 4296 \end{array} $	<p>Initially multiplication of HTU by a single digit up to 999 by 9</p> <p>Extend multiplication of any value by a single digit (up to 9)</p> <p>Remember to add in any values that have been carried over</p> <p>When we carry, it is carried to the bottom line of the sum.</p> <p>An example sum is laid out as shown on the left.</p>
<u>Long Multiplication</u>	
<p>53 x 14</p> $ \begin{array}{r} 53 \\ \times 14 \\ \hline 212 \\ + 530 \\ \hline 742 \end{array} $	<p>Introduce long multiplication multiplying a 2-digit number (up to 99) by a 2-digit number (up to 19)</p> <ol style="list-style-type: none"> 1. Multiply 3 x 4 (= 12) 2. Multiply 5 x 4 (= 20) and add carried 1 (20+1=21) 3. Fill in placeholder zero 4. Multiply 53 x 1 (=53) 5. Add two values (212 + 530 = 742)

$$75 \times 34$$

$$\begin{array}{r} 7_1 5 \\ \times 3_2 4 \\ \hline 300 \\ + 2250 \\ \hline 2550 \end{array}$$

1. 1 Multiply $5 \times 4 (=20)$
2. 2 Multiply $7 \times 4 (=28)$ and add carried 2 ($28 + 2 = 30$)
3. Fill in placeholder zero
4. Multiply $5 \times 3 (= 15)$
5. Multiply $7 \times 3 (= 21)$ and add carried 1 ($21 + 1 = 22$)
6. Add two values ($300 + 2250 = 2550$)

Multiplying Decimals By 10, 100 and 1000

Each digit moves the necessary number of places to the left because multiplying by 10, 100 or 1000 increases the number.

			3	.	0	2			
		3	0	.	2			←	$\times 10$
			3	.	0	2			
	3	0	2	.				←	$\times 100$
			3	.	0	2			
3	0	2	0	.				←	$\times 1000$

When multiplying decimal values by 10, each digit moves one place to the left. When multiplying decimal values by 100, each digit moves two places to the left. When multiplying decimal values by 1000, each digit moves three places to the left. The decimal point never moves.

Language of Multiplication used in Primary Six and Seven

Multiply
Multiplication
Product
Opposite of Division
Inverse of Division
BODMAS rule
Multiple of

Division

Approaches and strategies used for teaching division.

Bus Stop Division	
<div>189 ÷ 6 =</div> <div><div><div>031r3</div><div>6 189</div><div>no groups of 6 can be made</div><div>3 × 6 = 18</div><div>1 × 6 = 6</div><div>Remainder 3 left over</div></div></div>	<div>Division by a single initially within 999</div> <div>- without remainders</div> <div>- with remainders</div> <div>Extend division by a single digit to any value</div> <div>- without remainders</div> <div>- with remainders</div>
Division by Factors	
<div>1566 ÷ 27 =</div> <div><div><div>0522</div><div>3 1566</div></div><div><div>058</div><div>9 522</div></div></div>	<div>The factors of 27 are 3 and 9 (3 × 9 = 27)</div> <div>Divide 1566 by 3 (1566 ÷ 3 = 522)</div> <div>Divide the answer by the other factor, 9. (522 ÷ 9 = 58)</div>
Division by 10, 100 and 1000	
<div><div>3020 ÷ 10 = 302</div><div>3020 ÷ 100 = 30.2</div><div>3020 ÷ 1000 = 3.02</div></div> <div><div>Remember:</div><div><div>1. Keep the digits together. Don't let any 0's jump in!</div><div>34 ÷ 10 = 3.4</div></div><div><div>2. Round to check:</div><div>340 ÷ 100 = 3.4</div><div>use 300 ÷ 100 = 3</div></div><div><div>3. Use the inverse to check:</div><div>3.4 × 1000 = 3400</div></div></div> <div><div>When dividing a number by 10, 100 or 1,000 the value of each digit is divided sometimes giving a decimal answer.</div></div>	<div>When dividing values by</div> <div>a) 10 - each digit moves one place to the left.</div> <div>b) 100 - each digit moves two places to the left.</div> <div>c) 1000 - each digit moves three places to the left.</div> <div>The decimal point <u>never</u> moves.</div>

Language of Division used in Primary Six and Seven

Division
Divide
Share
Split
Equal sets
Equal sharing
Remainder
Divisible by
Opposite of multiplication
Inverse of multiplication
BODMAS rule
Quotient

