

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
 |