Snettisham Primary School

Written Calculation Policy 2017

This policy has been written as a result of the new Key Stage 2 Curriculum introduced in September 2014. Mathematics, in the new curriculum, is a challenge to pupils and teachers alike. Therefore this policy has been written to allow pupils to move at their own speed, but also allow them to reach the high standards required by the time they finish in year 6. Please note the calculations have not been set out according to age expectations and children should be moved on as soon as they are ready for the next calculation stage.

Mental calculations still play a large part in written calculations. It is therefore vital that children are secure with their number bonds (10, 20 and 100), adding single-digits (4 + 7), adding two-digits to single digits (24 + 8). The same applies to subtracting single-digits (9-3) and the subtraction of single-digits from two-digits (25 – 8). Children should also be encouraged to continue to practise a wide range of mental addition strategies adding the nearest multiple of 10, 100, 1000 and adjusting, using near doubles, partitioning and recombining.

To secure accuracy with multiplication and division it is absolutely vital that children learn and become secure with their tables as soon as possible. Although much work can be done at school to help this, children should be encouraged to practise at home as much as possible. It is clearly evident from the research carried out in the school that the children who have a solid knowledge of their tables are far more successful with multiplication and division calculations. The school follows the 'Tackling Tables' scheme for learning table facts and resources are available for parents to use at home.

Children need to be taught how to check their answers through estimation and inverse operations.

Finally, 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 must be a priority within calculation lessons.

All policies should be cross referenced with the SEND, Inclusion and Equality Policies which are available on the school website: www.snettisham-primary.co.uk

Addition

Number Line

358 + 73 = 431
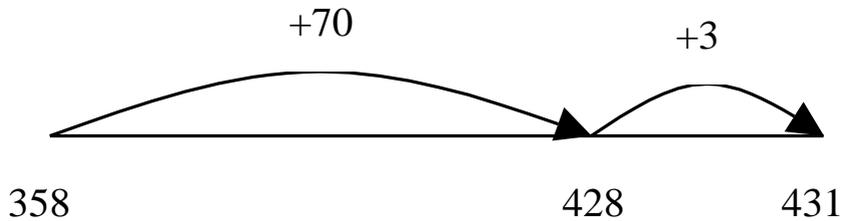
Some children may prefer to jump to the nearest 10 to begin with.

Column with partition

358 + 373 = 731

```
  300 + 50 + 8
  300 + 70 + 3
  600 +120+11 = 731
```

It is vital that children understand the importance of lining up their numbers in accordance with teaching of place value.
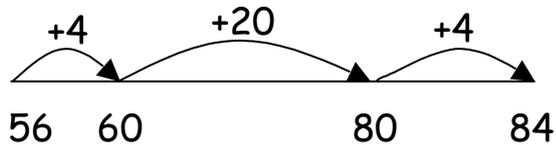
Standard column method

4258 + 3941 = 8199

```
        1
      4258
  +   3941
      8199
```

Children should be taught, and also have a full understanding, of why they carry, and this once again should be linked to place value and the decimal number system.

Subtraction

Number Line

84 – 56 = 28

```
      +4        +20        +4
    ╱    ╲    ╱      ╲    ╱    ╲
  56    60          80        84
```

Once again children may wish to make smaller jumps to the nearest ten to begin with.

Partition Column Method

828 -616 =   569 – 278 = 291

    800 + 20 + 8   500 + 60 + 9
- 600 + 10 + 6   200 + 70 + 8
    200 + 10 + 2   Children need to understand this sum
                       is not possible without exchanging.

  Once again the importance of   400
 lining numbers up, in accordance $\overline{500}$ + 160 + 9
with place value is vital.   - 200 + 70 + 8
Presentation is paramount.   200 + 90 + 1

Standard Column Method

5948 – 3675 = 2273

$$5\overset{8}{\cancel{9}}\overset{1}{4}8$$
$$-\ 3675$$
$$2273$$

> Once again it is vital that children have a solid understanding of place value before moving onto this method. They need to understand the process of exchanging, and why they do it.

Multiplication

Arrays and repeated addition.

● ● ● ●   4 x 2 or 4 + 4
● ● ● ●   2 x 4 or 2 + 2 + 2 + 2

0 1 2 3 4 5 6 7 8
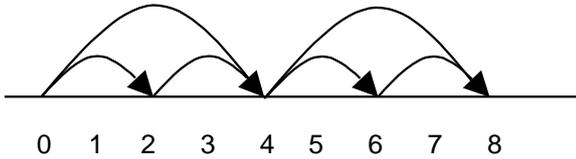
or 6 x 4 = 6+6+6+6 = 24

Partition
23 x 4 = 92

23 x 4 =   20 x 4 = 80
             3 x 4 = 12
                      92

(The layout is very important here, as it uses a column method, as per addition and subtraction).

Grid Method

72 x 38 =
Estimate first - 70 x 40 = 2800

X	70	2
30	2100	60
8	560	16

2160
 576
2736

Standard Column Method/ Long Multiplication.

612 x 24 = 14688

```
        612
  X      24
       2448
      12240
      14688
```

Excellent times-tables and place value knowledge is vital for this method.
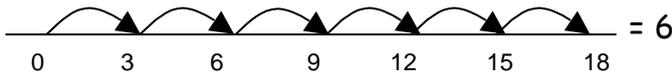
Division

Understand division as sharing and grouping – using a number-line.

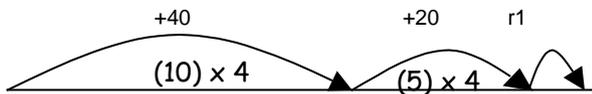18 ÷ 3 can be modelled as:
Sharing – 18 shared between 3
OR
Grouping - How many 3's make 18?

 = 6

0	3	6	9	12	15	18

then move onto larger calculations like this, to include remainders and moving up in larger "chunks". "Chunking" on a number-line.

61 ÷ 4 = 15r1

+40   +20   r1
(10) × 4   (5) × 4

Chunking by counting up or down.

256 ÷ 7 = 36 r 4

```
     256
    - 70      (10 × 7)
     186
    -140      (20 × 7)
      46
-     42      (6 × 7)
      r4
```

| 1 x 7 = 7 |
| 5 x 7 = 14 |
| 10 x 7= 70 |
| 20 x 7= 140 |
| 30 x 7 =210 |

Once again presentation is vital as there are numerous places where errors can be made. Children could be encouraged to fill out a fact box to help them with each sum they do, as shown.

Alternatively children could count up from 0 using this method.

Standard long-division.

473 ÷ 7 = 67 r 4   then onto   2849 ÷ 14 = 203.5

```
      67r4                         203.5
  7 | 473                   14 | 2849.0
      42
      53 r4
```

This method requires real confidence with number, place value and a solid knowledge of all times-tables.