

Maths Mastery Policy



In 2016, Birkwood Primary School began transitioning towards a mastery approach to the teaching and learning of mathematics. The rationale behind this new approach lay within the National Curriculum (2014) which states:

"Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content"

At the centre mastery approach to the teaching of mathematics is the belief that all children have the potential to succeed. At Birkwood Primary school we promote these values and have embedded problem solving as the key driver of our mastery approach to ensure that our children's needs are met and extended at all levels. To support the effectiveness of our approach, we have also considered the development of:

- *Deep conceptual understanding*
- *Mathematical Vocabulary/ Communication*
- *Mathematical thinking*

We believe that by using this strategy, our children will deepen their conceptual understanding through tackling varied and challenging problems in classrooms that are rich in mathematical thinking and talk.

Calculation Policy

Our calculation policy outlines the different strategies used to meet the requirements of the National Curriculum (2014) and highlights the range of strategies used to promote mastery and greater depth. A consideration in our delivery is the use of Concrete and pictorial representations which allow children to demonstrate their understanding as opposed to the rote learning of methods.



Concrete



Pictorial

$$1 + 1 =$$

Abstract

Birkwood Primary

Inspire

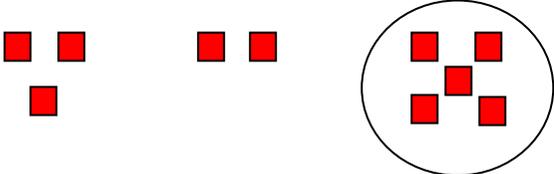
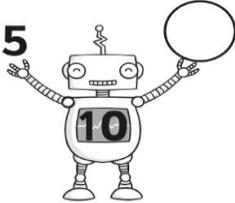
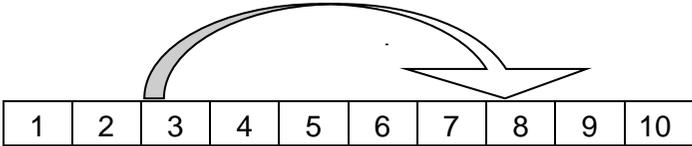
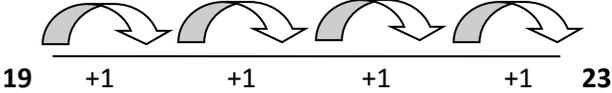


Together

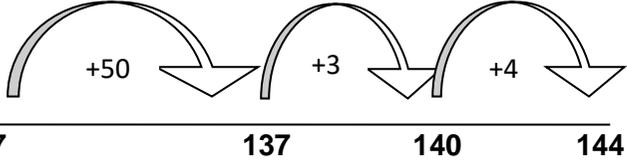
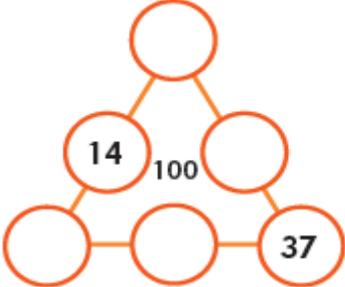
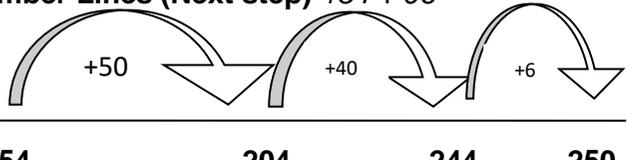
School

**Calculation Policy (Addition)
UPDATED DECEMBER 2016**

Birkwood Primary School
Calculation Policy (Addition)

| Stage | Key Vocabulary | How it looks in practice | Resources | Mastery Examples |
|-------|--|--|--|---|
| 1 | <ul style="list-style-type: none"> -Count on -One more -Add -How many altogether? -Total | <p>Pictorial representations (Up to 10):</p>  <p><i>Concrete apparatus models the addition of 3 objects with 2 objects by combining the sets.</i></p> | Counters, Small toys, Buttons, Cubes, Pegs, counters, Numicon, Fingers, Songs, whiteboards. | <p>Can you find the missing number?</p>  |
| 2 | <ul style="list-style-type: none"> -How many more? -Addition -Double -Near -One more -Two more -Ten more -Count up -Sum -Total | <p>Number tracks to add on:</p>  <p><i>What is 5 more than 3?</i> <i>Count on 5 from 3.</i></p> <p>Number lines: 19 + 4 (small steps)</p>  | Counters, Small toys, Buttons, Cubes, Pegs, counters, Numicon, Fingers, Number tracks, Songs, whiteboards. | <p> $2 + 3 + 4 = 9$ $3 + 4 + 5 = 12$ $5 + 6 + 7 = ?$ </p> <p>Could you continue the sequence? What calculation would come next? Can you see a pattern?</p> |

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|-------|---|--|--|--|--|--|--|--|--|--|
| 3 | <ul style="list-style-type: none"> -Ten more -One hundred more -Count up -Sum -Total -Plus -Place value -Estimate | <p>Partitioning</p> $86 + 57$ $80 + 50 = 130$ $6 + 7 = 13$ <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p style="text-align: center;"><i>Children can estimate their answers</i></p> $87 + 63$ $90 + 60 = 150$ </div> <p>One Hundred Grid (Count up the tens column on a 100 grid)</p> $50 + 30 =$ <p>Number Lines</p> $87 + 57$  <p style="text-align: center;">87 137 140 144</p> | Number lines, Number grids, Coins, Place value mats, Whiteboards, Coins. | <p>Could you complete the triangle so that all sides make 100?</p>  | | | | | | |
| 4 | <ul style="list-style-type: none"> -Increase -Total - + -Add -Hundreds -Tens -Units | <p>Partitioning</p> <p>Same as previous but with the introduction of a column method (prompting multiples of 10)</p> $\begin{array}{r} 134 \\ + 76 \\ \hline 10 \\ 100 \\ \hline 100 \\ 210 \end{array}$ <p>Number Lines (Next step) $154 + 96$</p>  <p style="text-align: center;">154 204 244 250</p> | Number lines, Number grids, Coins, Place value mats, Whiteboards, Cm squared maths books, Cm squared maths books. | <p>Using these digits, find as many answers as you can</p> <div style="text-align: center;"> <table border="1" style="border-collapse: collapse; width: 100px; height: 100px;"> <tr><td style="width: 50px; height: 50px;"></td><td style="width: 50px; height: 50px;"></td></tr> <tr><td style="width: 50px; height: 50px;"></td><td style="width: 50px; height: 50px;"></td></tr> </table> <hr style="width: 100%;"/> <table border="1" style="border-collapse: collapse; width: 100px; height: 100px;"> <tr><td style="width: 50px; height: 50px;"></td><td style="width: 50px; height: 50px;"></td></tr> </table> <p style="text-align: center; margin-top: 10px;">2 8 7 5</p> </div> | | | | | | |
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| 5 | -Increase -Total - + -Add -Hundreds -Tens -Units | Partitioning using column addition. (HTU) | | Number lines, Number grids, Coins, Place value mats, Whiteboards, Cm squared maths books. | Using the digits 1-9 (Once) to make 3 digit numbers, how close can you get to 1300? 987 + 312= 1299 Can you get closer? |
| | | Introduction: $\begin{array}{r} 115 \\ + 276 \\ \hline 11 \\ 80 \\ \hline 300 \\ 391 \end{array}$ | Moving to: $\begin{array}{r} 115 \\ + 276 \\ \hline 391 \\ 1 \end{array}$ | | |
| 6 | -Increase -Total - + -Add -Hundreds -Tens -Units -Ten more -One hundred more -One thousand more | Column addition (Thousands) | | Number lines, Number grids, Coins, Place value mats, Whiteboards, Cm squared maths books. | Could you find the missing number? 4658 + _ _ _ _ = 8907 3498 + _ _ _ _ = 9865 9674 + _ _ _ _ = 10969 |
| | | Introduction: $\begin{array}{r} 2115 \\ + 3276 \\ \hline 11 \\ 80 \\ \hline 300 \\ 5000 \\ \hline 5391 \end{array}$ | Moving to: $\begin{array}{r} 2115 \\ + 3276 \\ \hline 5391 \\ 1 \end{array}$ | | |

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Calculation Policy (Addition)

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|-------|---|---|---|--|
| 7 | -Increase -Total - + -Add -Ten more -One hundred more -One thousand more -Tenths Hundredths | <p>Partitioning using column addition:</p> $\begin{array}{r} 21.15 \\ + 32.76 \\ \hline \pounds 53.91 \\ 1 \end{array}$ <p><i>*Children will be prompted to estimate using rounding. This will allow them to check their answers to ensure they are realistic.</i></p> | Number lines, Number grids, Coins, Place value mats, Whiteboards. | <p>John buys a pair of shorts at £14.99, a shirt at 13.99 and some flip flops. He pays with two £20 notes and receives £3.26 change.</p> <p>How much were the flip flops?</p> |

