A blue oval with white outline on it

Description automatically generatedA blue oval with white outline on it

Description automatically generated

St Mary’s RC Primary School

Maths Progression of Mental Arithmetic

|  |  |  |  |
| --- | --- | --- | --- |
|  | Counting/Using number | Number recognition | Applying knowledge to mathematical problems |
| EYFS | 3-4   * Recites numbers past 5. * Develop fast recognition of up to 3 objects, without having to count them individually (‘subitising’). * Say one number for each item in order: 1,2,3,4,5. * Know that the last number reached when counting a small set of objects tells you how many there are in total (‘cardinal principle’). * Show ‘finger numbers’ up to 5.   Reception   * Count objects, actions and sounds. * Subitise. * Count beyond ten. | 3-4   * Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5.     Reception   * Link the number symbol (numeral) with its cardinal number value. | 3-4   * Experiment with their own symbols and marks as well as numerals. * Solve real world mathematical problems with numbers up to 5. * Compare quantities using language: ‘more than’, ‘fewer than’.   Reception     * Compare numbers. * Understand the ‘one more than/one less than’ relationship between consecutive numbers. * Explore the composition of numbers to 10. * Automatically recall number bonds for numbers 0–10. |
| Rapid recall | | Mental strategies | Mental calculations |
| Year 1 | * All pairs of numbers with a total to 10 e.g. 3+7 * Addition facts for all numbers to any number to 10. * Subtraction facts for all numbers to any number to 10. * Addition doubles of all numbers to at least 10+10 * Halving facts of even numbers to 20. * One and two more/ less than any number up to 100. * 10 more/less of multiples of 10 * 5 more/ less of multiples of 5 | * Count on or back in ones, twos, fives and tens * Reorder numbers in calculation * Begin to bridge through 10, and later 20, when adding a single-digit number * Use known number facts and place value to add pairs of single-digit numbers * Use known number facts and place value to subtract pairs of single-digit numbers * Add 9 to single-digit numbers by adding 10 then subtracting 1 * Subtract 9 by subtracting 10 then adding 1 * Identify near doubles using doubles already know * Use patterns of similar calculations | * Add a single digit to or from a single digit , without crossing 10 e.g. 4 + 5 * Subtract a single digit to or from a single digit , without crossing 10   e.g. 8-3   * Add or subtract a single digit to or from 10 * Add or subtract a single digit to or from a ‘teens’ number, without crossing 20 or 10 e.g. 13 + 5, 17 – 3 * Double of all numbers to 10 e.g. 8+8, double 6 |
| Year 2 | * Addition and subtraction facts for all numbers to at least 10 All pairs of numbers with a total of 20 e.g. 13 +7 * All pairs of multiples of 10 with a total of 100 e.g. 30+70 * Multiplication facts for the 2 and 10 times tables and corresponding division facts * Double of all numbers to ten and the corresponding halves * Multiplication facts up to 5x5 e.g. 4x3 * Know 10x, 2x, 5x tables * Count forwards and backwards in 3’s to 36 * Know inverse ÷ for 10, 2 and 5 | * Count on or back in tens or ones * find a small difference by counting up from the smaller to the larger number * reorder numbers in a calculation * add three small numbers by putting the largest number first and/or finding a pair totalling 10 * partition additions into tens and units then recombine bridge through 10 or 20 * use known number facts and place value to add or subtract pairs of numbers * partition into ‘5 and a bit’ when adding 6, 7, 8 or 9 * add or subtract 9, 19, 11 or 21 by rounding and compensating * identify near doubles * use patterns of similar calculations * use the relationship between addition/subtraction * use knowledge of number facts and place value to multiply or divide by 2, 5 or 10 * use doubles and halves and halving as the inverse of doubling | * add or subtract any single-digit to or from any two-digit number, without crossing the tens boundary, e.g. 62 + 4, 38 – 7 * add or subtract any single-digit to or from a multiple of 10, e.g. 60 + 5, 80 – 7 * add or subtract any ‘teens’ number to any two-digit number, without crossing the tens boundary, e.g. 23 + 14, 48 – 13 * Find what must be added to any two-digit multiple of 10 to make 100, e.g. 70 + ? = 100 * Add or subtract a multiple of 10 to or from any two-digit number, without crossing 100, e.g. 47 + 30, 82 – 50 * subtract any two-digit number from any two-digit number when the difference is less than 10, e.g. 78 – 71 or 52 – 48 * doubles of all numbers to at least 15, e.g. double 14 * double any multiple of 5 up to 50, e.g. double 35 * halve any multiple of 10 up to 100, e.g. halve 50 |
| Year 3 | * Addition and subtraction facts for each number to 20, e.g. 13 + 4 * sums and differences of multiples of 10, e.g. 70 + 20 or 80 – 30 * number pairs that total 100, e.g. 46 + 54 * multiplication facts for the 2, 3, 4, 5, 6 and 10 times tables and the corresponding division facts | * count on or back in tens or ones * find a small difference by counting up from the smaller to the larger number * reorder numbers in a calculation * add three or four small numbers by putting the largest number first and/or by finding pairs totalling 9, 10 or 11 * partition into tens and units then recombine * bridge through a multiple of 10, then adjust * use knowledge of number facts and place value to add or subtract pairs of numbers * partition into ‘5 and a bit’ when adding 6, 7, 8 or 9 * add or subtract mentally a ‘near multiple of 10’ to or from a two-digit number * identify near doubles * use patterns of similar calculations * say or write a subtraction statement corresponding to a given addition statement * to multiply a number by 10/100, shift its digits one/two places to the left * use knowledge of number facts and place value to multiply or divide by 2, 5 or 10, 100 * use doubling or halving * say or write a division statement corresponding to a given multiplication statement | * Find what must be added to any multiple of 100 to make 1000, e.g. 300 + ? = 1000 * add or subtract any pair of two-digit numbers, without crossing a tens boundary or 100, e.g. 33 + 45, 87 – 2 * add or subtract any single-digit to any two-digit number, including crossing the tens boundary, e.g. 67 + 5, 82 – 7 * Find what must be added to/subtracted from any two-digit number to make the next higher/lower multiple of 10. e.g. 64 + ? = 70, 56 - ? = 50 * subtract any three-digit number from any three-digit number when the difference is less than 10, e.g. 458 – 451, or 603 – 597 * Find what must be added to/subtracted from any three-digit number to make the next higher/lower multiple of 10, e.g. 647 +? = 650, 246 - ? = 240 * double any number to at least 20, e.g. double 18, and corresponding halves, e.g. halve 36; double 60, halve 120; double 35, halve 70; double 450, halve 900 * multiply single-digit numbers by 10 or 100, e.g. 6 x 100   divide any multiple of 10 by 10, e.g. 60 ÷ 10, and any multiple of 100 by 100, e.g. 700 ÷ 100 |
| Year 4 | * Multiplication facts of the 2,3,4,5, 6, 7, 8, 9, 10,11 and 12 times tables * Division facts corresponding to tables of 2,3,4,5, 6, 7, 8, 9, 10,11 and 12 * Number fractions (including decimals) * recognise and show, using diagrams, families of common equivalent fractions * count up and down in hundredths; recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10 * solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number * add and subtract fractions with the same denominator * recognise and write decimal equivalents of any number of tenths or hundreds * recognise and write decimal equivalents to  ,  , * find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths * round decimals with 1 decimal place to the nearest whole number * compare numbers with the same number of decimal places up to 2 decimal places * solve simple measure and money problems involving fractions and decimals to 2 decimal places | * count on or back in repeated steps of 1, 10 and 100 * count up through the next multiple of 10, 100 or 1000 * reorder numbers in a calculation * add 3 or 4 small numbers, finding pairs totalling 10 * add three two-digit multiples of 10 * partition into tens and units, adding the tens first * bridge through 100 * use knowledge of number facts and place value to add or subtract any pair of two-digit numbers * add or subtract 9, 19, 29, 11, 21 or 31 by rounding and compensating * add or subtract the nearest multiple of 10 then adjust * identify near doubles * continue to use the relationship between addition and subtraction * double any two-digit number by doubling tens first * use known number facts and place value to multiply or divide, including multiplying and dividing by 10 and then 100 * partition to carry out multiplication * use doubling or halving * use closely related facts to carry out multiplication and division * use the relationship between multiplication and division | * Find what must be added to any two-digit number to make 100, e.g. 37 + ? = 100 * add or subtract any pair of two-digit numbers, e.g. 38 + 85, 92 – 47 * find out what must be added to/subtracted from any two- or three-digit number to make the next higher/lower multiple of 100, e.g. 374 + ? = 400, 826 - ? = 800 * subtract any four-digit number from any four-digit number when the difference is small, e.g. 3641 – 3628, 6002 – 5991 * double any whole number from 1 to 50, e.g. double 36, and find all the corresponding halves, e.g. 96 ÷ 2 * double any multiple of 10 to 500, e.g. 380 x 2, and find all the corresponding halves, e.g. 760 ÷ 2, 130 ÷ 2 * double any multiple of 5 to 100, e.g. 65 x 2 * multiply any two-digit number by 10, e.g. 26 x 10 * divide a multiple of 100 by 10, e.g. 600 ÷ 10 * multiply any two-digit multiple of 10 by any single-digit number |
| Year 5 | * multiplication facts up to 12 x 12 and corresponding division facts Derive: * sums and differences of decimals, e.g. 6.5 * 2.7 doubles and halves of decimals, e.g. half of 5.6 | * count up through the next multiple of 10, 100 or 1000 * reorder numbers in a calculation * partition into hundreds, tens and units, adding the most significant digit first * use known number facts and place value to add or subtract pairs of three-digit multiples of 10 and two-digit numbers with one decimal place * add or subtract the nearest multiple of 10 or 100 then adjust * identify near doubles * add several numbers * develop further the relationship between addition and subtraction * use factors * partition to carry out multiplication * use doubling and halving * use closely related facts to carry out multiplication and division * use the relationship between multiplication and division * use knowledge of number facts and place value to multiply or divide | * Add or subtract any pair of three-digit multiples of 10, e.g. 570 + 250, 620 – 380 * Find what must be added to a decimal fraction with units and tenths to make the next higher whole number, e.g. 4.3 + ? = 5 * add or subtract any pair of decimal fractions each with units and tenths, or each with tenths and hundredths, e.g. 5.7 + 2.5, 0.63 – 0.48 * subtract a four-digit number just less than a multiple of 1000 from a four-digit number just more than a multiple of 1000, e.g. 5001-1997 * multiply any two- or three-digit number by 10 or 100, e.g. 79 x 100, 363 x 100 * divide a multiple of 100 by 10 or 100, e.g. 4000 ÷ 10, 3600 ÷ 100 * multiply any two-digit multiple of 10 y a single-digit, e.g. 60 x 7, 90 x 6 * double any whole number from 1 to 100, multiples of 10 to 1000, and find corresponding halves * find 50%, 25%, 10% of small whole numbers or quantities, e.g. 25% or £ * multiply any two-digit number by a single-digit, e.g. 34 x 6 |
| Year 6 | * multiplication and division facts involving decimals, e.g. 0.8 x 7 and 4.8 ÷ 6 * squares of numbers to 12 x 12 and the corresponding squares of multiples of 1 * cubed numbers to 12 x 12 x 12 | * consolidate all strategies from previous years * use knowledge of number facts and place value to add or subtract pairs of three-digit multiples of 10 and two-digit numbers with one decimal place * add or subtract the nearest multiple of 10, 100 or 1000, then adjust * continue to use the relationship between addition and subtraction * use factors * Order factions and find relationships between numbers * partition to carry out multiplication * use doubling and halving, including decimals * use closely related facts to carry out multiplication and division * use the relationship between multiplication and division to check answers * use knowledge of number facts and place value to multiply or divide, including scaling up e.g. 5 x 35 = 175, 50 x 34 = 1750 | * multiply or divide any whole number by 10 or 100, giving any remainder as a decimal, e.g. 47 ÷ 10 = 4.7, 1763 ÷ 100 = 17.63 * multiply and divide whole numbers and decimal numbers by 10, 100 and 1000 * find squares of multiples of 10 to 100 * find any multiple of 10% of a whole number or quantity, e.g. 70% of £20, 50% of 5kg, 20% of 2 metres |