

Mornington Primary School

2017/2020

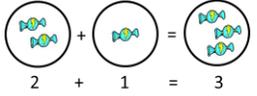
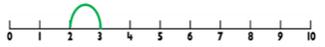
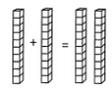
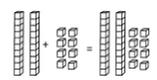
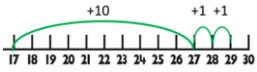
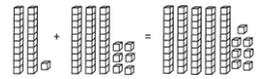


KS1 Calculation Policy

At Mornington we have recognised the specific need of many of our children is to have a clear and consistent method to solve problems relating to each of the four operations. Due to this we have, as a school, devised a calculation policy that clearly sets out the expectations of children in each of the year groups, the written method they should use to solve a given problem and the progression they should expect to encounter. In this document you will find guidance to the type of questions your child is likely to face, examples of how your child would be asked in school to solve the problem and therefore allow you to confidently support your child and the school when completing work at home and examples of the type of vocabulary your child will be experiencing.

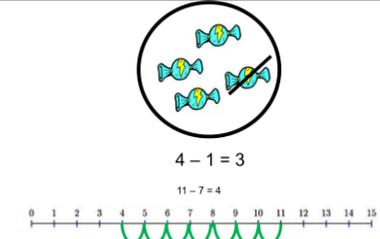
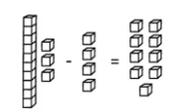
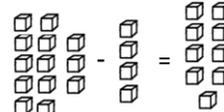
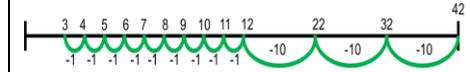
Addition

In addition pupils will learn how to count on, use Dienes blocks and a number line, partition numbers and use the column method.

	Reception	Year 1	Year 2
Process	<ul style="list-style-type: none"> Use practical methods to add small numbers together. Use of pictures to represent what they are doing. Supported by simple number lines. 	<ul style="list-style-type: none"> Use practical methods to add small numbers together. Use of Dienes blocks of 10 Progress onto number lines. Written calculations where the numbers are partitioned. Exchanging (ten ones for one ten) Add 1-digit and 2-digit numbers to 20, including 0. Solve missing number problems. 	<ul style="list-style-type: none"> Use of number lines and using Dienes blocks. Pictorial representation Begin to carry across the tens barrier 2+3 digit numbers without exchanging (ten ones for one ten) By Summer Term 2 use column addition Add 3, 1-digit numbers
Calc	2+1=3	16+12=28 19 + 7 = 26 6 + ? = 12	17+12=29 21+36= 57 3 + 7 +5 = 15
Examples	 <p style="text-align: center;">2 + 1 = 3</p> <p>2+1=3</p>  <p>When using a number line start on the biggest number and jump in ones however many are needed to add on.</p>	<p>16+12=28</p> <p>10+10=20</p>  <p>2+6=8</p>  <p>20+8=28</p> 	<p>17+12=29</p>  <p>21+36=57</p>  <p>T O 2 1 <u>+ 3 6</u> <u>5 7</u></p> <p>Line the digits up under the correct heading T (tens) O (ones). Add the ones together and write the number under the line. Repeat for tens (and hundreds - H where appropriate)</p>
Vocabulary	Add, more, and, make, sum, total, altogether, score, double, One more, two more, ten more... How many more make...? How many more is...than....? Is the same as.	+, Add, more, and, make, sum, total, altogether, score, double, near double, One more, two more, ten more... How many more make...? How many more is...than....? Is the same as. =, equals sign,	+, Add, addition, more, plus, make, sum, total, altogether, score, double, near double, One more, two more, ten more, one hundred more... How many more make...? How many more is...than....? How much more is...? Is the same as. =, equals sign Tens boundary

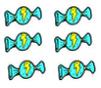
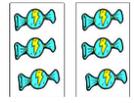
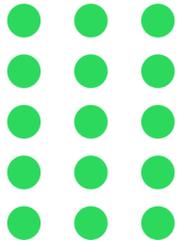
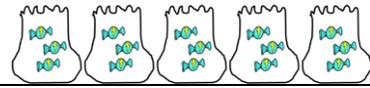
Subtraction

In subtraction pupils will learn to count back, use a number line, partition and use the column method.

	Reception	Year 1	Year 2
Process	<ul style="list-style-type: none"> All pictorial Counting back on a number line (underneath) Practically taking cubes away 	<ul style="list-style-type: none"> Use of number lines to count back Pictorially representing it Dienes blocks (exchanging eg one ten for ten ones) Subtract 1-digit and 2-digit numbers to 20, including 0. Solve missing number problems. 	As in year one but with appropriate numbers: <ul style="list-style-type: none"> Use of number lines to count back Pictorially representing it Dienes blocks (exchanging eg one ten for ten ones) By Summer Term 2 use of column subtraction
Calc	$4-1=3$ $11-7=4$	$13-4=$ or the difference between 4 and 13. See reception examples $18-6=12$ $7=?-9$	$37-12=25$ $42-39=3$ number line only (See year one examples)
Examples	 <p style="text-align: center;">$4-1=3$ $11-7=4$</p> <p>Using a number line to subtract, note the jumps are under the line so as to distinguish it from addition.</p> <p>Finding the difference between 7 and 11 (counting on from 7)</p>  <p>Counting on (so adding to get to the next number to find the difference), in this case the top of the number line is used.</p>	 <p>However they can't do this using a single block of 10 (because they need to break into the block of 10), so this is exchanged for 10 individual blocks:</p>  <p>$7=?-9$ can be solved by counting on 7 times from 9:</p> <p>9, 10, 11, 12, 13, 14, 15, 16</p>	Number lines on and back (with only key numbers) <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> $\begin{array}{r} 37 \\ -12 \\ \hline 25 \end{array}$ </div> <div> <p>This number (12) is taken away from the top, bigger number (37)</p> </div> </div> <p>Always start with the ones.</p> <p>$42-39=3$</p>  <p>Using a number line to count back in larger quantities than one and so only putting relevant numbers on the number line.</p>
Vocabulary	Take (away), leave, How many are left/left over? How many have gone? One less, two less...ten less... How many fewer is...than...? Difference between Same as...	-, subtract, take (away), leave, How many are left/left over? How many have gone? One less, two less...ten less... How many fewer is...than...? How much less is...than...? Difference between Half, halve Equals sign, equals, Is the same as...	-, subtract, subtraction, take (away), minus, leave, How many are left/left over? One less, two less...ten less...one hundred less... How many fewer is...than...? How much less is...than...? Difference between Half, halve Equals sign, equals, Is the same as... Tens boundaries

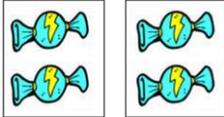
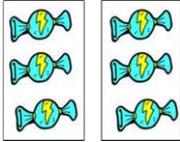
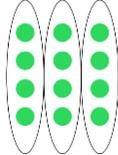
Multiplication

In multiplication pupils will learn to group and use arrays to multiply numbers.

	Reception	Year 1	Year 2
Process	<ul style="list-style-type: none"> Counting in 1's, 2's, 5's, 10's Grouping objects pictorially Repeated addition 	<ul style="list-style-type: none"> Counting in 1's, 2's, 5's, 10's Verbally talking about lots of.... Counting groups of objects Practically Drawing arrays (objects grouped in rows and columns) (Shouldn't use × sign) 	<ul style="list-style-type: none"> Drawing arrays (objects grouped in rows and columns) Pictorially grouping objects (by circling equal number of objects) Writing out the times tables to find the correct one (starting with x1, x2, x3, x4, x5, x10 etc) – using x and = signs. By Summer Term 2 use column multiplication
Calc	$2 \times 3 = 6$	$5 \times 3 = 15$	$7 \times 2 = 14$
Examples	<p>$2 \times 3 =$</p>  <p>The pictures can be grouped in this case 2 groups of 3.</p>  <p>to clearly show, in</p>	<p>$5 \times 3 =$</p>  <p>$3 \times 5 =$</p> 	<p>$7 \times 2 =$</p>  <p>$2 \times 7 =$</p> 
Vocabulary	<p>Count in ones, twos.....tens. How many times Double, Groups, lots of</p>	<p>Count in ones, twos.....tens. How many times Double, Groups, lots of</p>	<p>Lots of... Groups of... ×, times, multiply, multiply by, multiple of Once, twice, three times...ten times Times as (big, long, wide....etc) (Eg 3 times as big) Repeated addition, array Row, column Double</p>

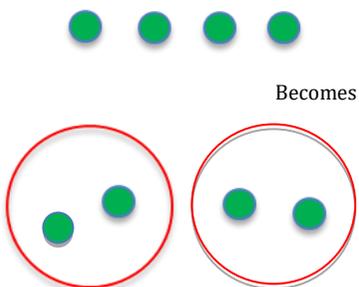
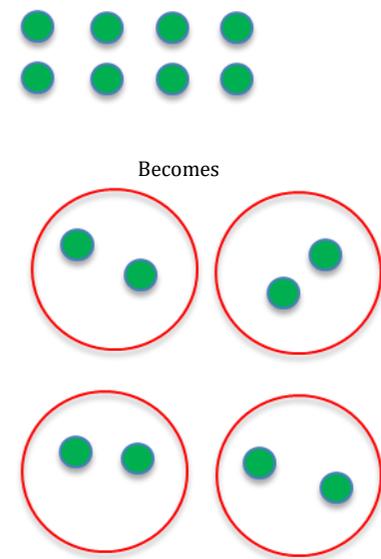
Division

In division pupils will learn to group and use arrays to divide numbers.

	Reception	Year 1	Year 2
Process	<ul style="list-style-type: none"> Practically separating each group Pictorially drawing groups Arrays 	<ul style="list-style-type: none"> Consolidate idea of sharing Practically share Introduce the sign of division Draw equal groups Arrays (objects grouped in rows and columns) 	<ul style="list-style-type: none"> Pictorially drawing groups Reinforce vocabulary and use of sign Understand division as sharing and grouping By Summer Term 2 use short division
Calc	4 shared between 2 $4 \div 2 = 2$	$6 \div 2 = 3$	$12 \div 3 = 4$
Examples	$4 \div 2 = 2$ 	$6 \div 2 = 3$ 	$12 \div 3 = 4$ 
Vocabulary	Sharing, share, share out, group, half, halve	Sharing, share, share out, group, half, halve	Halve, Share, share equally One each, two each, three each... Group in pairs, threes....tens Equal groups of... \div , divide, divided by, divided into Left, left over

Fractions and Percentages.

This is to develop and support a conceptual understanding of calculating with fractions and percentages.

	Reception	Year 1	Year 2
Processes	<ul style="list-style-type: none"> Use sharing between two, to show a half 	<ul style="list-style-type: none"> Recognise a quarter is one of four equal parts. (shared between 4) 	<ul style="list-style-type: none"> Recognise fractions of quantity for $1/3$, $1/4$, $2/4$ and $3/4$
Calc	4 shared between 2 = 2 per group	8 shared between 4 = 2	$1/3$ of 6 = 2 $1/4$ of 12 = 3 $2/4$ of 12 = 6 $3/4$ of 12 = 9
Examples	 <p style="text-align: center;">Becomes</p> <p>$1/2 = 2$</p>	 <p style="text-align: center;">Becomes</p> <p>$1/4 = 2$</p>	$6 \div 3 = 2$ Here the '3' has come from the denominator (bottom number of the fraction) and the '6' is the total number of objects you are finding a fraction of. $3/4$ of 12 When the numerator is more than 1 we need to add an extra step $12 \div 4 = 3$ (4 being the denominator) We now have $1/4$ of 12 so we multiply our answer by the numerator - 3 $3 \times 3 = 9$ $3/4$ of 12 = 9
Vocabulary	Half, quantity, shape, object, share, equal, parts	Half, equal parts, fraction, half, whole, quarter, object, shape, quantity.	Whole, parts of a whole, fractions, fair share, half, third, quarter, equivalent, partitioning, divide, multiply