Suffield Park Infant and Nursery School Calculation Policy May 2021

This policy contains the key pencil and paper procedures that will be taught within our school. It has been written to ensure consistency and progression throughout the school and reflects a whole school agreement.

Although the focus of the policy is on pencil and paper procedures it is important to recognise that, the ability to calculate mentally lies at the heart of mathematics and is modelled throughout the school. We follow a concrete, pictorial, abstract method at Suffield Park. We believe practical activities are seen as essential to the development of the mathematical concepts needed for calculation. It is important to remember that:
- Mental calculation is not at the exclusion of written recording and should be seen as complementary to and not as separate from it.
- In every written method there is an element of mental processing.
- Sharing written methods with the teacher and other children encourages children to think about the mental strategies that underpin them and to develop new ideas.
- Written recording both helps children to clarify their thinking and supports and extends the development of more fluent and sophisticated mental strategies.

During their time at this school, children will be encouraged to see mathematics as both a written and spoken language. Teachers will support and guide children through the following important stages:
- developing the use of pictures and a mixture of words and symbols to represent numerical activities;
- using standard symbols and conventions;
- use of jottings to aid a mental strategy;
- use of pencil and paper procedures;

Children will always be encouraged to look at a calculation/problem and then decide which the best method to use is. Our aim is for children to be able to select an efficient method of their choice that is appropriate for a given task.
They will do this by always asking themselves…
- 'Can I do this in my head?'
- 'Can I do this in my head using drawings or jottings?'
- 'Do I need to use a pencil and paper procedure?'
- 'Can I explain what I have done to someone else?'

<u>Skills needed prior to formal calculations.</u>

Prior to a child being ready to attempt any calculation the following experiences need to be embedded:

<u>An awareness of pattern</u>
Children need to have an awareness of patterns and 'see' patterns, for example 2 or 3 colour, object repeating patterns.
Be able to talk about these patterns, complete patterns and tell others patterns to make.

<u>An awareness of number names.</u>
Children need to have an awareness of the number names and match the name to the visual number.

<u>An awareness of number order.</u>
Children need to be able to order numbers and recognise whether one number is larger or smaller than another number.

<u>Experience in child initiated time with numbers in role play</u>
e.g. Role play shopping with real and pretend money, sharing out play dough/cars/toys etc.
Number games and puzzles such as dominoes, jigsaws and snakes and ladders, putting socks into pairs and using timers/clocks in play and used to turn take.
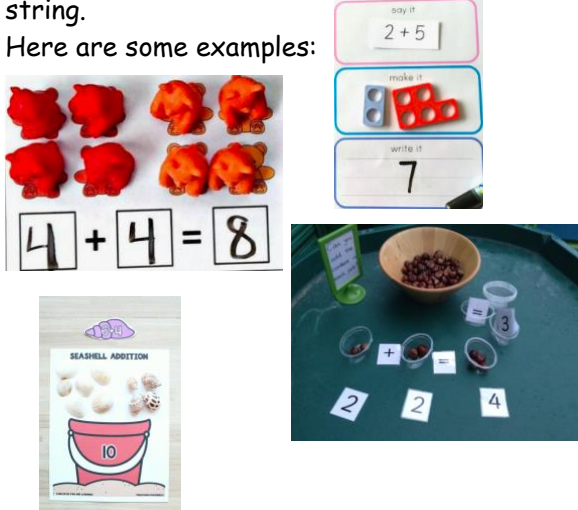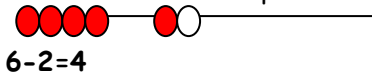

<u>Using vocabulary related to addition, subtraction, multiplication and division:</u>
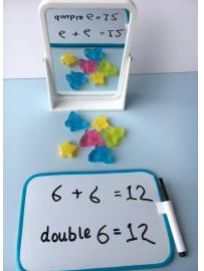Altogether, more than, add, addition, total, plus
Less, left, take away, minus, fewer
Lots of, groups of, sets
Share, groups of, pairs etc.

	Addition	Subtraction	Multiplication	Division
Rec	Children are encouraged to explore addition using practical resources e.g. counters, multilink, numicon counting bears, bead string. Here are some examples: Children are then encouraged to solve addition problems by counting items that cannot be moved. For example: Children may begin to use pictures to show addition e.g. drawing dots on a ladybird, drawing pictures to solve problems etc. Here are some examples: 	Children are encouraged to explore subtraction using practical resources. These could be counters, multilink, numicon counting bears, bead string etc. Here are some examples: **6-2=4** Children are encouraged to solve subtraction problems by counting items that cannot be moved. For example: Children may begin to use pictures to show subtraction. For example: 	Using practical resources children will count repeated groups of the same size. They will solve problems including doubling. For example They are encouraged to count items that cannot be moved. For example: Children may begin to use pictures to solve problems e.g. drawing dots on a ladybird. 	Children will use practical resources to solve problems, including halving and sharing. They will share objects into equal groups and count how many in each group. For example:

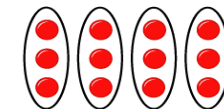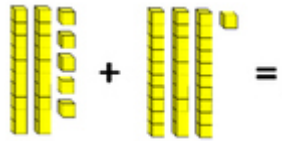| Y1	Children to use practical resources to explore addition. These could be counters, multink blocks, bead strings etc. Children are then encouraged to solve addition problems by counting items that cannot be moved. For example: Once they have a secure understanding of addition using practical resources and pictures, children are taught to draw a representation of the number. For example: 4 + 5 = 9	Children to use practical resources to explore subtraction. These could be counters, multink blocks, bead strings etc. Children are encouraged to solve subtraction problems by counting items that cannot be moved. For example: 4 – 1 = Once they have a secure understanding of subtraction using practical resources and pictures, children are taught to draw a representation of the number. For example: 7 – 5 = 2	Children will use practical items (counters, multilink blocks, counting elephants etc.). to create an array. E.g. 3 x 6 = 18 Children may begin to draw an array. 3 x 6 = 18 1 . . . . . . 2 . . . . . . 3	Children will understand equal groups and share items out in play and problem solving. For example grouping 12 cupcakes into 2's or sharing 12 cupcakes between 2. Children will be taught to draw a representation of 'grouping' to solve division. e.g. 12 ÷ 3 = 4 Children will be taught to draw a representation of 'sharing' to solve division. e.g. 12 ÷ 3 = 4
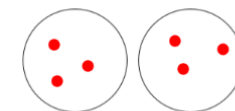
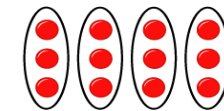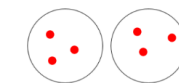| Y2				
Children will use practical items such as base ten to solve addition calculations. Children are taught to count the tens first and then the ones to find the answer. Children are taught to draw a representation of the tens and ones in a number. The children count the tens first and then the ones. $$21 + 34 = 55$$ ||. |||.... This process remains the same when crossing the tens boundary. $$27 + 14 = 41$$ ||........ |....	Children will use practical items such as base ten to solve subtraction calculations. Children are taught to count the tens first and then the ones to find the answer. When crossing the ten barrier (e.g. 50-27 =) children will exchange a ten stick for ten ones. Children are taught to draw a representation of the tens and ones in the first number. The children will then cross out the correct number of tens and ones. For example $$34 - 12 = 22$$ When crossing the ten boundary children will exchange one ten for ten ones. For example: $$51 - 19 = 32$$	Children will use practical items (counters, multilink blocks, counting elephants etc.). to create an array. E.g. $3 \times 6 = 18$ Children are taught to draw an array. $3 \times 6 = 18$ 1 . . . . . . 2 . . . . . . 3 . . . . . . Children will be encouraged to count in the pattern to 2, 5, 10 and 3 to solve multiplication calculations. For example to solve 3×10 the children will count in 10s three times. They may need to draw something to support this e.g. 1. 10 2. 10 3. 10	Children will understand equal groups and share items out in play and problem solving. For example grouping 12 cupcakes into 2's or sharing 12 cupcakes between 2. Children will be taught to draw a representation of 'grouping' to solve division. e.g. $12 \div 3 = 4$ Children will be taught to draw a representation of 'sharing' to solve division. e.g. $12 \div 3 = 4$ Children will be encouraged to count in the pattern of 2, 5, 10 and 3 to solve division calculations. For example so solve $6 \div 2$, the children will count in 2's until 6. They may need to draw something to support this e.g.