

# HOLGATE PRIMARY & NURSERY SCHOOL



**Primary and Nursery School**

A guide for parents on written  
calculations in mathematics

Year 3

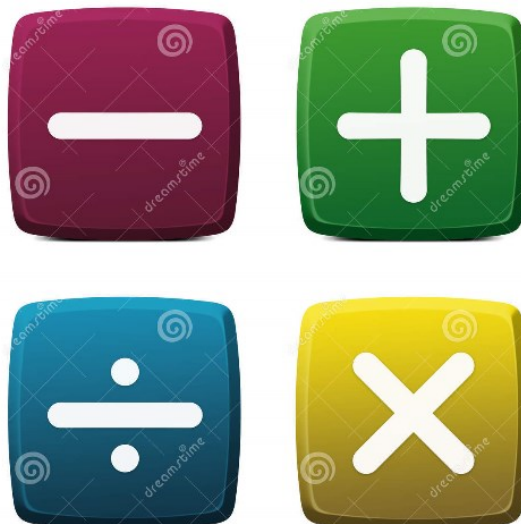
This booklet is designed to support parents understand the strategies/methods used in school when teaching children a formal written method to solve a problem. It shows the progression in calculation strategies for each of the four operations: addition, subtraction, multiplication and division. For each operation there are stages that children need to work through and build upon their basic skills.

This is an outline of our calculation policy — it does not cover everything but provides examples of the main stages for your information. A full version of the Calculation Policy is available on the our website.

For children to develop a good sense of number, it is important to lay firm foundations in mathematics and to build on these in a systematic way.

At Holgate Primary we have taken into account the way children develop in their learning and understanding, beginning with a firm grounding in mental calculations, and using these skills to develop effective written methods for calculations.

We have provided a copy of the multiplication facts at the back of this booklet. These should be learnt (up to  $12 \times 12$ ) by the end of year 4 and children need to become fluent and able to recall these quickly. In year 3 children should know their 4 and 8 times tables. Times tables are one of the basic skills needed to develop understanding of mathematics.



# Addition

## Step 1

Move towards partitioned column method.

$$23 + 43$$

$$20 + 3$$

$$\underline{40 + 3}$$

$$60 + 6 = 66$$

## Step 2

Column addition by partitioning.

$$135 + 143$$

$$\begin{array}{r} 135 \\ 143 \\ \hline 8 \text{ ( } 5 + 3 \text{)} \\ 70 \text{ ( } 30 + 40 \text{)} \\ 200 \text{ ( } 100 + 100 \text{)} \\ \hline 278 \end{array}$$

## Step 3

Column addition by partitioning with the brackets

$$135 + 143$$

$$\begin{array}{r} 135 \\ 143 \\ \hline 8 \\ 70 \\ 200 \\ \hline 278 \end{array}$$

## Year 3

count on  
number line  
sum  
tens  
units  
partition  
addition  
column  
tens  
boundary

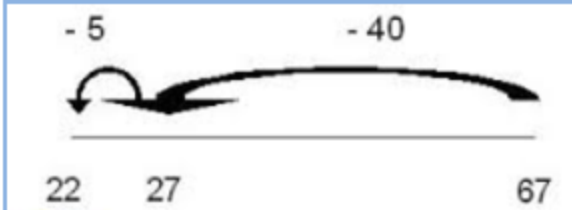
hundreds  
boundary  
increase  
vertical  
carry  
expanded  
compact  
inverse

# Subtraction

## Step 1

Using a number line to find the difference between numbers.

$$67 - 45 = 22$$



## Step 2

Expanded vertical method without exchanging.

$$\begin{array}{r} 89 - 35 = 54 \\ 80 + 9 \\ - \underline{30 + 5} \\ 50 + 4 \end{array}$$

## Step 3

Vertical method without exchanging.

$$\begin{array}{r} 89 - 35 = 54 \\ 89 \\ - \underline{35} \\ 54 \end{array}$$

## Step 4

Introduce exchanging through practical subtraction. Make the large number with Base 10, then subtract 47 from it.

$$72 - 47$$

Before subtracting 7 from 72 blocks, they will need to exchange a row of 10 for ten units. Then subtract 7 and subtract 4 tens.

## Step 5

Using the column partitioned method for exchanging.

$$327 - 136 = 191$$

$$\begin{array}{r} 200 \\ \cancel{300} + 20 + 7 \\ 100 + 30 + 6 \\ \hline 100 + 90 + 1 \end{array}$$

## Year 3

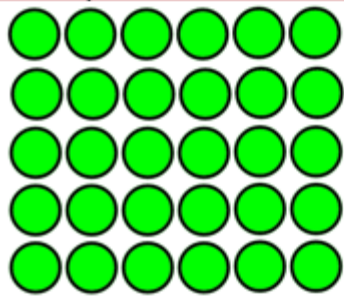
equal to  
take away  
less  
minus  
subtract  
distance  
between  
how many  
more

less than  
most  
least  
count back  
how many  
left  
how much  
less is  
difference  
count on  
strategy

# Multiplication

## Step 1

Use arrays to show the commutative law of multiplication.



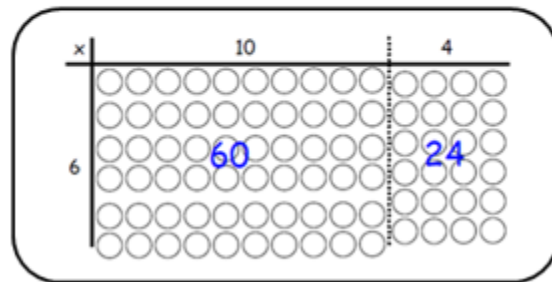
$$6 \times 5 = 30$$

$$5 \times 6 = 30$$

## Step 2

Introduce the grid method linking the layout to arrays (use as a visual only).

$$14 \times 6 = 84$$



## Step 3

Use the grid method.

$$24 \times 8 = 192$$

x	20	4
8	160	32

$$160 + 32 = 192$$

## Year 3

groups of  
lots of  
times  
array  
altogether  
multiply  
count  
multiplies by  
repeated  
addition  
partition

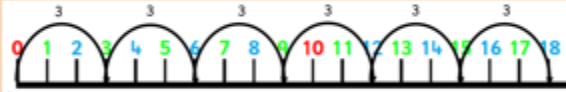
column  
row  
commutative  
sets of  
equal groups  
times  
grid method  
multiple  
product  
tens  
units

# Division

## Step 1

Chunking on a number line.

$$18 \div 3 = 6$$



## Step 2

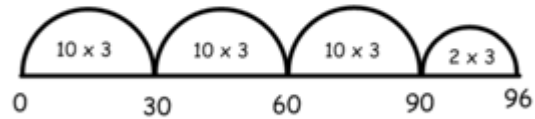
Chunking TU  $\div$  U with no remainders.

$$96 \div 3$$

$$2 \times 3 = 6$$

$$5 \times 3 = 15$$

$$10 \times 3 = 30$$



## Year 3

(See Y2)  
one each  
two each  
group  
groups of  
equal groups  
of  
lots of  
array  
divide  
divided by

divided into  
division  
grouping  
number line  
left  
left over  
inverse  
short division  
carry  
remainder  
multiple

## Multiplication Facts

2 times tables	5 times tables	10 times table
$1 \times 2 = 2$	$1 \times 5 = 5$	$1 \times 10 = 10$
$2 \times 2 = 4$	$2 \times 5 = 10$	$2 \times 10 = 20$
$3 \times 2 = 6$	$3 \times 5 = 15$	$3 \times 10 = 30$
$4 \times 2 = 8$	$4 \times 5 = 20$	$4 \times 10 = 40$
$5 \times 2 = 10$	$5 \times 5 = 25$	$5 \times 10 = 50$
$6 \times 2 = 12$	$6 \times 5 = 30$	$6 \times 10 = 60$
$7 \times 2 = 14$	$7 \times 5 = 35$	$7 \times 10 = 70$
$8 \times 2 = 16$	$8 \times 5 = 40$	$8 \times 10 = 80$
$9 \times 2 = 18$	$9 \times 5 = 45$	$9 \times 10 = 90$
$10 \times 2 = 20$	$10 \times 5 = 50$	$10 \times 10 = 100$
$11 \times 2 = 22$	$11 \times 5 = 55$	$11 \times 10 = 110$
$12 \times 2 = 24$	$12 \times 5 = 60$	$12 \times 10 = 120$
3 times tables	4 times tables	8 times tables
$1 \times 3 = 3$	$1 \times 4 = 4$	$1 \times 8 = 8$
$2 \times 3 = 6$	$2 \times 4 = 8$	$2 \times 8 = 16$
$3 \times 3 = 9$	$3 \times 4 = 12$	$3 \times 8 = 24$
$4 \times 3 = 12$	$4 \times 4 = 16$	$4 \times 8 = 32$
$5 \times 3 = 15$	$5 \times 4 = 20$	$5 \times 8 = 40$
$6 \times 3 = 18$	$6 \times 4 = 24$	$6 \times 8 = 48$
$7 \times 3 = 21$	$7 \times 4 = 28$	$7 \times 8 = 56$
$8 \times 3 = 24$	$8 \times 4 = 32$	$8 \times 8 = 64$
$9 \times 3 = 27$	$9 \times 4 = 36$	$9 \times 8 = 72$
$10 \times 3 = 30$	$10 \times 4 = 40$	$10 \times 8 = 80$
$11 \times 3 = 33$	$11 \times 4 = 44$	$11 \times 8 = 88$
$12 \times 3 = 36$	$12 \times 4 = 48$	$12 \times 8 = 96$

