MELDRETH
Primary School

About our Calculation Policy

The following calculation policy has been devised to meet requirements of the National Curriculum 2014 for the teaching and learning of mathematics, and is also designed to give pupils a consistent and smooth progression of learning in calculations across the school. Please note that early learning in number and calculation in Reception follows the 'Development Matters' EYFS document, and this calculation policy is designed to build on progressively from the content and methods established in the Early Years Foundation Stage.

Age stage expectations

The calculation policy is organised according to age stage expectations as set out in the National Curriculum 2014. However it is vital that pupils are taught according to the stage that they are currently working at, being moved onto the next level when they are ready or working at a lower stage until they are secure enough to move on.

Providing a context for calculation

It is important that any type of calculation is given a real life context or problem solving approach to help build children's understanding of the purpose of calculation, and to help them recognise when to use certain operations and methods when faced with problems. This is a priority within calculation lessons.

Choosing a calculation method

Children need to be taught and encouraged to use the following processes in deciding what approach they will take to a calculation, to ensure they select the most appropriate method for the numbers involved…

Can I do it in my head?
Could I use some jottings to help me?
Should I use a written method to work it out?

year 5 Add numbers with more than 4 digits including

money, measures and decimals with different numbers of decimal

```
  £ 2 3 · 5 9
+ £ 7 · 5 5
  £ 3 1 · 1 4
```

```
  2 3 . 4 8 1
+     1 3 6 2
  2 4 8 4 3
```

```
  1 9 · 0 1
    3 · 6 5
+   0 · 7
  2 3 · 3 6
```

Key skills for addition at Y5:

In their head:

• Add numbers mentally with increasingly large numbers, ie. add the nearest multiple of 10, 100, 100 and adjust; use near doubles, inverse, partitioning and re-combining; using number bonds.
• Use rounding to check answers and accuracy.
• Solve multi-step problems in contexts, deciding which operations and methods to use and why.

On paper:

• Read, write, order and compare numbers to at least 1 million and determine the value of each digit.
• Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000.
• Add numbers with more than 4 digits using formal written method of columnar addition.

Key vocabulary: add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, plus, addition, column, tens boundary, hundreds boundary, increase, carry, expanded, compact, vertical, thousands, hundreds, digits, inverse & decimal places, decimal point, tenths, hundredths, thousandths

Subtraction

Year 5 Subtract with at least 4 digits including money, measures and decimals with different numbers of decimal

Subtracting with larger integers.

```
  ²3̷ ¹⁰1̷ '0 ⁴3̷ '6
-  0  2  1  2  8
   2  8, 9  2  8
```

```
  ⁶7̷ ¹⁰1̷ '6 ⁸8̷ · '0
-  0  3  7  2  · 5
   6  7  9  6  · 5
```

Subtract with decimal values, including mixtures of integers and decimals, aligning the decimal point.

Key skills for subtraction at Y5:

- Subtract numbers mentally with increasingly large numbers.
- Use rounding and estimation to check answers to calculations and determine, in a range of contexts, levels of accuracy.
- Solve addition and subtraction multi-step problems in context, deciding which operations and methods to use and why.
- Read, write, order and compare numbers to at least 1 million and determine the value of each digit.
- Count forwards or backwards in steps of powers of 10 for any given number up to 1 million.
- Interpret negative numbers in context, counting forwards and backwards with positive and negative integers through 0.
- Round any number up to 1 million to the nearest 10, 100, 1000, 10 000 and 100 000.

Key vocabulary: Equal to, take, take away, less, minus, subtract, leaves, difference, distance between, how many more, how many fewer / less than, most, least, count back, howmany left, how much less is_? count on, strategy, partition, tens, units, exchange, decrease, hundreds, value, digit, inverse, tenths, hundredths, decimal point, decimal
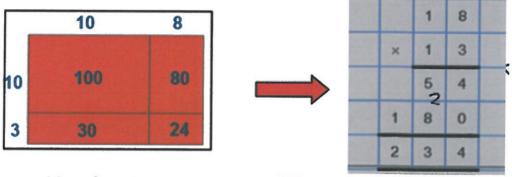
Multiplication

Year 5 Multiply up to 4-digits by 1 or 2 digits.

Introducing column multiplication

x	300	20	7
4	1200	80	28

$$\begin{array}{r} 327 \\ \times \quad 4 \\ \hline 1308 \\ \scriptstyle{1 \quad 2} \end{array}$$

Introduce long multiplication

	10	8
10	100	80
3	30	24

$$\begin{array}{r} 18 \\ \times \quad 13 \\ \hline 54 \\ \scriptstyle{2} \\ 180 \\ \hline 234 \end{array}$$

Key skills for multiplication at Y5:

- Identify multiples and factors, using knowledge of multiplication tables to 12x12.
- Solve problems where larger numbers are decomposed into their factors
- Multiply and divide integers and decimals by 10, 100 and 1000
- Recognise and use square and cube numbers and their notation
- Solve problems involving combinations of operations, choosing and using calculations and methods appropriately.

Key vocabulary: groups of, lots of, times, array, altogether, multiply, count, multiplied by, repeated addition, column, row, commutative, sets of, equal groups, _times as big as, once, twice, three times..., inverse, partition, grid method, total, multiple, product, tens, units, value, sets of, square, factor, integer, decimal, short/long multiplication, carry

Division

Year 5 Divide up to 4 digits by a single digit, including those with remainders.

Short division, including remainder answers

```
     0  6  6  3  r  5
8) 5 ⁵3 ⁵0 ²9
```

The answer to 5309 ÷ 8 could be expressed as 663 and five eighths, 663 r 5, as a decimal, or rounded as appropriate to the problem involved.

Key skills for division at Y5:

- Recall multiplication and division facts for all numbers up to 12 x 12
- Multiply and divide numbers mentally, drawing upon known facts.
- Identify multiples and factors, including finding all factor pairs of a number, and common factors of two number.
- Solve problems involving multiplication and division where larger numbers are decomposed into their factors.
- Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.
- Use the vocabulary:prime numbers & factors and composite numbers
- Recall prime numbers to 19.
- Divide numbers up to 4 digits by a one-digit number using the formal written method of short division with remainders in context
- Use multiplication and division as inverses.
- Interpret non-integer answers to division by expressing results in different ways according to the context, including with remainders, as fractions, as decimals or by rounding (98÷4 = 24r2 = 24.5 = 25).
- Solve problems involving combinations of all four operations, including understanding of the equals sign, and including division for scaling by different fractions and problems involving simple rates.

Key vocabulary: share, share equally, one each, two each..., group, equal groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over, inverse, short division, carry, remainder, multiple, divisible by, factor, inverse, quotient, prime number, prime factors, composite number (non-prime)