# Rishton Methodist Primary School Calculation Policy 

2019-2020

## School Mission Statement

As a Methodist school, our values lie at the heart of all we are and do. Within our caring Christian community, where all are welcome, everyone is encouraged to be the best that they can possibly be. We promote respect, compassion and resilience to prepare our children for the challenges of an ever-changing world.

Rise up ........take courage and do it"
Ezra 10:4

This policy documents the mathematical concepts and procedures encountered throughout the school's approach to teaching maths, in line with Maths - No Problem! The methods and the approach are tailored to meet the expectations and objectives of the National Curriculum.



| Adding hundreds |
| :---: | :---: |
| to a three-digit |
| number. |
| $\mathbf{2 1 3}+400=613$ |
| Children use |
| Base 10 to add |
| tens - counting |
| on in tens to |
| support where |
| needed. |





## SUBTRACTION

## EARLY SUBTRACTION

Children have access to a range of 'concrete' resources to support the exploration of subtraction. Subtraction is presented to them in a variety of contexts, progressing from single digit subtraction to word problems that require subtraction from 20.

## 6-2 = 4

Children use objects to 'jump' along the number track, learning to begin with the (1) 3 4 5 ( $6 \times 910$ greatest number.

| $6-2=4$ <br> Children begin exploring the concept of subtraction by removing concrete resources or by crossing out pictorial representations. |  |
| :---: | :---: |
| $6-2=4$ <br> Children use 'unifix' and number lines to continue to support learning as they explore subtraction within 10, making links to, and reinforcing, number bonds. |  |
| $\begin{aligned} & 4-3=1 \\ & 7-5=2 \end{aligned}$ <br> Part/Part/Whole diagrams are used to represent what is left when subtracting, using number bonds. |  |
| $12-3=9$ <br> Chidlren progress to subtraction within 20, using ten-frames to help develop their <br> understanding of number bonds and introduces the |  |


| concept of tens |  |
| :---: | :--- |
| and ones. |  |
|  |  |
|  |  |

TENS \& ONES
Children build on their use of ten-frames to explore numbers using Base 10. These help embed an understanding of 'tens and ones' when looking at two-digit numbers. This exploration with Base 10 provides a concrete link to column subtraction.
Subtracting a one-digit number or a two digit number from a two-digit number
without the need for renaming.
$37-24=13$
Children use Base 10 to subtract the ones first, and then the tens.
Subtracting tens from a three-digit number without the need for renaming.
$658-40=$ 618
Children use Base 10 to subtract, counting
back in tens if
necessary.


## RENAMING

Continuing their exploration using Base 10, children encounter two-digit subtraction that requires 'regrouping' or 'renaming' one ten as ten ones. This is then linked to the column subtraction method.
Subtracting a one-digit number from a two-digit number by renaming.
$23-5=18$ $32-16=16$
Children use Base 10 to subtract the ones first, renaming a ten as ten ones, then subtracting from the teens number. Move on to subtracting a two-digit number from a two-digit number.

Step 1 Regroup 1 ten into 10 ones.




Step 1 Regroup 1 ten into 10 ones Subtract the ones. 12 ones -6 ones $=6$ ones.


Step 2 Subtract the tens. 2 tens -1 ten $=1$ ten

teens number.
Move on to
subtracting a
two-digit
number from a
number.



| Children <br> subtract the <br> ones first <br> and move <br> through the <br> places each <br> time, <br> renaming <br> where |  |  |  |  |
| :---: | :--- | :--- | :--- | :--- |
| necessary. |  |  |  |  |
| Subtracting <br> decimal <br> numbers using <br> the column <br> method. |  |  |  |  |


$2 \mathbf{x} 5=10$
Children explore
doubles beginning
with factors less
than lo


| Arrays |  |
| :---: | :--- |
| $\mathbf{6} \mathbf{x} \mathbf{7}=\mathbf{4 2}$ |  |
| $\mathbf{7} \mathbf{x} 6=\mathbf{4 2}$ |  |
| Children draw |  |
| dots to represent |  |
| amounts, |  |
| understanding the |  |
| commutative |  |
| properties of |  |
| arrays. |  |

## MULTIPLICATION

WRITTEN MULTIPLICATION
Children use range of strategies to record the exploration of multiplication.

## $8 \times 18=144$

Children use a grid that breaks down the amount into tens and ones to show how much this calculation represents.


## 1144 x $8=9152$

Children break down each stage of multiplication by a one-digit number as an expanded method of recording, to show each stage
of the place value of the calculation.

| $28 \times 26=728$ Children set out the multiplication of a two-digit number by a twodigit number as a grid method of recording, to show each stage of the place value of the calculation. |  |
| :---: | :---: |
| $123 \times 45=$ <br> Children identify the link between the number discs and the values in the shorter method - multiply the ones first, then the tens, then the hundreds, renaming where needed. |  |

## MULTIPLICATION <br> FORMAL MULTIPLICATION

Children use range of written strategies to record the exploration of multiplication.

| $8 \times 18=144$ <br> Children use a grid that breaks down the amount into tens and ones to show how much this calculation represents. |  |
| :---: | :---: |
| $1144 \times 8=9152$ <br> Children break down each stage of multiplication by a one-digit number as an expanded method of recording, to show each stage of the place value of the calculation. |  |
| $28 \times 26=728$ <br> Children set out the multiplication of a two-digit number by a twodigit number as a grid method of recording, to show each stage of the place value of the calculation. |  |
| $123 \times 45=$ <br> Children identify the link between the number discs and the values in <br> the shorter method - multiply the ones first, |  |


| then the tens, then the hundreds, renaming where needed. |  |
| :---: | :---: |
| $114 \times 24=2736$ <br> Children break down the lower value factor into tens and ones when in column multiply the ones first, then the tens, then the hundreds, renaming where needed. | $\begin{array}{r} 114 \\ \times \quad 20 \\ \hline 2280 \\ \hline \end{array} \begin{array}{r} 114 \\ \times \quad 456 \\ \hline 426 \end{array} \begin{array}{r} 114 \\ \times \quad 24 \\ \hline 2280 \\ \hline 2736 \end{array} 114 \times 4 \times 20$ |
| DIVISION |  |
| Children have acc resources to sup division. Division variety of contex digit division to halves using num | Y DIVISION <br> to a range of 'concrete' ort the exploration of is presented to them in a progressing from single ord problems that require rs that are 20 or less. |
| $8 \div 2=4$ <br> Children organise objects into equal groups. This example shows eight cans grouped into twos. | There are 8 cans. <br> There are 4 boxes of 2 cans. |


| $6 \div 3=2$ <br> Children organise objects by sharing them out equally. |  |
| :---: | :---: |
| $10 \div 2=5$ <br> Children explore halves beginning with numbers which are less than 20. |  |


| DIVISION |  |
| :---: | :---: |
| Children deve division to show | TTEN DIVISION <br> op methods of recording both specific answers and lated facts. |
| $\begin{aligned} & 12 \div 3=4 \\ & 12 \div 4=3 \end{aligned}$ <br> Children use dots to represent objects when showing working out in an array. | $\begin{aligned} & 12 \div 3 \\ & =4 \\ & 12 \div 4 \end{aligned}$ |


| $2528 \div 8=316$ <br> Children identify related facts which are related (e.g. $24 \div 8=3$ so $2400 \div 8=30$ ) to partition the number into chunks which are divisible by the divisor. |  |
| :---: | :---: |
| $376 \div 5=75$ <br> Children identify the link between the number discs and the values in the shorter method - find related facts to use to divide the larger number by using partitioning and remainders. |  |
| $7192 \div 31=232$ <br> Children identify chunks of numbers that they can subtract to find out how many of the divisor are in the dividend find related facts by using known facts to divide the larger number by using partitioning and remainders. |  |


| $1989 \div 15=132$ | 132 ra |
| :---: | :---: |
| $\stackrel{\text { r9 }}{\text { Children work out }}$ | $\begin{array}{r} 1 5 \longdiv { 1 9 8 9 } \\ 15 \downarrow \end{array}$ |
| how many of the divisor are in | $\frac{15}{4} \downarrow$ |
| divisor are in the first two | 45 |
| digits of the | 39 |
| dividend if taken | 30 |
| as a whole number subtract the answer and drop the next digit | $\underline{0}$ |
| down to make the divide by the divisor. Repeat |  |
| left which cannot be divided by the divisor is the remainder. |  |



