# Grange Infant Primary School



Maths Calculation Policy

2024-2025

# Progression in Calculations from Year 1 to 2

Addition: sum, total, parts and wholes, plus, add, altogether, more, exchange, ‘is equal to’

‘is the same as’

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| Key skills and stem sentences | Concrete  (can we make it?) | Pictorial (can we draw it?) | Abstract  (can we write the calculation?) |
|  | | Year 1 Addition |  |
| Combining two parts to make a whole: part- part- whole model    \_\_\_\_\_\_\_\_\_\_\_\_ is a whole,  \_\_\_\_\_\_\_\_\_\_\_\_\_ is a part, \_\_\_\_\_\_\_\_\_\_\_\_ is a part.    There are \_\_\_\_\_\_ in total.    First… Then… Now…  e.g. | |  |  |  | | --- | --- | --- | |  | |  | | --- | | Use cubes or other resources to add two numbers    together as a group or in a bar. | | | |  | | --- | | Use pictures to add two numbers together as a group or in a bar. |            |  |  | | --- | --- | | 8 | 1 | | 4 + 3 = 7    10= 6 + 4    5    3             |  | | --- | | Use the part-part whole diagram as shown above to move into the abstract. | |

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| Starting at the bigger number and counting on  The bigger number is \_\_\_\_\_\_\_. To find the total, I need to start at the biggest number, then count **on**.    (delete words as chn become more  familiar)    First… Then…  Now…  E.g. **First** there were 4 children on the bus, **then** 3 children got on, **now** there are 7 children on the bus.  (This will help with the inverse relationship and missing numbers.) | Start with the larger number and then count on to the smaller number 1 by 1 to find the answer.      Ten frames will also support this skill | 12 + 5 = 17      Start at the larger number on the number line and count on in ones or in one jump to find the answer. | 5 + 12 = 17      Place the larger number in your head and count on the smaller number to find your answer.    \_\_\_\_ more than \_\_\_\_ is \_\_\_\_.  The sum of \_\_\_ and \_\_\_\_ is\_\_\_\_.  The total of \_\_\_ and \_\_\_\_ is \_\_\_\_\_. |
| Making 10.    I need \_\_\_\_ to make ten. I have | 6 + 5 = 11  Start with the bigger number and use the smaller number to make 10. | Use pictures.  Regroup or partition the smaller number to make 10. |  |

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| \_\_\_\_ left over. 10 + \_\_\_ is \_\_\_\_\_. |  | |  |  |  | | --- | --- | --- | | |  | | --- | | Draw the tens    frame and    counters | |  |     6 + 5 |  |
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| Bar Model |  |  | 6 + 2 = 8    2 + 6 = 8    6 + 4 = 10  4 + 6 = 10 |
| Year 2 Addition | | | |
| Adding three single digits  (delete words as chn become more  familiar)    \_\_\_\_ and \_\_\_\_ make ten. Ten add \_\_\_\_ is \_\_\_\_\_. | Make 10 with 2 of the digits (if possible) then add on the third digit, e.g. put 4 and 6 together to make 10. Add on 7. |  | Combine the two numbers that make/bridge 10 and then add on the remainder. |
|  |  | |  | | --- | | Add together three groups of objects. Draw a picture to recombine the groups to make  10. | | Look for ways to make 10 and use this knowledge to solve,  e.g. 9 + 3 + 4 = 10 + 2 + 4  = 16 |

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| Adding multiples of ten.    \_\_ tens and \_\_ tens total.    The sum of \_\_\_ tens and\_\_\_ tens is \_\_\_\_. | Model using dienes. | 3 tens + 5 tens = \_\_\_\_ tens    30 + 50 = \_\_\_\_\_\_\_\_\_\_\_\_\_    Use representations for base 10. |  |
| Using known facts.    Use addition facts of 10 to derive facts of 100.    If I know that  3 and 3 make 6. Then I know that 30 and 30 makes 60. |  | Children draw representations of tens and ones. | 3 + 4 = 7    leads to    30 + 40 = 70 |

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| Add a two digit number and ones  \_\_\_\_ can be partitioned into \_\_\_\_ tens and \_\_\_\_ ones.  \_\_\_ one and \_\_\_ ones makes \_\_\_\_ ones.  \_\_\_ tens. The total is\_\_\_\_. 41 can be partitioned into 4 tens and 1 one. 1 one and 8 ones is 9 ones. We have 4 tens. The total is 49. |  |  |  |
| Add a twodigit number and tens. | Explore how we are adding multiples of ten and the ones digit doesn’t change. | 27 + 30 = 57        5 7 |  |

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| Column method- no exchange  The\_\_\_ is in the ones column, it represents \_\_\_ one(s).  The \_\_\_ is in the tens column, it represents \_\_\_\_ ten(s) | | 24 + 15=  Use base 10 blocks to represent the numbers. Add the ones together and then add the tens. | | Draw the base 10 or counters to help them to solve additions. Lines for tens and dots for ones.    24 + 15 = | Add the ones first  4 + 5 = 9  Then add the tens 2 tens add 1 ten = 3 tens 20 + 10 = 30. |
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| Column method with exchanging  If the ones column sum is equal to ten or more, we must exchange. | |  | | Children can draw a pictoral representation of the base 10 or place value counters to further support their learning and understanding. |  |
| We need to exchange ten ones for one ten. | | | Make both numbers on a place value grid.  36+25      Add up the ones and exchange 10 ones for one 10.    Then count how many ones there are and record the answer under the ones column.    Count the tens nor forgetting the extra 10 which you exchanged the 10 ones for. |  |  |

Subtraction: take away, less than, the difference, subtract, minus, fewer, decrease, exchange

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| Key skills | Concrete | Pictorial | Abstract |
| Year 1 | | | |
| Taking away ones  First… Then…  Now…  e.g. **First** there were 4 children in the car, **then** 1 child got out, **Now** there are 3 children in the car. | Use physical objects, counters, cubes etc to show how objects can be taken away.      6    –    2  =  4 | Cross out drawn objects to show what has been taken away.      Children to draw the concrete resources they are using and cross out the correct amount. The bar model can also be used. |  |

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| Counting back  The whole is \_\_\_\_. The part we are taking away is \_\_\_\_\_\_.  Start on \_\_\_\_\_\_ and count back \_\_\_\_. | **Counting back** (using number lines or tracks)  6-2=  Children start at 6 and count back 2 | Count back on a number line or number track    13 – 4 =    Start at the bigger number and count back the smaller number showing the jumps on the number line. | Put 13 in your head, count back 4. What number are you at? Use your fingers to help. |

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| Finding the difference.    The difference is the amount between amounts. | **Finding the difference** (using cubes, Numicon or other objects can also be used).  Calculate the difference between 8 and  5. | Children to draw the cubes/other concrete objects which they have used or use the bar model to illustrate what they need to calculate. | Hannah has 12 sweets and her sister has 5. How many more does Hannah have than her sister? |
| Make 10  To reach the next 10 I need to takeaway \_\_\_\_. \_\_\_\_\_ can be partitioned into \_\_\_\_ and \_\_\_\_. \_\_\_\_\_ takeaway \_\_\_\_ is 10.  10 takeaway \_\_\_\_ is \_\_\_\_\_. | 14 – 5 =  Make 14 on the ten frame. Take away the four first to make 10 and then takeaway one more so you have taken away 5. You are left with the answer of 9. | To reach the next 10 I need to takeaway 3.  7 can be partitioned into 3 and 4.  13 takeaway 3 is ten.  10 takeaway 4 is 6. | 16 – 8=    How many do we take off to reach the next 10?    How many do we have left to take off? |

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| Represent and use number bonds and related subtraction facts within 20.    Part / Whole  Model    \_\_\_\_ is the whole, \_\_\_\_ is a part and \_\_\_\_\_ is a part. | If 10 is the whole and 6 is one of the parts, what’s the other part?    10-6 = 4 |  |  |
| Bar Model |  |  |  |

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| Year 2 Subtraction | | | |
| Column method without  exchanging    Partitioning to subtract without  regrouping    The bigger number is \_\_\_\_\_\_ so that goes at the top.  Take away the \_\_\_\_\_\_, then takeaway the \_\_\_\_\_\_. |  |  | written column subtraction. |
| Column subtraction with regrouping. | Base 10 |  | 33 – 15 = |

Multiplication double, times, multiplied by, the product of, groups of, lots of, equal groups, exchange

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| Key Skills | Concrete | Pictorial | Abstract |
| Year 1 | | | |
| Doubling  Doubling is an amount twice. | Use practical activities to show how to double a number.    4  + 4  =8      2 x 4 = 8 | Draw pictures to show how to double a number. | Double 4 is    4 + 4 =    2 x 4 = |
| Counting in multiples  We are counting in multiples of \_\_\_\_ so we count every \_\_\_\_. | Count in multiples supported by concrete objects in equal groups. | Use a number line or pictures to continue support in counting in multiples. |  |

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| Making equal groups and counting the total. |  | Draw    to show 2x3 = 6 |  |
| Understanding arrays |  | 5 + 5 + 5 + 5  4 + 4 + 4 + 4 + 4 |  |
| Year 2 | | | |
| Counting in  Multiples of 2, 3, 5 and  10 from 0. | Count the groups as children skip coutning. Children may use their fingers as they are skip counting.      3 + 3 + 3 | Children to use pictures to help counting in multiples. |  |

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| Repeated addition/ repeated grouping.  There are \_\_\_\_ in each group. There are \_\_\_\_ groups. We have to add\_\_\_\_ \_\_\_times |  | 3 x 4 = 12      7 x 2  2 + 2 + 2+ 2 + 2 + 2 + 2 | Write addition sentences to describe objects and pictures.  5 x 2 |
| Arrays- showing commutative multiplication  \_\_\_\_ lots of \_\_\_\_ is the same as \_\_\_\_ lots of \_\_\_\_. | Create arrays using counters/ cubes to show multiplication sentences. | Draw arrays in  different rotations to  find  **commutative**  multiplication  sentences. | Use an array to write multiplication sentences and reinforce repeated addition. |
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| \_\_\_\_ lots of \_\_\_\_ is the same as \_\_\_\_ lots of \_\_\_\_.  Using the inverse (to be taught alongside division)  \_\_\_\_ lots of \_\_\_\_ is \_\_\_\_ so \_\_\_\_ divided by \_\_\_\_ is \_\_\_\_. |  |  | Children to be able to use an array to write a range of calculations e.g.   * 10 = 2 × 5 * 5 × 2 = 10 * 2 + 2 + 2 + 2 + 2 = 10 * 10 = 5 + 5 |

Division share, group, divide, divided by, half, remainder

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| Key skills | Concrete | Pictorial | Abstract |
| Year 1 | | | |
| Sharing objects into groups  \_\_\_\_ shared equally between  \_\_\_\_ is \_\_\_\_\_ | I have 10 cubes, can you share them equally in 2 groups? | Children use pictures or shapes to share quantities.       |  | | --- | | 8 ÷ 2 = 4 | | Share 9 buns between three people.    9 ÷ 3 = 3 |

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| Division as grouping.  \_\_\_\_ shared equally into groups of \_\_\_\_. There are \_\_\_\_\_ groups. |  | There are 8 flowers. 2 flowers in each vase.  How many vases?    Represent:  10 biscuits. Five on each plate. How many plates? | Divide 10 into groups of 5. How many groups are there? |
| Year 2 | | | |
| Division as sharing.    \_\_\_\_ shared equally between \_\_\_\_ is \_\_\_\_\_ |  | Represent the **sharing** pictorially    10  = 5 | Children should also be encouraged to use their 2 times table facts. |
| Division as grouping  \_\_\_\_ split into \_\_\_ groups means there would be \_\_\_\_ in each group. | Divide quantities into equal groups. Use cubes,  counters, objects or place value counters to aid understanding.      12 divided into equal groups of  4 = 3 |  | 28 ÷ 7 = 4    Divide 28 into 7 groups. How many are in each group? |
| Division within  arrays | Link division to multiplication by creating an array and thinking about the number sentences that can be created.  Eg 15 ÷ 3 = 5 5 x 3 = 15  15 ÷ 5 = 3 3 x 5 = 15 | Draw an array and use lines to split the array into groups to make multiplication and division sentences. | Find the inverse of multiplication and division sentences by creating four linking number sentences.    7 x 4 = 28  4 x 7 = 28  28 ÷ 7 = 4  28 ÷ 4 = 7 |