St. Leonard's CE Primary School Calculation Policy UKS2

Safeguarding Children In Banbury

About St. Leonard's Calculation Policy

The following calculation policy has been devised to meet requirements of the National Curriculum 2014 for the teaching and learning of mathematics; it is also designed to give pupils a consistent and smooth progression of learning in calculations across the school.

Age stage expectations:

The calculation policy is organised according to age stage expectations as set out in the National Curriculum 2014 and the method(s) shown for each year group should be modelled to the vast majority of pupils. Pupils are taught according to the pathway that they are currently working at and are showing to have 'mastered' a pathway before moving on to the next one. Of course, pupils who are showing to be secure in a skill can be challenged to the next pathway as necessary.

Maths Mastery:

At the centre of the mastery approach to the teaching of mathematics is the belief that **all children have the potential to succeed**. They should have access to the same curriculum content and, rather than being extended with new learning, they should **deepen their conceptual understanding by tackling challenging and varied problems**. Similarly, with calculation strategies, children must not simply rote learn procedures but demonstrate their understanding of these procedures through the use of concrete materials and pictorial representations. This policy outlines the different calculation strategies that should be taught and used in Year 1 to Year 6 in line with the requirements of the 2014 Primary National Curriculum.

Safeguarding Children In Banbury

About St. Leonard's Calculation Policy

Mathematical Language:

The 2014 National Curriculum is explicit in articulating the importance of children using the correct mathematical language as a central part of their learning (*reasoning*). Indeed, in certain year groups, the non-statutory guidance highlights the requirement for children to extend their language around certain concepts. It is therefore essential that teaching using the strategies outlined in this policy is accompanied by the use of appropriate and precise mathematical vocabulary. New vocabulary should be introduced in a suitable context (for example, with relevant real objects, apparatus, pictures or diagrams) and explained carefully. High expectations of the mathematical language used are essential, with teachers only accepting what is correct.

How to use the policy:

This calculation policy is a guide for all staff and parents of St Leonard's Primary school and has been adapted from work by PiXL. It is expected that teachers will use their professional judgement as to when consolidation of existing skills is required or if to move onto the next concept. However, the **focus must always remain on breadth and depth rather than accelerating through concepts.** Children should not be extended with new learning before they are ready, they should deepen their conceptual understanding by tackling challenging and varied problems.
Teachers can use any teaching resources that they wish to use and the policy does not recommend one set of resources over another, rather that, a variety of resources are used. The principle of the concrete-pictorial-abstract (CPA) approach [Make it, Draw it, Write it] is for children to have a true understanding of a mathematical concept.

Safeguarding Children In Banbury

Addition: Years Five and Six

Year 5 statutory requirements :

- Add whole numbers with more than 4 digits using formal written methods of columnar addition.
- Add numbers mentally, with increasingly large numbers.
- Solve addition multi-step problems in contexts, deciding which operations and methods to use and why.
- Solve problems involving numbers up to three decimal places

Year 6 statutory requirements :

- Pupils are expected to solve more complex addition and subtraction problems

In year 5 and 6 pupils should be adding numbers using compact column addition method. **Note:** The carried ten, hundred, thousand is just as important as any other number, therefore, it should be written as clear and as large as any other number, and placed at the **bottom** of the column in which it is to be added.

$$\begin{array}{r} 46892 \\ +\ 32758 \\ \hline 79650 \\ \hline 111 \end{array}$$

When adding decimals, it is essential that the decimal point does not move and kept in line.

Where necessary, a zero should be added as a ***place holder***.

12.5 + 23.7

$$\begin{array}{r} 12.5 \\ +\ 23.7 \\ \hline 36.2 \\ \hline 1 \end{array}$$

34.5 + 27.43

$$\begin{array}{r} 34.50 \\ +\ 27.43 \\ \hline 61.93 \\ \hline 1 \end{array}$$

Safeguarding Children In Banbury

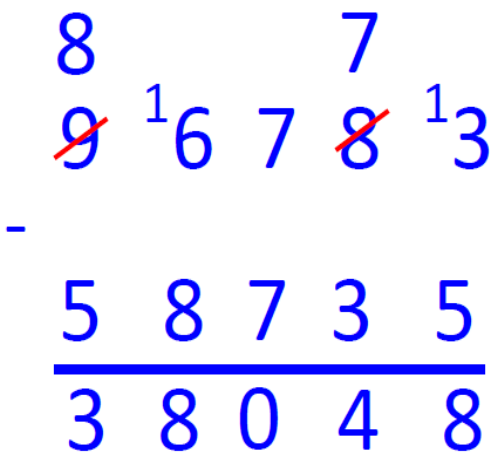
Subtraction: Years Five and Six

Year 5 statutory requirements :

- Subtract whole numbers with more than 4 digits using formal written methods of columnar subtraction.
- Subtract numbers mentally, with increasingly large numbers.
- Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
- Solve problems involving numbers up to three decimal places.

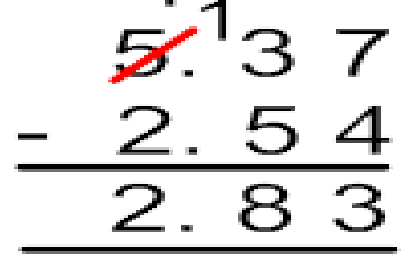
Year 6 statutory requirements: pupils are expected to solve more complex addition and subtraction problems

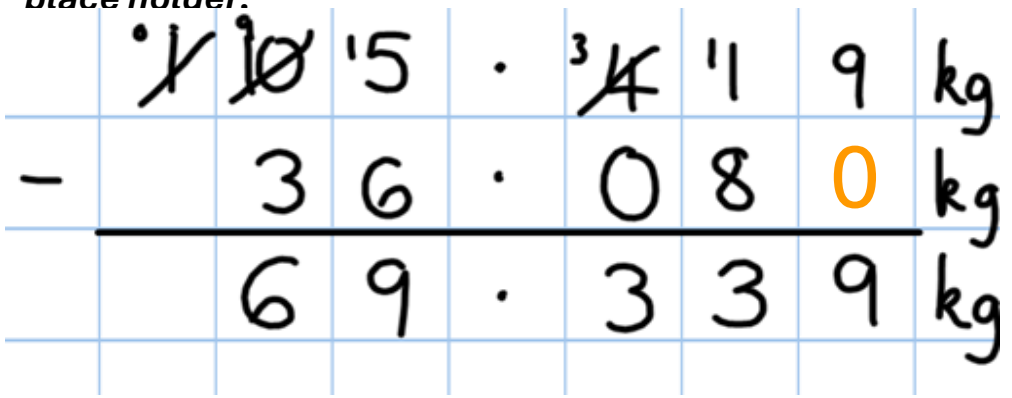
In year 5 and 6 pupils should be subtracting numbers using compact column subtraction method. **Note:** The exchanged ten or hundred is just as important as any other number. Therefore, it should be written as clear and as large as any other number, and placed at the **top** of the column which has been adjusted.



When subtracting decimals, it is essential that the decimal point does not move and kept in line.

Where necessary, a zero should be added as a ***place holder.***





Safeguarding Children In Banbury

Multiplication: Year Five

Year 5 statutory requirements:
✓Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers.
✓Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000

Build on learning from Year 4 and use concrete resources if needed to multiply numbers up to 4 digits by **one digit** using compact short multiplication.

643 x 8

```
   6  4  3
x           8
-------------
5  1  4  4
   3  2
```

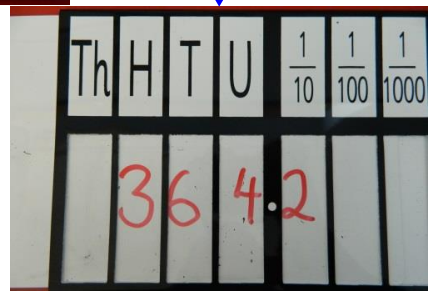
x	600	40	3
50	30,000	2,000	150
4	2,400	160	12

Reinforce the connection between the grid method to multiply numbers up to 4 digits by **two digit** using long multiplication.

```
      6  4  3
x        5  4
-------------
   2  5  7  2
   2  1
+  3  2  1  5  0
   1  1
-------------
   3  4  7  2  2
      1
```

To multiply by 10, 100, 1000 children should use place value charts to show that the digit moves a column (s) to the left .The value of the digit is increasing by 10, 100 or 1000 times.

X 10



Safeguarding Children In Banbury

Multiplication: Year Six

Year 6 statutory requirements:
✓ Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the
formal written method of long multiplication.
✓Multiply one-digit numbers with up to two decimal places by whole numbers.

Build on learning from Year 5 multiplying numbers using compact short multiplication and long division.

Use compact short multiplication to multiply decimal number by whole number.

643 x 8

```
  6 4 3
x     8
-------
5 1 4 4
  3 2
```

```
    6 4 3
x     5 4
---------
  2 5 7 2
  2 1
+ 3 2 1 5 0
---------
  3 4 7 2 2
    1
---------
```

```
    7 . 6 8
x           4
-----------
3 0 . 7 2
  2   3
```

Division: Year Five

Year 5 statutory requirement:
✓ divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.

Further secure pupils' understanding of compact short division.

$$218 \div 8 =$$

$$\begin{array}{r} 27 \text{ r } 2 \\ 8\overline{)21^{5}8} \end{array}$$

Extend to expressing results in different ways according to the context, including with remainders as fractions, as decimals or by rounding. For example:

- Whole number remainder = 27 r 2
- Fraction remainder = $27\frac{2}{8} = 27\frac{1}{4}$
- Decimal remainder = $27\frac{1}{4} = 27\frac{25}{100} = 27.25$

Safeguarding Children In Banbury

Division: Year Six

Year 6 statutory requirement:
✓ divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context

Continue to use compact short division to divide numbers up to 4 digits by a 1-digit whole number.

$218 \div 8 =$

$$\begin{array}{r} 027 \text{ r } 2 \\ 8\overline{)2\,1^{5}8} \end{array}$$

- Whole number remainder = 27 r 2
- Fraction remainder = $27\frac{2}{8} = 27\frac{1}{4}$
- Decimal remainder = $27\frac{1}{4} = 27\frac{25}{100} = 27.25$

Use long division to divide numbers up to 4 digits by a 2-digit whole number.

$$\begin{array}{r} 024 \text{ r } 12 \\ 24\overline{)588} \\ -\,48 \\ \hline 108 \\ -\,96 \\ \hline 12 \end{array}$$

Safeguarding Children In Banbury