



# Hambrook Calculation Policy

## Calculations (For the end of KS1)

Addition	Subtraction	Multiplication	Division
<p>Number bonds to 10 and 20, and for other numbers up to 20 e.g. <math>8 = 5+3</math></p> <p>Recognise effect of adding and subtracting zero.</p> <p><b>Counting on using a number line</b> TU + U (e.g. <math>23 + 3</math>)</p> <p><b>Use of hundred square/ bead string</b> TU + multiple of 10 (e.g. <math>56 + 20</math>)</p> <p><b>Partitioning method/ drawing base 10</b> TU + TU <math>34 + 15</math> <math>30+10=40</math> <math>4+5=9</math> <math>40+9=49</math></p> <p>O+O+O (<math>3+7+2</math>) – look for pairs that make 10, reorder to start with the biggest number</p> <p>Understand the words sum, total and altogether</p> <p>Pupils count in fractions up to 10 <math>\frac{1}{2}</math>, 1, <math>1\frac{1}{2}</math>, 2 etc</p>	<p>Recall addition and subtraction facts to 20 (fact families e.g. <math>3+4=7</math>, <math>4+3=7</math>, <math>7-4=3</math>, <math>7-3=4</math>)</p> <p>Subtract one and two digit numbers (TO-O) by counting back on a number line.</p> <p>Understand the word difference by visually comparing Numicon/ Number blocks pieces</p> <p>Subtracting by counting on to find the difference <math>26-17 = 9</math></p>  <p><b>Repeat strategies for addition</b></p>	<p>Showing multiplication using Numicon e.g. <math>3 \times 2</math> (three lots of two)</p>  <p>e.g. <math>2 \times 3</math> (two lots of three)</p>  <p><b>Partitioning Method</b> <math>12 \times 3</math> <math>10 \times 3 = 30</math> <math>2 \times 3 = 6</math></p> <p>To know the 2x 5x 10x table written “as lots of” <math>1 \times 2=2</math>, <math>2 \times 2=4</math>, <math>3 \times 2=6</math></p> <p>Inverse facts between multiplication and division using Numicon</p>	<p>Halving numbers e.g. Half of <math>12 = 6</math></p> <p>Halving two digit even numbers using Numicon e.g. Half of <math>42 = 21</math></p> <p>Simple fractions of objects or numbers (half or quarter)</p> <p>Linking division to sharing using objects e.g. bricks</p> <p>Division using grouping (with Numicon) e.g. <math>6 \div 2 = 3</math></p>  <p>“How many groups of 2 are there in 6?”</p>



# Hambrook Calculation Policy

## Calculations (For the end of KS2)

### Addition

#### Partitioning Method

$$34 + 15$$

$$30 + 10 = 40$$

$$4 + 5 = 9$$

$$= 49$$

#### Developing into only partitioning one number

$$34 + 10 + 5$$

(Once proficient, this becomes a mental calculation strategy)

#### Column addition without carrying

#### Column addition with carrying (using equipment in year 3 & 4)

$$\begin{array}{r} 76 \\ +47 \\ \hline 123 \\ \hline 1 \end{array}$$

Progressing to column addition of money, decimals and four digit numbers.

### Subtraction

**Counting back mentally** e.g.  $15 - 3$  (count back from 15 to 12).

**Counting on mentally** e.g.  $15 - 9$  (count up from 9 up to 15).

**Counting up on a number line** to find complements to multiples of 10 or 100 to used for money, fractions, decimals and negative numbers.

#### Column Subtraction without exchanging

Pupils **must** subtract the units first

**Column subtraction** with exchanging in any column – e.g. exchanging hundreds and tens and units. Using apparatus in year 3 & 4 when required.

$$\begin{array}{r} 61 \\ \cancel{6} \phantom{1} \\ - 48 \\ \hline 28 \end{array}$$

Using a number line to calculate differences: negative numbers, time problems, differences between positive and negative numbers.

### Multiplication

#### Partitioning Method

$$12 \times 3$$

$$10 \times 3 = 30$$

$$2 \times 3 = 6$$

$$\mathbf{30 + 6 = 36}$$

#### Compact Column Method

$$\begin{array}{r} 72 \\ \times 3 \\ \hline 216 \end{array}$$

#### Compact Column method for TO.t x O

$$\begin{array}{r} 21.8 \\ \times 3 \\ \hline 65.4 \\ \hline 2 \end{array}$$

#### Long multiplication

TO x TO

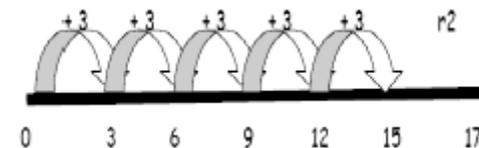
$$\begin{array}{r} 32 \\ \times 15 \\ \hline 160 \\ 320 \\ \hline 480 \end{array}$$

### Division

#### Year 3 Transition

Using Numicon to divide (see KS1), repeated addition and applying times tables to empty number line.

How many groups of 3 in 17?  
e.g.  $17 \div 3 = 5 \text{ r } 2$



**Dividing using the 'compact' method up to three digit divided by two digit.**

$$3 \overline{) 1412}$$

$$16 \overline{) 2264}$$

#### Dividing using long division

$$\begin{array}{r} 16 \\ 2 \overline{) 2264} \\ \underline{16} \phantom{0} \\ 6 \phantom{4} \\ \underline{6} \phantom{4} \\ 0 \end{array}$$

Write the remainder as a fraction or decimal.

