St Thomas More Mental Calculation Policy

Early Years Foundation Stage (EYFS) Development Matters requirements:

- Count object, actions and sounds
- Subitise
- Link the number symbol (numeral) with its cardinal number value
- Count beyond 10
- 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 0-5 and some to 10

Counting

Count objects by matching one number name to each item

Play counting games

Sing counting songs

Subitising

Show small quantities in familiar patterns and random arrangements

Play games involving quickly revealing and hiding of objects

Put objects into five frames and ten frames

Prompt children to subitise first

Encourage children to show a number of fingers 'all at once' without counting

Link the number symbol with the cardinal number value

Display numerals in order alongside dot quantities or tens frame arrangements

Play matching games

Count beyond 10

Count verbally beyond 20

Provide number tracks and hundred squares so that children become familiar with number patterns, e.g. I know that 14 comes after 13 because 4 comes after 3

Compare numbers

Provide collections of objects to compare, include groups where the number of items is the same

Distribute items evenly

Use double and half facts

One more than/ one less than

Use staircase patterns, for example using Numicon or Numberblocks

Explore the composition of numbers to 10

Focus on composition and number bonds of 2, 3, 4 and 5 first before moving onto larger numbers

Model conceptual subitising, e.g. 'if there are three here and three here there must be 6!'

Play games which involve partitioning and recombining (number bonds)

Automatically recall number bonds for numbers 0-5 and some to 10

Have a focus on number bonds to 5 first, encouraging the chilkdren to visualise the numbers in their heads

Partition and recombine numbers in different ways, drawing on subitising patterns

Play hiding games with the number of objects in a box (number bonds)

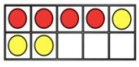
Please note: EYFS children will be encouraged to use mental calculation strategies alongside practical manipulatives and jottings (as shown on our calculation policy). Children may use the following resources:

Numicon

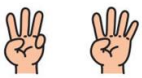
Bead strings/ Rekenreks

Multilink cubes

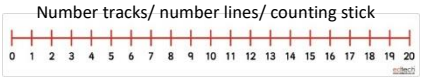
Tens frames - fill each row before starting the next



Fingers



Number tracks/ number lines/ counting stick



Loose parts for counting

Dice

Counting stick

Pegs

St Thomas More Mental Calculation Policy

Year 1 National Curriculum requirements:

- Add and subtract one digit and two digit numbers to 20 including zero
- Represent and use number bonds and related subtraction facts within 20
- Solve simple one step problems involving addition, subtraction, multiplication and division

Addition

Add two one digit numbers, e.g. 3 + 5 =
Add a teens number and a one digit number, e.g. 13 + 5 =
Add zero to a number, e.g. 15 + 0 =

Mental strategies to use

Count on in ones
Add by counting on from the larger number
Reorder numbers in a calculation
Look for known number bonds
Begin to bridge through ten when adding a one digit number
Partition and recombine
Use patterns of similar calculations (fact families)

Subtraction

Subtract a smaller number from a one digit number, e.g. 9 - 2 =
Subtract a one digit number from a teens number, e.g. 16 - 5 =
Subtract zero from a number, e.g. 3 - 0 =
Subtract ones from 10 or 20

Mental strategies to use

Count back in ones
Take away a smaller number by counting backwards
Find a small difference by counting on
Begin to bridge through ten when subtracting a one digit number
Use known number facts and place value to subtract one digit numbers
Use patterns of similar calculations (fact families)

YEAR 1

Multiplication

Count in equal groups of 2s, 5s and 10s
Count equal sets or groups
Double numbers up to 10

Mental strategies to use

Repeated addition
Counting in 2s, 5s and 10s
Doubling by repeated addition
Subitising
Use known number facts (fact families)

Division

Halve corrosponding doubles to 10

Mental strategies to use

Use known number facts (fact families)

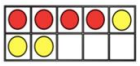
Please note: Year 1 will be encouraged to use mental calculation strategies alongside practical manipulatives and jottings (as shown on our calculation policy). Children may use the following resources:

Numicon

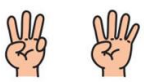
Bead strings/ Rekenreks

Multilink cubes

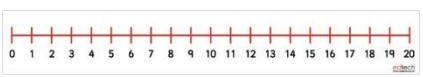
Tens frames - fill each row before starting the next



Fingers



Number tracks/ number lines/ counting stick



Loose parts for counting

St Thomas More Mental Calculation Policy

Year 2 National Curriculum requirements:

- Add and subtract 2 digit numbers and ones, two 2 digit numbers and 3 one digit numbers
- Recall and use addition and subtraction facts to 20 and derive and use related facts up to 100
- Recall and use multiplication and division facts for 2, 5 and 10 multiplication tables
- Solve problems involving multiplication and division

Addition

Add 3 one digit numbers, e.g. 6 + 4 + 2 =
Add a 2 digit number and ones, e.g. 43 + 5 =
Add a 2 digit number and tens, e.g. 23 + 10 =
Add two 2 digit numbers without bridging 10, e.g. 41 + 32 =
Add a tens number to another tens number, e.g. 50 + 30 =

Mental strategies to use

Count on in tens or ones
Add by counting on from the larger number
Reorder numbers in a calculation
Look for known number bonds or number facts
Partition into tens and ones, add and recombine
Add 9 by adding 10 and subtracting 1
Use patterns of similar calculations (fact families)

Subtraction

Subtract ones from a 2 digit number, e.g. 35 - 4 =
Subtract ten from a 2 digit number, e.g. 64 - 10 =
Subtract two 2 digit numbers without bridging through 10, e.g. 47 - 22 =
Subtract ones from a tens number, e.g. 30 - 4 =
Subtract a tens number from another tens number, e.g. 80 - 40 =

Mental strategies to use

Count back in tens or ones
Take away a smaller number by counting backwards
Find a small difference by counting on
Begin to bridge through ten when subtracting a one digit number
Use known number facts and place value to subtract one digit numbers
Partition into tens and ones, subtract and recombine
Use patterns of similar calculations (fact families)

YEAR 2

Multiplication

Multiplication facts for x2, x5 and x10
Doubles to 20, e.g. double 11

Mental strategies to use

Repeated addition
Counting in 2s, 5s and 10s
Doubling by repeated addition
Use known number facts (fact families)
Re-order a calculation knowing that it can be completed in any way (commutativity)

Division

Division facts for 2, 5 and 10 tables
Halves of corresponding doubles to 20, e.g. half of 12
Divide a 2 digit number by 2, 5 or 10, e.g. 50 ÷ 5 =

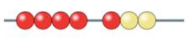
Mental strategies to use

Counting in 2s, 5s and 10s
Link to halving and sharing
Use known number facts (fact families)

Please note: Year 2 will be encouraged to use mental calculation strategies alongside practical manipulatives and jottings (as shown on our calculation policy). Children may use the following resources:

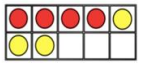
Numicon

Bead strings/ Rekenreks

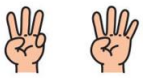


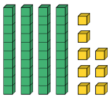
Multilink cubes

Tens frames - fill each row before starting the next



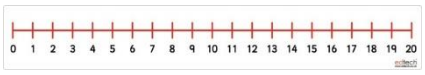
Fingers





Dienes

Number tracks/ number lines/ counting stick



Loose parts for counting

St Thomas More Mental Calculation Policy

Year 3 National Curriculum requirements:

- Add and subtract numbers mentally including a 3 digit number and ones, a 3 digit number and tens, a 3 digit number and hundreds
- Recall and use multiplication and division facts for 3, 4 and 8 multiplication tables
- Write and calculate simple multiplication and division calculations using times tables that they know

YEAR 3

Addition

Add a 3 digit number and ones, e.g. 231 + 6 =
Add a 3 digit number and tens, e.g. 248 + 30 =
Add a 3 digit number and hundreds, e.g. 381 + 200 =
Add two 2 digit numbers (initially without bridging 10), e.g. 72 + 21 =
Add 3 numbers below 20, e.g. 13 + 8 + 5 =

Mental strategies to use

Count on in hundreds, tens or ones
Add by counting on from the larger number
Reorder numbers in a calculation
Look for known number bonds or number facts and apply them
Partition into hundreds, tens and ones, add and recombine
Add 9, 19, 29 ect by adding the nearest multiple of 10 and subtracting 1
Use patterns of similar calculations or knowledge of the relationship between addition and subtraction

Subtraction

Subtract ones from a 3 digit number, e.g. 237 - 6 =
Subtract tens from a 3 digit number, e.g. 375 - 20 =
Subtract hundreds from a 3 digit number, e.g. 456 - 300 =
Subtract ones from a a 3 digit tens number, e.g. 280 - 3 =
Subtract a 2 digit number from a 3 digit number, e.g. 143 - 31 =

Mental strategies to use

Count back in hundreds, tens or ones
Take away a smaller number by counting backwards
Find a small difference by counting on
Use known number facts and place value to subtract numbers
Partition into hundreds, tens and ones, subtract and recombine
Subtract 9, 19, 29 ect by subtracting the nearest multiple of 10 and adding 1
Use patterns of similar calculations or knoweldge of the relationship between addition and subtraction

Multiplication

Recall multiplication facts for x3, x4 and x8
Multiply a 1 digit number by a multiple of 10, e.g. 2 x 20 =
Recall doubles to 50
Multiply three 1 digit numbers together, e.g. 8 x 3 x 2 =
Multiply a 2 digit number by a 1 digit number, e.g. 14 x 3 =

Mental strategies to use

Counting in equal steps
Using repeated addition
Use known facts to multiply numbers and understand the relationship between multiplication and division
Use doubles to link the 2x, 4x and 8x tables
Reorder a calculation using commutativity
Use the rule of associativity

Division

Recall division facts for x3, x4 and x8
Divide a tens number by a 1 digit number, e.g. 60 ÷ 3 =
Recall halves of doubles to 50
Divide a 2 digit number by 2, 3, 4, 5, 8 or 10, e.g. 96 ÷ 3 =

Mental strategies to use

Counting in equal steps
Use known facts to divide numbers and understand the relationship between multiplication and division
Use halving to link the 2x, 4x and 8x tables
Partition in different ways to divide
Use the rule of associativity

Please note: Children may use jottings whilst calculating mentally to record their working out.

St Thomas More Mental Calculation Policy

Year 4 National Curriculum requirements:

- Add and subtract mentally with increasingly large numbers
- Recall and use multiplication and division facts up to 12x tables
- Multiply and divide mentally including multiplying 0 and 1, dividing by 1 and multiplying 3 numbers together
- Recognise and use factor pairs and commutativity in mental calculations

Addition

Add a 4 digit number and ones, e.g. 4231 + 5 =

Add a 4 digit number and tens, e.g. 6534 + 30 =

Add a 4 digit number and hundreds, e.g. 3614 + 300 =

Add a 4 digit number and thousands, e.g. 1367 + 4000 =

Add a 2 digit number to a 3 digit tens number, e.g. 430 + 54 =

Add two 3 digit multiple of 10 numbers, e.g. 430 + 260 =

Find missing number bonds to 1000, e.g. 370 + ___ = 1000

Add three 2 digit numbers, e.g. 61 + 32 + 14 =

Mental strategies to use

Count on in steps of 1, 10, 100 or 1000

Add by counting on from the larger number, reordering numbers in a calculation if needed

Look for known number bonds or number facts and apply them

Partition the number, add each part and recombine

Add the nearest multiple of 10 or 100 and then adjust

Use patterns of similar calculations or knowledge of the relationship between addition and subtraction

Subtraction

Subtract ones from a 4 digit number, e.g. 4319 - 6 =

Subtract tens from a 4 digit number, e.g. 1375 - 40 =

Subtract hundreds from a 4 digit number, e.g. 5629 - 500 =

Subtract thousands from a 4 digit number, e.g. 6173 - 4000 =

Subtract a 3 digit multiple of 10 from a 3 digit number, e.g. 742 - 210 =

Subtract a 3 digit multiple of 10 from a 4 digit number, e.g. 3000 - 230 =

Mental strategies to use

Count back in steps of 1, 10, 100 or 1000

Take away a smaller number by counting backwards

Find the difference by counting on in steps of 1, 10 or 100

Use known number facts and place value to subtract numbers

Partition the number, subtract each part and recombine

Subtract the nearest multiple of 10 or 100 and then adjust

Use patterns of similar calculations or knoweldge of the relationship between addition and subtraction

YEAR 4

Multiplication

Multiply numbers up to 12 x 12

Multiply 3 one digit numbers, e.g. 5 x 4 x 8 =

Multiply by 1 and 0

Multiply a number up to 12 by a multiple of 10, e.g. 8 x 50 =

Multiply a number up to 12 by a multiple of 100, e.g. 7 x 300 =

Double 2 digit numbers, e.g. double 24

Multiply a two digit number less than 20 by a 1 digit number, e.g. 15 x 4 =

Mental strategies to use

Counting in equal steps

Using repeated addition

Use known facts to multiply numbers and understand the relationship between multiplication and division

Reorder a calculation using commutativity

Use the rule of associativity

Use the distributive law and partitioning to multiply

Division

Recall division facts up to 12 x 12

Divide by 1

Divide a multiple of 10 by a linked division fact, e.g. 210 ÷ 3 =

Divide a multiple of 100 by a linked division fact, e.g. 3600 ÷ 4 =

Divide a 2 or 3 digit number to give an answer less than 20, e.g. 396 ÷ 3 =

Mental strategies to use

Counting in equal steps

Use known facts to divide numbers and understand the relationship between multiplication and division

Use factor pairs to divide

Use the distributive law and partitioning to divide

Use the rule of associativity

Please note: Children may use jottings whilst calculating mentally to record their working out.

St Thomas More Mental Calculation Policy

Year 5 National Curriculum requirements:

- Add and subtract mentally with increasingly large numbers and numbers to 1 decimal place (tenths)
- Multiply and divide numbers mentally drawing upon known facts
- Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes
- Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000

Addition

Add tenths to a 1 digit whole number and tenths, e.g. 5.4 + 0.3 =
Add two 1 digit whole numbers and tenths, e.g. 8.1 + 1.4 =
Add a 4 digit multiple of 100 to a 5 digit number, e.g. 32634 + 2100 =
Add two 3 digit multiples of 10, e.g. 350 + 230 =
Add two numbers with tenths and hundredths, e.g. 0.57 + 0.32 =

Mental strategies to use

Count on in steps of 0.1, 1, 10, 100 or 1000

Add by counting on from the larger number, reordering numbers in a calculation if needed

Look for known number bonds or number facts and apply them

Partition the number, add each part and recombine

Add the nearest multiple of 1, 10 or 100 and then adjust

Use patterns of similar calculations or knowledge of the relationship between addition and subtraction

Subtraction

Subtract tenths from a 1 digit whole number and tenths, e.g. 5.4 - 0.3 =
Subtract two 1 digit whole numbers and tenths, e.g. 8.5 - 1.4 =
Subtract a 4 digit multiple of 100 from a 5 digit number, e.g. 25935 - 2100 =
Subtract two numbers with tenths and hundredths, e.g. 0.57 - 0.32 =
Subtract a 1 digit whole number and tenths from a whole number, e.g. 7 - 5.4 =

Mental strategies to use

Count back in steps of 0.1, 1, 10, 100 or 1000

Take away a smaller number by counting backwards

Find the difference by counting on in steps of 0.1, 1, 10 or 100

Use known number facts and place value to subtract numbers

Partition the number, subtract each part and recombine

Subtract the nearest multiple of 1, 10 or 100 and then adjust

Use patterns of similar calculations or knoweldge of the relationship between addition and subtraction

YEAR 5

Multiplication

Multiply a 2 digit number by a 1 digit number, e.g. 4 x 35 =
Multiply whole numbers by 10, 100 and 1000, e.g. 327 x 100 =
Multiply decimals by 10, 100 and 1000, e.g. 5.4 x 10 =
Multiply a multiple of 10 by a multiple of 10, e.g. 50 x 60 =
Multiply 3 numbers, e.g. 3 x 6 x 20 =
Double any multiple of 5 up to 500

Mental strategies to use

Counting in equal steps and powers of 10

Use known facts to multiply numbers and understand the relationship between multiplication and division

Reorder a calculation using commutativity

Use the rule of associativity and factor pairs to multiply

Use the distributive law and partitioning to multiply

Recognise and use square and cube numbers

Division

Divide whole numbers by 10, 100 and 1000, e.g. 32700 ÷ 10 =
Divide decimals by 10, 100 and 1000, e.g. 251.4 ÷ 100 =
Divide multiples of 10 by a multiple of 10, e.g. 3000 ÷ 60 =
Halve corresponding doubles of any multiple of 5 up to 500

Mental strategies to use

Counting in equal steps and powers of 10

Use known facts to divide numbers and understand the relationship between multiplication and division

Use factor pairs to divide

Use the distributive law and partitioning to divide

Use the rule of associativity

Please note: Children may use jottings whilst calculating mentally to record their working out.

St Thomas More Mental Calculation Policy

Year 6 National Curriculum requirements:

- Add and subtract mentally with increasingly large numbers and decimals
- Multiply and divide numbers mentally drawing upon known facts
- Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes
- Multiply and divide numbers by 10, 100 and 1000 where the answers are up to 3 decimal places

Addition

Add two multidigit numbers, e.g. 129000 + 34000 =
Add negative numbers, e.g. rise from -3°C by 1°C
Add two 4 digit numbers which are multiples of 100, e.g. 5700 + 2500 =

Mental strategies to use

Count on in steps of 0.1, 1, 10, 100 or 1000
Add by counting on from the larger number, reordering numbers in a calculation if needed
Look for known number bonds or number facts and apply them
Partition the number, add each part and recombine
Add the nearest multiple of 1, 10 or 100 and then adjust
Use patterns of similar calculations or knowledge of the relationship between addition and subtraction

Subtraction

Subtract 2 multidigit numbers, e.g. 268000 - 42000 =
Subtract negative numbers, e.g. decrease from 3°C to -1°C
Subtract two 4 digit numbers which are multiples of 100, e.g. 6200 - 3800 =

Mental strategies to use

Count back in steps of 0.1, 1, 10, 100 or 1000
Take away a smaller number by counting backwards
Find the difference by counting on in steps of 0.1, 1, 10 or 100
Use known number facts and place value to subtract numbers
Partition the number, subtract each part and recombine
Subtract the nearest multiple of 1, 10 or 100 and then adjust
Use patterns of similar calculations or knoweldge of the relationship between addition and subtraction

YEAR 6

Multiplication

Multiply a tenth number by a 1 digit number, e.g. 0.4 x 9 =
Multiply a hundredths number by a 1 digit number, e.g. 0.06 x 3 =
Multiply a multiple of 10 by a multiple of 100, e.g. 30 x 500 =
Multiply a tenth number by a multiple of 10, e.g. 0.7 x 20 =
Multiply a 1 digit and tenths number by a 1 digit number, e.g. 3.7 x 5 =
Double decimals up to 2 decimal places

Mental strategies to use

Counting in equal steps and powers of 10
Use known facts to multiply numbers and understand the relationship between multiplication and division
Reorder a calculation using commutativity
Use the rule of associativity and factor pairs to multiply
Use the distributive law and partitioning to multiply
Recognise and use square and cube numbers

Division

Divide a number with 1 decimal place by a 1 digit number, e.g. 3.6 ÷ 9 =
Divide a number with 2 decimal places by a 1 digit number, e.g. 0.18 ÷ 3 =
Divide numbers by 10, 100 and 1000, e.g. 0.7 ÷ 100 =
Halve corresponding doubles of decimals up to 2 decimal places

Mental strategies to use

Counting in equal steps and powers of 10
Use known facts to divide numbers and understand the relationship between multiplication and division
Use factor pairs to divide
Use the distributive law and partitioning to divide
Use the rule of associativity

Please note: Children may use jottings whilst calculating mentally to record their working out.