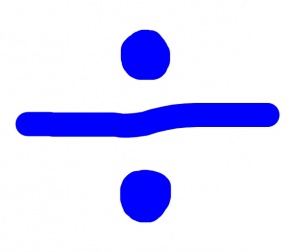


Langdon Primary School

Calculation Policy

2021-2022

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| **ADDITION GUIDELINES** | | |
| **Year One** | **Year Two** | **Year Three** |
| * **Know how to combine 2 sets of objects together by counting them** * **Know part-part-whole and use this when talking about ‘number sentences’ (first, next, then)** * **Use part-part-whole to solve empty box questions eg. 8+5=🞏** * **Know number bonds to 10 including 0** * **Use number tracks to support counting and addition** * **Be able to explain and apply** | * **Know number bonds to 20** * **Apply to addition calculations**   **16 + 4 =**  **37 + 3 =**   * **Move from number tracks to number lines** * **Add a single and a 2-digit number**   **6 + 23 =**  **23 + 6 =**   * **Add two 2-digit numbers**   **21 + 14 =**    **Then…**  **62 + 31 = 93**  **60 + 30** = 90  **2 + 1** = 3  **90 + 3 = 93**   * **Add multiples of ten to each other and to two-digit numbers:**   **40 + 50 =**  **54 + 20 =**   * **Be able to explain and apply** | * **Know number bonds to 100, including ones**   **34 + 66 = 100**   * **Add multiples of ten to reach hundreds and to cross the hundreds boundary**   **150 + 50 = 200**  **137 + 90 = 227**   * **Mentally be able to find the difference between the following:**   **HTU – U**  **HTU – T**  **HTU – H**   * **Use informal written method using partitioning:**   65 + 18 =  60 + 10 =70 5 + 8 =13  70 + 13 = 83   * **Add three digit numbers** * **Be able to explain and apply** |

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| **ADDITION GUIDELINES** | | |
| **Year Four** | **Year Five** | **Year Six** |
| * **Adapt informal written method from Year 3 to vertical expanded layout** * **Start with TU + TU then HTU + HTU**   **60 + 5**  **10 + 8**  **70 + 13 = 83**   * Use expanded layout to solve money and measures problems * **Be able to explain and apply** | * **Extend informal written methods to column addition of two integers up to 10,000** * **Use with decimal money, length, weight, capacity** * **Continue to stress mental and informal strategies of appropriate numbers** * **Introduce by the end of the year, formal column methods of addition, including bridging the columns by carrying a value forward:**   **5346**  **+ 1578**  **6924**  **1 1**   * **Be able to explain and apply** | * **Extend use of column addition to decimals and different contexts such as money, length, weight, capacity** * **Be able to explain and apply** |

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| **SUBTRACTION GUIDELINES** | | |
| **Year One** | **Year Two** | **Year Three** |
| * **Know number bonds to 10 including 0**   **7 – 3 = 4**   * **Use part-part-whole to solve empty box problems eg.**   **13 - 🞏 = 7**   * **One stop word problems eg.**   **Find the difference between…..**  **How much longer is the second stick?**  **How many must I add to make the 2 sticks the same?**   |  |  |  | | --- | --- | --- | |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | |  |  |  |  |  |  * **Be able to explain and apply** | * **Subtraction of multiples of ten**   **70 – 30 = 40**   * **Subtraction of multiples of ten from a two-digit number**   **34 – 20 =**   * **Link addition and subtraction facts, using the inverse operation to check**   **6 + 4 = 10**  **4 + 6 = 10**  **10 – 4 = 6**  **10 – 6 = 4**   * **Use mental strategies to find the difference between the following:**   **TU – U**  **TU – T**   * **Use manipulatives, numbertracks or numberlines to ‘find the difference’ between TU – TU:**   **31 – 26 =**  +1 +1 +1 +1 +1  **26 27 28 29 30 31**   * **Be able to explain and apply** | * **Know number bonds to 100 including ones**   **100 – 34 = 66**   * **Mentally be able to find the difference between the following:**   **HTU – U**  **HTU – T**  **HTU – H**   * **Informal written method using counting on**   **Find the difference between 338 and 63**  **+7 +30 +200 +38**  63 70 100 300 338  **200 + 30 + 30 + 8 + 7** = 275  or  **200 + 38 + 30 +7** = 275     * **Introduce column subtraction with no exchange across columns** * **Use the inverse operation to check** * **Be able to explain and apply** |

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| **SUBTRACTION GUIDELINES** | | |
| **Year Four** | **Year Five** | **Year Six** |
| * **Mentally be able to find the difference between the following:**   **ThHTU – U**  **ThHTU – T**  **ThHTU – H**   * **Extend informal written method using counting on – focus on increasing efficiency and problems involving money, measures and time** * **Be able to explain and apply** | * **Mentally be able to find the difference between the following:**   **¹⁰Th Th H T U – U**  **¹⁰Th Th H T U – T**  **¹⁰Th Th H T U – H**   * **Consolidate informal written method using counting on – focus on increasing efficiency and problems involving whole numbers, decimals, money, measures and time eg.**   **£30.00 - £12.39 = £17.61**  **+ 61p +£7 +£10**  £12.39 £13.00 £20.00 £30.00  **£10 + £7 + 61p** = **£17.61**  or  **£17 + 61p** = **£17.61**   * **By the end of the year, column subtraction with exchange across tens/units columns eg.**   H T U  7 1  9 8 2  -4 5 7  5 2 5   * **Be able to explain and apply** | * **Columnar subtraction with exchange across all columns using numbers to 10 000 000** * **Columnar subtraction with exchange across all columns including decimals** * **Be able to explain and apply** |

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| **DIVISION GUIDELINES** | | |
| **Year One** | **Year Two** | **Year Three** |
| * **Using grouping (of concrete apparatus and/or jottings) to solve question such as:**   **I have 8 wheels, how many bikes can I make?**  **Give everyone 2 sweets**  **Make groups of 3 for PE**  **Halving small even numbers**   * **Be able to explain and apply** | * **Grouping equally into 2s, 3s, 5s and 10s**   **15 ÷ 3 =**   * **Put quantities into groups**   **Stress that can be organised in any order**  **Put 15 into groups of 3:**  X X X **3**  X X X **6**  X X X **9 Link to array**  X X X **12**  X X X **15**  X X X X X  X X X X X  X X X X X  **3 6 9 12 15**   * **Halving as inverse as doubling** * **Be able to explain and apply** | * **Grouping equally into 2s, 3s, 4s, 5s, 6s, 8s and 10s** * **Informal written method using equal groups on a numberline:**   **Put 24 into groups of 6**  +6 +6 +6 +6  0 6 12 18 24   * **Introduce remainders**   **Put 27 into groups of 6**  **27 ÷ 6 = 4 r 3**  +6 +6 +6 +6 **xxx**  0 6 12 18 24 27   * **Focus on grouping rather than sharing** * **Halving even numbers as inverse of doubling** * **Division as the inverse of multiplication** * **Be able to explain and apply** |

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| **DIVISION GUIDELINES** | | |
| **Year Four** | **Year Five** | **Year Six** |
| * **Grouping equally into 2s, 3s, 4s,**   **5s, 6s, 7s, 8s, 9s and 10s**   * **Division facts for multiplication tables up to 12 x 12** * **Read questions as:**   **‘Put 136 into groups of 6’**   * **Extend informal written method as Yr 3 – increase efficiency by using multiples of 10 as first jump** * **TU ÷ U / HTU ÷ U**   **136 ÷ 6 = 22 r 4**  **10 x 6 10 x 6 2 x 6 \*\*\*\***  **0 60 120 132 136**   * **Be able to explain and apply** | * **Extend informal written method as Yr 4 – increase efficiency by using multiples of 10 and 100** * **Read questions as:**   **‘Put 740 into groups of 6.’**   * **TU ÷ U / HTU ÷ U / ThHTU ÷ U**   **740 ÷ 6 = 123 r 2**  **100 x 6 20 x 6 3 x 6 \*\***  **0 600 720 738 740**   * **Use whole numbers and decimals** * **Introduce compact short division**   **239 ÷ 8 =**  **2 9 r7**  **8 2 3 79**   * **Be able to explain and apply** | * **Continue to use number line and compact short division methods as in Yr 5** * **HTU ÷ TU/ ThHTU ÷ TU** * **Introduce long division**   **432 ÷ 15 =**  **28 r 12**  **15 432**  **-300 (20x15=300)**  **132**  **-120 (8x15=120)**  **12**   * **Use whole numbers and decimals, including interpreting remainders as decimals or fractions** * **Be able to explain and apply** |

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| **MULTIPLICATION GUIDELINES** | | |
| **Year One** | **Year Two** | **Year Three** |
| * **Count, use concrete apparatus, use jottings or unitise to solve questions such as:**   **How many wheels on 3 bikes?**  **Can you make a tower three times higher that this one?**   * **Count in 10s to 100** * **Count in 2s to 20** * **Double numbers to 5, then 10** * **Use coins to count in 2s, 5s and 10s** * **Be able to explain and apply** | * **Count on in steps of 2, 3, 5 and 10** * **Quick recall of multiplication facts for 2x, 5x and 10x tables and use this to work out division questions**   **How many groups of 2 in 20?**   * **Use a numbertrack, numberline or hundred square as support** * **Repeated addition**   **5 + 5 + 5 + 5 = 20**   * **Make arrays to show multiplication as equal groups**   **3 x 5 = 15 or 5 x 3 = 15**  **x x x x x x x x**  **x x x x x x x x**  **x x x x x x x x**  **x x x**  **x x x**   * **Use x and =** * **Doubling to 10 and beyond** * **Be able to explain and apply** | * **Count on in steps of 50 and 100** * **Quick recall of multiplication facts for 2x, 3x 4x, 5x, 6x, 8x and 10x tables** * **Single digit x1, x10, x100** * **Doubling all numbers to 20** * **Related facts eg. 7 x 5 = 5 x 7** * **Division facts**   **7 x 5 = 35**  **5 x 7 = 35**  **35 ÷** **7 = 5**  **35 ÷ 5 = 7**   * **Use grid method TU x U**   **14 x 8 = 112**   |  |  |  | | --- | --- | --- | | **X** | **10** | **4** | | **8** | **80** | **32** |   **80 + 32 = 112**   * **Be able to explain and apply** |

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| **MULTIPLICATION GUIDELINES** | | |
| **Year Four** | **Year Five** | **Year Six** |
| * **Quick recall of multiplication facts up to**   **12 x 12**   * **Continue to use grid method as numbers become more complex** * **HTU x U / ThHTU**   **147 x 4**   |  |  |  |  | | --- | --- | --- | --- | | **X** | **100** | **40** | **7** | | **4** | **400** | **160** | **28** |   **400 + 100 + 60 + 28 = 588**  **or**  **560 + 28 = 588**   * **Be able to explain and apply** | * **Use of grid method for all long multiplication questions** * **HTU x TU** * **ThHTU x TU** * **2dp x U eg. as in money**   **£3.86 x 7 =**   |  |  |  |  | | --- | --- | --- | --- | | **X** | **£3** | **80p** | **6p** | | **7** | **£21** | **560p**  **(£5.60)** | **42p** |   **£21 + £5 = £26**  **60p + 42p = £1.02**  **£26 + £1.02 = £27.02**   * **If decimals are not in context of money, multiply as whole numbers and use approximation to establish place value in answer :**   **5.07m x 8 calculate as**  **507 x 8 = 4056**   * **Be able to explain and apply** | * **Children continue to use the grid method as PREFERRED WRITTEN METHOD FOR MULTIPLICATION** * **Introduce short compact multiplication**   **625 x 6**  **625**  **x 6**  **3750**  **1 3**   * **Introduce long multiplication ONLY AT TEACHER DISCRETION FOR INDIVIDUAL CHILDREN**   **2 3 4**  **x 2 4**  **9 3 6**  **+ 4 6 8 0**  **5 6 1 6**   * **Be able to explain and apply** |

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| **FRACTIONS GUIDELINES** | | |
| **Year One** | **Year Two** | **Year Three** |
| * **Find half of an object/shape** * **Find half of a quantity**   **½ of 6 = 3**  **\* \***  **\* \***  **\* \***   * **Find quarter of an object/shape** * **Find quarter of a quantity** * **Find half of an object/shape** * **Find half of a quantity**   **¼ of 8 = 2**  **\* \* \* \***  **\* \* \* \*** | * **Find 1/2, 1/3, 1/4, 2/4, 3/4 of an object/shape** * **Find 1/2, 1/3, 1/4, 2/4, 3/4 of a length** * **Find 1/2, 1/3, 1/4, 2/4, 3/4 of a quantity**   **3 of 8 = 6**  **\* \* \* \***  **\* \* \* \***   * **Recognise 1/2, 1/3, 1/4, 2/4, 3/4 in numerical form and know for example that it means ‘one in every two’ or ‘one in every four’** * **Find equivalent fractions eg. 1/2 = 2/4** | * **Count up and down in 1/10s and 1/100s** * **Divide quantities into ten/a hundred equal parts** * **Use a bar model to find fractions of a set of objects/quantity**   **1/5 of 10 = 2**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **10** | | | | | | **2** | **2** | **2** | **2** | **2** | | **\* \*** | **\* \*** | **\* \*** | **\* \*** | **\* \*** |  * **Find equivalent fractions using a bar model**   **4/10 of 10 = 4**  **2/5 of 10 = 4**   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **10** | | | | | | | | | | | **1** | **1** | **1** | **1** | **1** | **1** | **1** | **1** | **1** | **1** | | **2** | | **2** | | **2** | | **2** | | **2** | | | **\* \*** | | **\* \*** | | **\* \*** | | **\* \*** | | **\* \*** | | |

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| **FRACTIONS GUIDELINES** | | |
| **Year Four** | **Year Five** | **Year Six** |
| * **Count up and down in 1/10s and 1/100s** * **Divide quantities into ten/a hundred equal parts** * **Use a bar model to find fractions of a set of objects/quantity**   **1/5 of 10 = 2**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **10** | | | | | | **2** | **2** | **2** | **2** | **2** | | **\* \*** | **\* \*** | **\* \*** | **\* \*** | **\* \*** |  * **Find equivalent fractions using a bar model**   **4/10 of 10 = 4**  **2/5 of 10 = 4**   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **10** | | | | | | | | | | | **1** | **1** | **1** | **1** | **1** | **1** | **1** | **1** | **1** | **1** | | **2** | | **2** | | **2** | | **2** | | **2** | | | **\* \*** | | **\* \*** | | **\* \*** | | **\* \*** | | **\* \*** | |  * **Add/subtract fractions with the same denominator** | * **Compare and order fractions with the same denominator** * **Recognise and use mixed numbers and improper fractions and convert them to use**   **2/5 + 4/5 = 6/5 = 1 1/5**   * **Add/subtract fractions with the same denominator** * **Multiply fractions and mixed numbers by a whole number** | * **Rounding to 3 decimal places** * **Comparing and ordering numbers to three decimal places** * **Compare and order fractions with same and mixed denominator** * **Add/subtract fractions with different denominators by converting to make them the same, using the concept of equivalent fractions** * **Multiply pairs of fractions** * **1/4 x 1/2 = 1/8** * **Divide fractions by whole numbers** * **1/3 ÷ 2 = 1/6** |