

Raysfield Schools

Calculation

Scheme Guidelines.

Rationale

To ensure consistency of approach to the teaching of calculation strategies from Foundation Stage to Year 6, we have adopted the following policy and procedures in consultation with parents, children, staff and governors.

Aims

Through this policy we aim to:


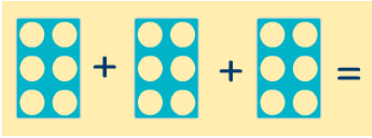
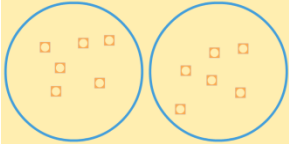
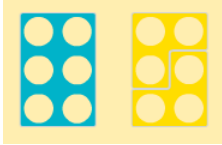
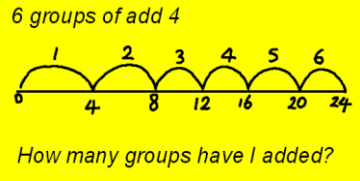
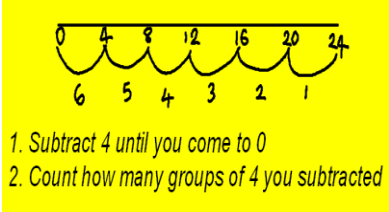
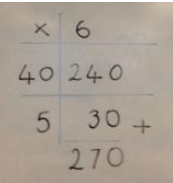
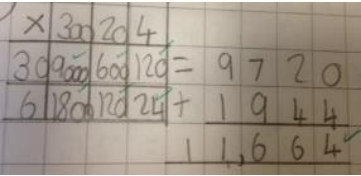
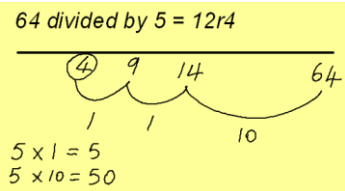
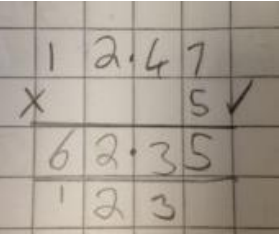
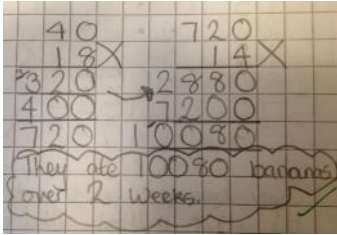
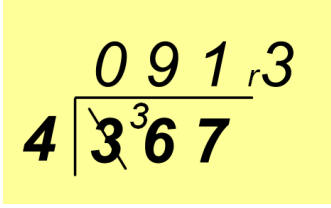
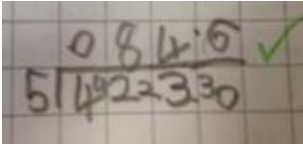
- Ensure continuity and progression for all children across the phases.
- Give reference for members of staff to support the teaching of calculation strategies.
- Support the next steps in learning, meeting the individual need of the children.
- Teach to Age Related Expectation (ARE) grids to support accurate assessment across all phases.
- Use the Interim Framework in Y2 and Y6 for assessment
- Teach mathematics through a mastery approach using concrete-pictorial-abstract progression of strategies.

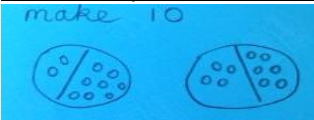

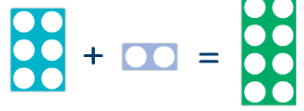
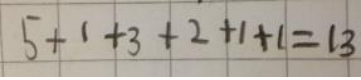
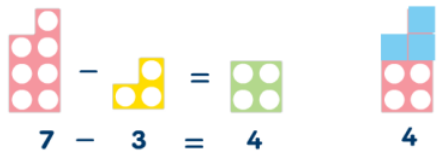
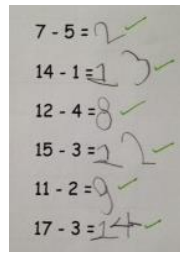
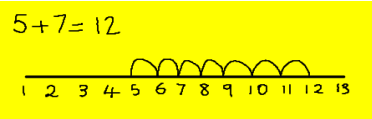
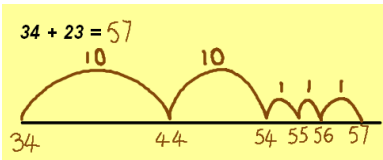

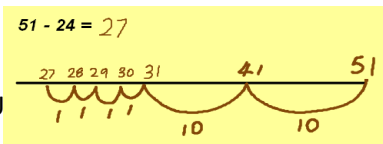
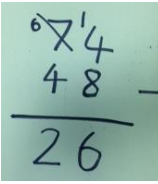



Guidelines

- The following policy is to be used in conjunction with the 2014 Primary Curriculum and ARE grids to aid planning.
- All staff to teach the appropriate strategy for the chosen calculation method.
- All staff to use the calculation progression grids to support differentiation with mastery of mathematics as an aim.
- For S.E.N.D and More Able pupils the grids should be supplemented with other materials e.g. WAVE 3, Max Marvellous Maths, Challenges for More Able and Springboard.

Ratified

January 2017
Review June 2018

PROGRESSION	MULTIPLICATION	DIVISION
<p>TEACHER GUIDE Use the term 'equal to'</p>	<p><u>Pictorial representation (real story)</u></p>  <p><u>Concrete representation (real story)</u></p> 	<p><u>Pictorial representation (real story)</u> Understanding a half</p>  <p><u>Use concrete objects</u></p>  <p>Moving from a concept of halving a shape to halving a small quantity</p>
<p>TEACHER GUIDE Using vocabulary 'groups of' when modelling process. You will count on in 'groups of...' or subtract in 'groups of...' Use the number line to model remainders, when moving from practical to abstract</p>	<p><u>Repeated addition</u></p> <p>$6 \times 4 = 24$</p>  <p>6 groups of add 4</p> <p>How many groups have I added?</p> <p>ALWAYS WRITE HOW MANY GROUPS ARE BEING ADDED</p>	<p><u>Repeated subtraction</u></p>  <p>$24 \div 4 = 6$</p> <ol style="list-style-type: none"> 1. Subtract 4 until you come to 0 2. Count how many groups of 4 you subtracted <p>ALWAYS WRITE HOW MANY GROUPS ARE SUBTRACTED</p>
<p>TEACHER GUIDE It is important that the layout of the grid method TOxO will support the layout of the compact addition method.</p>	<p><u>Grid method</u></p>  	<p><u>Compact method</u></p> <ol style="list-style-type: none"> 1. Make clear links with multiplication by writing a fact box 2. Complete method <p>Fact box</p> <p>4 8 12 16 20 24 28 32 36</p>  <p>64 divided by 5 = 12r4</p> <p>5 x 1 = 5 5 x 10 = 50</p>
<p>Once pupils demonstrate a good understanding of place value and are proficient users of grid method and number lines to multiply and divide, the compact methods need to be introduced to aid speed and accuracy.</p>	<p><u>Compact methods TOxO and TOxTO</u></p> <p>$37 \times 6 = 222$</p>   <p>40 x 720 = 28800 They ate 10030 bananas over 2 weeks.</p>	 <p>$4 \overline{) 367} = 91 \text{ r}3$</p>  <p>$5 \overline{) 5142330} = 1028466$</p> <p>Extend to</p> <p>Extend division on a number line to include remainders. Once secure move to compact.</p>

PROGRESSION	ADDITION	SUBTRACTION
<p>Please see http://www.numicon.com/Index.aspx or training on shared drive for how to use Numicon. For subtraction, use subtraction covers. See the Numicon website. You will also find them on the IWB software. Number tracks and printed number lines can also be used at this level to support calculation</p>	<p><u>Pictorial representation (real story)</u>  $... + = $</p> <p><u>Concrete objects (real story)</u>   <u>Number sentences (maths story)</u> </p>	<p><u>Pictorial representation (real story)</u> $... \text{ minus } 2 = .$ (strike out the 2)</p> <p><u>Concrete objects (real story)</u>  $7 - 3 = 4$</p> <p><u>Number sentences (maths story)</u> </p>
<ul style="list-style-type: none"> Use blank number line <p>Teach to count on or back in ones first. Use dienes apparatus to demonstrate the value of digits.</p>	<p><u>Number lines (real story)</u> $5 + 7 = 12$ </p> <p>Add ones</p> <p>Add tens</p> <p>Extend to using HTU $34 + 23 = 57$ </p> <p>ALWAYS COUNT ABOVE THE LINE</p>	<p><u>Number lines (real story)</u> $8 - 6 = 2$ </p> <p>Subtract ones</p> <p>Subtract tens</p> <p>Extend to using HTU $51 - 24 = 27$ </p> <p>ALWAYS COUNT BACKWARDS, BELOW THE LINE</p>
<p>Use expanded method to illustrate process if necessary. + sign and - sign on the right. Visual guide to prompt pupil to start with ones first.</p>	<p><u>Compact vertical method</u></p> $\begin{array}{r} 345 \\ 23 + \\ \hline 368 \end{array}$ $\begin{array}{r} 76 \\ 54 + \\ \hline 130 \\ 1 \end{array}$ <p>Extend to using with larger numbers and decimals Use dienes apparatus to model</p>	<p><u>Compact vertical method</u></p> $\begin{array}{r} 807 \\ 38 - \\ \hline \end{array}$     <p>Use dienes</p>