Rhodes Avenue Primary School Calculation Policy for addition Year 2

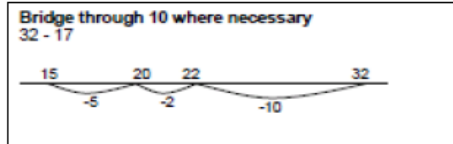|	
Mental Calculations	**Add numbers using concrete objects, pictorial representations, and mentally, including:** • a two-digit number and ones • a two-digit number and tens • two two-digit numbers • adding three one-digit numbers $17 + 2 = 19$ $12 + 4 = 16$ $57 + 2 = 59$ $32 + 34 = 66$
Written Calculations	• **Recall and use addition addition and subtraction facts to 20 facts fluently, and derive and use related facts up to 100** • **Demonstrate the commutative law of addition** $12 + 30 = \underline{30} + 12$ • Re-partition numbers eg. $\square + 25 = 25 + 41$ • Use a hundred square • *Check calculations using inverse and by adding numbers in different order* • Begin to *record addition in columns to support place value and prepare for formal written methods with larger numbers* $65 = 60 + 5$ $65 = 50 + 15$ $65 = 40 + 25$ $65 = 30 + 35$ $65 = 20 + 45$ $65 = 10 + 55$ $$\begin{array}{r} 30 + 4 \\ 20 + 5 \\ \hline 50 + 9 \end{array}$$
Representations to support mental and written calculations.	Use a range of concrete and pictorial representations, including: Which line has most money! How much more? 6 and how many more make 10? $6 + \square = 10$ $4+3$ $8+5$ $9-2$ $13-7$ 25 add 6 Bead strings e.g. $34 + 23 = 57$ Number lines Number tracks Real everyday objects
Fractions	Counting in fractions up to 10, starting from any numbers and using the 1/2 and 2/4 equivalence on the number line 1 ¼ 1 ½ 1 ¾ 2 2 ¼ 2 ½
Links from other strands	• Solve problems: • Using concrete objects, pictorial representations (numbers, quantities & measures) • Applying increasing knowledge of mental & written methods • Partition numbers in different ways • *Discuss and solve problems that emphasise the value of each digit in two-digit numbers* (They should) develop the concept of addition and subtraction and … use these operations flexibly. (*Number-addition and subtraction, Non-statutory guidance.*)

Rhodes Avenue Primary School Calculation Policy for subtraction Year 2

Mental Calculations

Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:

- **a two-digit number and ones**
- **a two-digit number and tens**
- **two two-digit numbers**
- **adding three one-digit numbers**
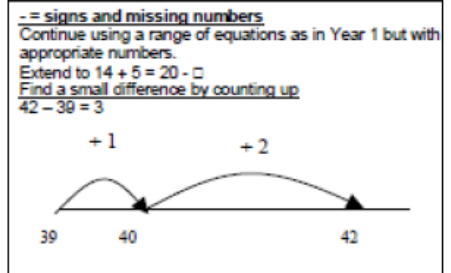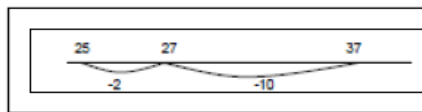
Jottings to support informal methods:

Bridge through 10 where necessary
32 - 17

15   20   22   32
    -5   -2   -10

$54 - 32 = 22$

Written Calculations

Written recording:

$37 - 12 = 37 - 10 - 2$
$= 27 - 2$
$= 25$

25   27   37
    -2   -10

- = signs and missing numbers
Continue using a range of equations as in Year 1 but with appropriate numbers.
Extend to 14 + 5 = 20 - □
Find a small difference by counting up
42 – 39 = 3

+ 1   + 2

39   40   42

Representations to support mental and written calculations.

Informal methods to support written subtraction calculations
Practical portioning of a 2-digit number

In Year 1 leads to:
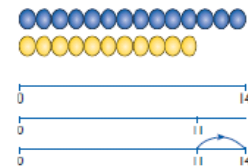
The difference between 11 and 14 is 3.
$14 - 11 = 3$
$11 + □ = 14$

Which line has **most** money?
How much **more**?

Bundles of straws or dienes to represent and partition 2 digit numbers.
Subtract (without decomposition) using partitioning and equipment, e.g.

To calculate 35-22, remove 22.   Then record: **35-22=13**.

Continue to use of a range of concrete and pictorial representations from Year 1—including Bar model to support understanding of **difference. (See below.)**

Fractions

Pupils should count in fractions up to 10, starting from any number and using the and equivalence on the number line (for example, 1 ¼, 1 ½, 1 ¾, 2.)

Use concrete and pictorial models of fractions to assist with counting e.g. paper cups, plates, shapes etc.

$1\frac{3}{4}$
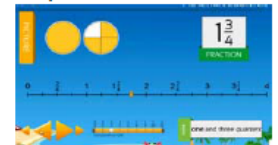
Links from other strands

Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100.
Pupils should partition numbers in different ways (for example, 23 = 20 + 3 and 23 = 10 + 13) to support subtraction.

55 + 45 = 100
45 + 55 = 100
35 + 65 = 100
100—55 = 45
100—45 = 55
100—35 = 65

Solve problems with addition and subtraction:

- using concrete objects and pictorial representations, including those involving numbers, quantities and measures
- **applying their increasing knowledge of mental and written methods**
- *Pupils extend their understanding of the language of addition and subtraction to include sum and difference.*

Mental Calculations

- **Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables,** *connecting the 2, 5 and 10 multiplication tables to each other*
- *Connect the 10 multiplication table to place value*
- **Recognise odd and even numbers**
- **show that multiplication of two numbers can be done in any order (commutative)**
- *Use a variety of language to describe multiplication and division*
- Apply doubling of numbers up to ten to doubling larger numbers

> I know that the multiples of 2/5/10 are always/never ….

Written Calculations

- **calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs**
- *Begin to use other multiplication tables and recall facts to perform written calculations*
- *Use a range of materials and contexts … including arrays and repeated addition*

$7 \times 2 = \square$
$7 \times \square = 14$
$\square \times 2 = 14$
$\triangle \times \square = 14$

Representations to support mental and written calculations.

Use a range of concrete and pictorial representations, including:

> I want five, four times

> What arrays can you make with 20 counters?

> I want four, five times

> 3 multiplied by 4

> What do you notice about the numbers covered up? Is there a pattern? What number is next?

$10 + 10 = 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2$
$5 + 5 + 5 + 5 = 4 + 4 + 4 + 4 + 4$

Fractions

- **write simple fractions for example, 1/2 of 6 = 3 and recognise the equivalence of 2/4 and 1/2**
- *Begin to relate multiplication and division models to fractions and measures*

Links from other strands

- **solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.**
- *Use commutativity and inverse relations to develop multiplicative reasoning (e.g. 4 x 5 = 20 and 20 ÷ 5 = 4)*
- **Statistics—interpret and consttruct simple pictograms, tally charts and block diagrams**
- Measurement— coiunting 5 minute intervals on a clock face
- Place value **count in steps of 2, 3 and 5 from 0 and inh tens from any number, forwards and backwards**

Rhodes Avenue Primary School Calculation Policy for division Year 2

The relationship between multiplication and division must be continually considered.

Mental Calculations

- **Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.**
- **Calculate mathematical statements for multiplication and division within**
- **the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs.**

"5, one time", "5, two times" and so on.

$5 \times 1 = 5$ $5 \times 3 = 15$
$5 \times 2 = 10$ $5 \times 4 = 20$

$10 - 2 = 5$

Written Calculations

- **Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot**
- **Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts. (See below.)**

8   2   4

½ of 26 = 13
26 ÷ 2 = 13

Pupils decode a problem first, represent it using manipulatives and jottings; and finally record it symbolically.

Representations to support mental and written calculations.

Use a range of concrete and pictorial representations, including:

- Arrays

  7 x 2 = 14   2 x 7 = 14
  14 ÷ 2 = 7   14 ÷ 7 = 2

  Is 14 an odd number? How do you know?

  Odd   even

- Number lines to support grouping

  10p 10p 10p 10p 10p
  10p + 10p + 10p + 10p + 10p = 50p
  10p × 5 = 50p
  5 hops of 10

  Grouping ITP

  15 ÷ 3 =

  "How many groups of 5 minutes have passed when the minute hand reaches twenty past?"

- Representations to support multiplicative reasoning:

  Using Dienes: *"If 40 ÷ 10 = 4 and 30 ÷ 10 = 3, what do you think 70 ÷ 10 would be? Why?"*

Fractions

Recognise, find, name and write fractions ⅓, ¼, ¾, 2/4 of a length, shape, set of objects or quantity
Write simple fractions for example, ½ of 6 = 3 and recognise the equivalence of ½ and 2/4.

Links from other strands

- **Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward.**
- **Recognise the place value of each digit in a two-digit number (tens, ones) (PLACE VALUE).**
- **Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times, (MEASURES).**