



Garfield Primary
Today's children, tomorrow's future.

Garfield School Calculation Policy

Ratified and agreed by governing body 18th March 2019

- Garfield School follows the Abacus Maths Scheme.
- For Reception and KS1 there is no expectation that children use any formal written methods.
- Informal mental maths methods, the use of apparatus and jottings suitable for these year groups are set out in the Abacus documents that are attached to this policy (***ABACUS KS1 calculation strategies, ABACUS Reception calculation strategies***).
- Formal written methods are introduced at year 3.
- The methods outlined for the earlier years in KS2 (years 3 and 4) are more concrete, i.e. they break down the calculations so that the children understand how they are manipulating the numbers to calculate the answer.
- The children move on to more formal calculations in years 5 and 6.
- The policy uses a combination of ABACUS methods and strategies taken from the Enfield Calculation policy.

Garfield Calculation Policy - Year 1

+ Addition

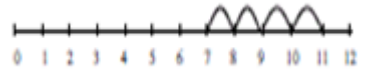
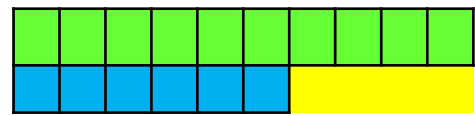
Adding 1s and 10s

Count in 1s
e.g. $45 + 1$
Count in 10s
e.g. $45 + 10$ without counting on in 1s

34	35	36
44	45	46
54	55	56



Simple Addition - Number bonds to 10/20 ($6 + ? = 10$)



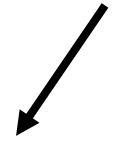
Recording number Sentences in books

- Subtraction

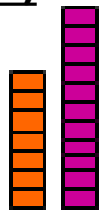
Subtracting 1s and 10s

Count back in 1s
e.g. $11 - 3$ as 11, 10, 9, 8
Count back in 10s
e.g. $53 - 20$ as 53, 43, 33

32	33	34
42	43	44
52	53	54



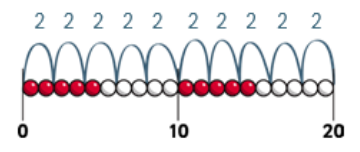
Simple Subtraction - Number bonds to 10/20 ($10 - ? = 6$ or $20 - 16 = ?$)



Recording number Sentences in books

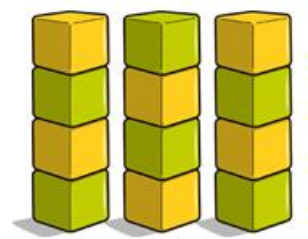
X Multiplication

Counting in 2s and 10s



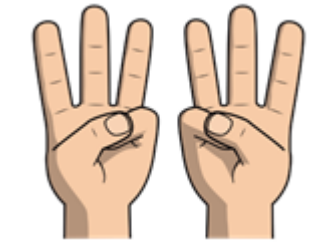
Grouping

e.g. three lots of four



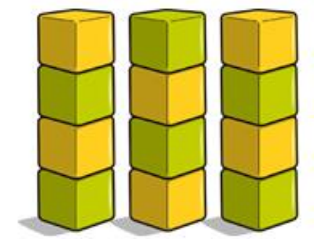
÷ Division

Doubling and halving to 10



Grouping

e.g. three lots of four



Sharing

e.g. find half of 16 cubes by giving one each repeatedly to two children

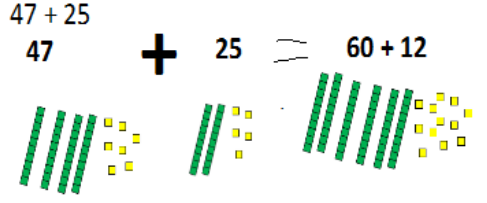
Garfield Calculation Policy - Year 2

+

Addition

Partitioning and Recombining

Partitioning in different way and recombine



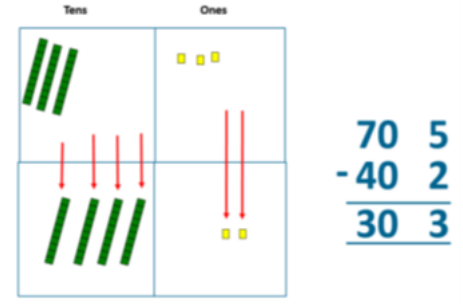
Partitioned (expanded) columnar addition

$$\begin{array}{r}
 \text{T} \quad + \quad \text{O} \quad = \\
 20 \quad + \quad 3 \quad = \\
 + 30 \quad + \quad 4 \quad = \\
 \hline
 50 \quad + \quad 7 \quad = 57
 \end{array}$$

Subtraction

Partitioning and Moving

-



$$\begin{array}{r}
 70 \quad 5 \\
 - 40 \quad 2 \\
 \hline
 30 \quad 3
 \end{array}$$

Partitioned (expanded) columnar subtraction

$$\begin{array}{r}
 \text{T} \quad + \quad \text{O} \quad = \\
 80 \quad + \quad 6 \quad = \\
 - 40 \quad + \quad 3 \quad = \\
 \hline
 40 \quad + \quad 3 \quad = 43
 \end{array}$$

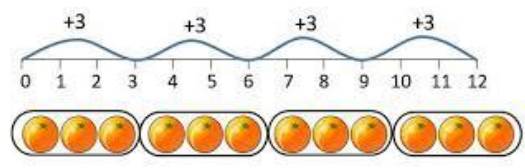
Multiplication

X

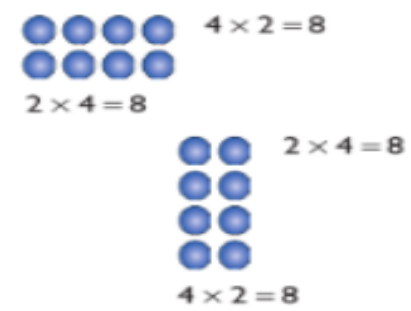
Repeated Addition

THE 'MULTIPLIED BY' MODEL

3×4 is the same as $3 + 3 + 3 + 3$



Arrays and Writing Simple Number Sentences

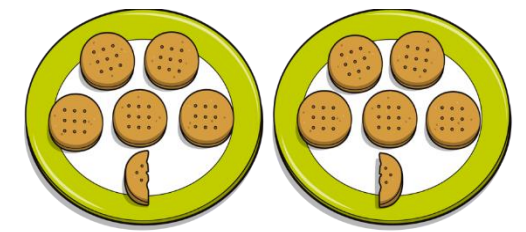


(Times Tables – 2,5,10)

Division

÷

Halving/Dividing



e.g. $1/2$ of $11 = 5 \frac{1}{2}$

Dividing by sharing

$$15 \div 3 = 5 \quad 5 \times 3 = 15$$



Garfield Calculation Policy - Year 3

+ Addition

Expanded columnar addition

600	70	4	
+	80	7	
<hr/>			
600	150	11	= 761



Compact columnar addition

TO	HTO
23	315
+ 42	+ 624
<hr/> 65	<hr/> 939

TO	HTO
47	237
+ 25	+ 516
<hr/> 72	<hr/> 753
1	1

- Subtraction

Counting up to subtract

$144 - 68 = 76$

$2 + 30 + 44 = 76$

X Multiplication

Grid Multiplication

162×5				
x	100	60	2	
5	500	300	10	= 810

(Times Tables – 2,3, 4, 5,8,10)

÷ Division

Dividing by sharing

$15 \div 3 = 5$ $5 \times 3 = 15$

Division by counting on

$28 \div 7 = 4$ $4 \times 7 = 28$

0	7	14	21	28
—	—	—	—	—
1	1	1	1	

$20 \div 6 = 3 \text{ r.} 2$ $3 \times 6 + 2 = 20$

0	6	12	18	20
—	—	—	—	—
1	1	1		R2

$84 \div 7 = 12$ $12 \times 7 = 84$

0	70	77	84
—	—	—	—
10	1	1	

$10 + 1 + 1 = 12$

Addition +

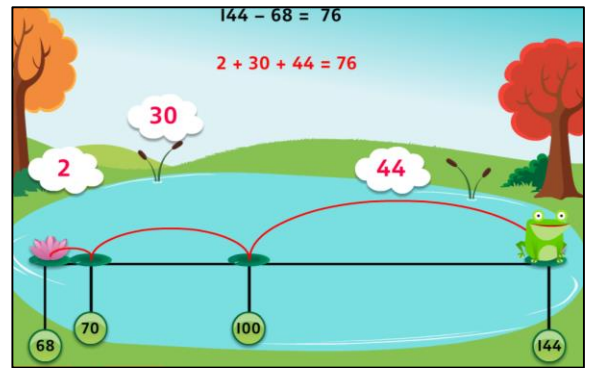
Compact column addition

$$\begin{array}{r} \text{HTO} \\ 371 \\ + 485 \\ \hline 856 \\ 1 \end{array}$$

$\begin{array}{r} \text{HTO} \\ 376 \\ + 485 \\ \hline 861 \\ 11 \end{array}$	$\begin{array}{r} \text{Th HTO} \\ 2388 \\ + 1124 \\ \hline 3512 \\ 11 \end{array}$
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Subtraction -

Counting up to subtract



Expanded columnar subtraction

$$753 - 26 = 727$$

$$\begin{array}{r} 40 \text{ } 13 \\ 700 \text{ } 50 \text{ } 3 \\ - 20 \text{ } 6 \\ \hline 700 \text{ } 20 \text{ } 7 = 727 \end{array}$$

Compact columnar subtraction

	100s	10s	1s
	6	12	
	7	2	6
-	2	4	3
	4	8	3

Multiplication

Ladder Method

$$\begin{array}{r} 423 \times 6 \\ \times \quad \quad 6 \\ \hline 2400 \\ 120 \\ 18 \\ \hline 2538 \end{array}$$

Grid

Multiplication

	20	6	
10	200	60	= 260
4	80	24	= 104
Total =			364

(Times Tables – Up to 12x12)

Division ÷

Division by counting on

$$28 \div 7 = 4 \quad 4 \times 7 = 28$$

$$0 \quad \underline{1} \quad 7 \quad \underline{1} \quad 14 \quad \underline{1} \quad 21 \quad \underline{1} \quad 28$$

$$20 \div 6 = 3 \text{ r.}2 \quad 3 \times 6 + 2 = 20$$

$$0 \quad \underline{1} \quad 6 \quad \underline{1} \quad 12 \quad \underline{1} \quad 18 \quad \underline{\text{R}2} \quad 20$$

$$84 \div 7 = 12 \quad 12 \times 7 = 84$$

$$0 \quad \underline{10} \quad 70 \quad \underline{1} \quad 77 \quad \underline{1} \quad 84$$

$$10 + 1 + 1 = 12$$

Short division (bus stop method)

$$252 \div 4 = \begin{array}{r} 063 \\ 4 \overline{) 252} \end{array}$$

How many 4s in 2? = 0 r.2
 How many 4s in 25? = 6 r.1
 Place the answer at the top and the remainder in front of the next number.
 How many 4s in 12? = 3
 Place the answer at the top.

Addition

Compact columnar addition **+**

$$\begin{array}{r} 3 \ 2 \ 8 \ 7 \ 9 \\ + 3 \ 5 \ 9 \ 8 \ 7 \\ \hline 6 \ 8 \ 8 \ 6 \ 6 \end{array}$$

Addition of money and decimals.

$$\begin{array}{r} \text{£} 23.59 \\ + \text{£} 7.55 \\ \hline \text{£} 31.14 \end{array}$$

$$\begin{array}{r} 19.01 \\ 3.65 \\ + 0.70 \\ \hline 23.36 \end{array}$$

Subtraction

Expanded columnar subtraction **-**

$$753 - 26 = 727$$

$$\begin{array}{r} 700 \ 50 \ 3 \\ - 20 \ 6 \\ \hline 700 \ 20 \ 7 = 727 \end{array}$$

Compact columnar subtraction

$$726 - 243 = 483$$

	100s	10s	1s
	6	12	
	7	2	6
-	2	4	3
	4	8	3

Multiplication

X

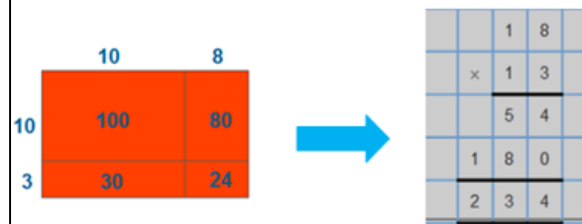
Short Multiplication

No carrying	Extra digit	Carrying	Zeros
$\begin{array}{r} \text{T O} \\ 32 \\ \times 3 \\ \hline 96 \end{array}$	$\begin{array}{r} \text{H T O} \\ 51 \\ \times 2 \\ \hline 102 \end{array}$	$\begin{array}{r} \text{H T O} \\ 38 \\ \times 7 \\ \hline 266 \end{array}$	$\begin{array}{r} \text{H T O} \\ 202 \\ \times 4 \\ \hline 808 \end{array}$

Long Multiplication

$$13 \times 18 = 234$$

Use Grid Method to introduce long multiplication.



(Times Tables – Up to 12x12 and related division facts)

Division

÷

Short division (bus stop method)

$$252 \div 4 =$$

$$\begin{array}{r} 63 \\ 4 \overline{) 252} \\ \underline{24} \\ 12 \\ \underline{12} \\ 0 \end{array}$$

How many 4s in 2? = 0 r.2
 How many 4s in 25? = 6 r.1
 Place the answer at the top and the remainder in front of the next number.
 How many 4s in 12? = 3
 Place the answer at the top.

$$\begin{array}{r} 178 \\ 4 \overline{) 712} \\ \underline{4} \\ 31 \\ \underline{28} \\ 32 \\ \underline{32} \\ 0 \end{array}$$

How many 4s in 7? = 1 r.3
 How many 4s in 31? = 7 r.3
 How many 4s in 32? = 8
 Place the answers at the top.

Garfield Calculation Policy - Year 6

Addition +

Compact columnar addition

$$\begin{array}{r} 23.361 \\ 9.080 \\ 59.770 \\ + 1.300 \\ \hline 93.511 \\ \small 2 \quad 1 \quad 2 \end{array}$$

$$\begin{array}{r} 81,059 \\ 3,668 \\ 15,301 \\ + 20,551 \\ \hline 120,579 \\ \small 1 \quad 1 \quad 1 \quad 1 \end{array}$$

Subtraction -

Compact columnar subtraction

1000s	100s	10s	1s
	12	13	
7	2	3	12
8	3	4	2
4	7	8	6
<hr/>			
3	5	5	6

Multiplication X

Short and long Multiplication

Continue to practise short multiplication.

Continue to practise long multiplication.

$$\begin{array}{r} 3652 \\ \times 8 \\ \hline 29216 \end{array}$$
$$\begin{array}{r} 1234 \\ \times 16 \\ \hline 7404 \\ 12340 \\ \hline 19744 \end{array}$$

Division ÷

Short division (bus stop method) Including decimals

$$4 \overline{) 712}$$

How many 4s in 7? = 1 r.3

How many 4s in 31? = 7 r.3

How many 4s in 32? = 8

Place the answers at the top.

Long division

$$13 \overline{) 338}$$
$$\begin{array}{r} 26 \\ \underline{26} \downarrow \\ 078 \end{array}$$

(Times Tables –
Up to 12x12 and
related division facts)