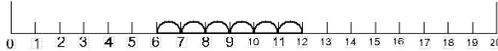


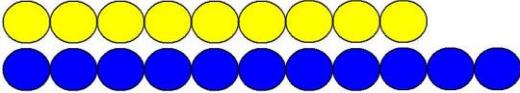
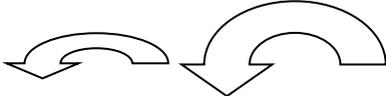
St. Joseph's Calculation Policy

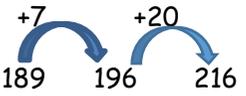
Addition

FY	Y1	Y2
<p>Children will engage in a wide variety of songs and rhymes, games and activities. They will begin to relate addition to combining two groups of objects, first by counting all and then by counting on from the largest number.</p> <p>They will find one more than a given number.</p> <p>I have three apples and you have one more></p> <p> </p> <p>How many apples altogether?</p> <p>In practical activities and through discussion they will begin to use the vocabulary involved in addition.</p>	<p>Children will continue to practise counting on from any number e.g. 'Put five in your head and count on four.'</p> <p>Initially use a number track to count on for addition, counting on from the largest number:</p> <p>$8 + 7 = 15$ 'Put your finger on number eight and count on seven.'</p> 	<p>Counting on in ones and tens using an empty number line, within 100...</p> <p>$28 + 5 = 33$</p>  <p>$28 + 30 = 58$</p> 

Y3	Y4	Y5	Y6
<p>Further develop the use of the empty number line with calculations that bridge 100:</p> $78 + 46 = 124$ <p style="text-align: center;"> +40 + 6 </p> <p>Introduce column method</p> $63 + 32 = 95$ $ \begin{array}{r} 60 + 3 \\ + \quad \underline{30 + 2} \\ 90 + 5 = 95 \end{array} $	<p>Further develop the formal written method of addition, with three-digit numbers. Revisit the expanded method first, if necessary.</p> $176 + 147 = 323$ $ \begin{array}{r} 176 \\ + 147 \\ \hline 13 \quad (6 + 7) \\ 110 \quad (70 + 40) \\ \underline{200} \quad (100 + 100) \\ \underline{323} \end{array} $ <p>This will lead into the formal written method.</p> $1845 + 526 = 2371$ $ \begin{array}{r} 1845 \\ + \underline{526} \\ \hline \underline{2371} \\ 1 \quad 1 \end{array} $	<p>Continue to teach the use of empty number lines with larger numbers (and decimals), as appropriate.</p> <p>Continue to develop the formal written method for addition with larger numbers (and decimal numbers) and with the addition of three or more numbers.</p> $£154.75 + £233.82 = £388.57$ $ \begin{array}{r} 154.75 \\ + \quad \underline{233.82} \\ \hline 388.57 \\ 1 \end{array} $ <p>Ensure that the decimal points line up.</p>	<p>No objectives have been included in the programmes of study explicitly related to written methods for addition in Y6. However, there is an expectation that children will continue to practise and use the formal written method for larger numbers and decimals and use these methods when solving problems, when appropriate (see previous year's guidance for methods).</p> <p>Our aim is that by the end of Y6, children use mental methods (with jottings) when appropriate, but for calculations that they cannot do in their heads, they use an efficient formal written method accurately and with confidence.</p>

Subtraction

FY	Y1	Y2
<p>Children will engage in a variety of counting songs and rhymes and practical activities.</p> <p>In practical activities and through discussion they will begin to use the vocabulary associated with subtraction.</p> <p>They will find one less than a given number.</p>	<p>Children will continue to practise counting back from a given number.</p> <p>They will use a number line.</p>  <p>Counting on to find a small difference:</p> $11 - 9 = 2$  <p>Introduce complementary addition to find differences (only use for small differences). The use of models is extremely important here to understand the idea of "difference".</p> <p>Count up from the smallest number to the largest to find the difference using resources, e.g. cubes, beads, number tracks/lines:</p>	<p>Counting back using an empty number line within 100, in ones...</p> $34 - 6 = 28$  <p>28 29 30 31 32 33 34</p> <p>And in tens...</p> $58 - 30 = 28$  <p>28 38 48 58</p> <p>If children are confident, use efficient jumps:</p> $76 - 45 = 31$  <p>31 36 76</p>

Y3	Y4	Y5	Y6						
<p>Find the difference by counting up.</p> <p>$216 - 27 = 189$</p>  <p>Introduce expanded column method. This will support the use of base 10.</p> <p>$78 - 37 =$</p> <p>$70 + 8 \qquad 60 + 18$</p> <p>$\underline{30 + 7} \qquad \underline{- 30 + 7}$</p> <p>$30 + 11 = 41$</p> <p>$\begin{array}{r} 5 \ 13 \\ 637 \\ - 252 \\ \hline 385 \end{array}$</p> <table border="1" data-bbox="190 1181 627 1388"> <tr> <td>$500 + 0 + 3$</td> <td>$400 + 90 + 13$</td> </tr> <tr> <td>$\underline{-200 + 70 + 8}$</td> <td>$\underline{-200 + 70 + 8}$</td> </tr> <tr> <td></td> <td>$200 + 20 + 5$</td> </tr> </table>	$500 + 0 + 3$	$400 + 90 + 13$	$\underline{-200 + 70 + 8}$	$\underline{-200 + 70 + 8}$		$200 + 20 + 5$	<p>Move onto larger numbers</p> <p>$3625 - 1219 = 2406$</p> $\begin{array}{r} 1 \ 15 \\ 36\cancel{2}5 \\ - 1219 \\ \hline 2406 \end{array}$ <p>Continue to develop the formal written method for subtraction with three and four digit numbers, returning to an expanded method and using base ten materials, if necessary.</p>	<p>Continue to use the formal method of subtraction and introduce decimals.</p> <p>$\pounds 166.25 - \pounds 83.72 = \pounds 82.53$</p> $\begin{array}{r} 5 \ 1 \\ 16\cancel{6}.25 \\ - 83.72 \\ \hline 82.53 \end{array}$	<p>Our aim is that by the end of Y6 children use mental methods (with jottings) when appropriate, but for calculations that they cannot do in their heads, they use an efficient formal written method accurately and with confidence.</p>
$500 + 0 + 3$	$400 + 90 + 13$								
$\underline{-200 + 70 + 8}$	$\underline{-200 + 70 + 8}$								
	$200 + 20 + 5$								

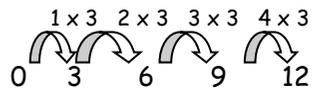
Multiplication

FY	Y1	Y2
<p>In practical activities and through discussion they will begin to solve problems involving doubling.</p> <p>Three apples for me and three apples for you. How many apples altogether?</p>  	<p>Children will count repeated groups of the same size in practical contexts. They will use the vocabulary associated with multiplication in practical contexts. They will solve practical problems that involve combining groups of 2, 5 or 10. e.g. socks, fingers and cubes.</p> <p>For example: 6 pairs of socks. How many socks altogether?</p>  <p>Use arrays to support early multiplication.</p> 	<p>Children will use a range of vocabulary to describe multiplication and use practical resources, pictures, diagrams and the x sign to record.</p> <p>Combining Groups (repeated addition):</p> <p>3 groups of ten crayons. How many crayons altogether?</p>  <p>Using arrays. $3 \times 5 = 15$</p> 

Y3

Continue to use number lines and arrays to support multiplication.

$$4 \times 3 = 12$$



Use the partitioning method eg.

$$13 \times 5 =$$

$$10 \times 5 = 50$$

$$3 \times 5 = 15$$

$$50 + 15 = 65$$

$$13 \times 8 = 104$$

X	10	3
8	80	24

$$80 + 24 = 104$$

Y4

$$36 \times 4 = 144$$

X	30	6
4	120	24

$$120 + 24 = 144$$

Lead into:

$$36$$

$$\underline{X 4}$$

$$24 \quad (4 \times 6)$$

$$\underline{120} \quad (4 \times 30)$$

$$\underline{144}$$

1 2 7
<u>X 6</u>
<u>7 6 2</u>
1 4

Y5

Build on the work covered in Y4 with the formal method of short multiplication

(two-digit number multiplied by a one-digit number).

When children are confident introduce multiplication by a two-digit number. If necessary, return to the grid method and/or expanded method first.

$$23 \times 13 = (20 + 3) \times (10 + 3) = 299$$

X	20	3
10	200	30
3	60	9

$$200 + 30 = 230$$

$$60 + 9 = 69$$

$$230 + 69 = 299$$

Y6

Our aim is that by the end of Y6 children use mental methods (with jottings) when appropriate, but for calculations that they cannot do in their heads, they use an efficient formal written method accurately and with confidence.

The formal written method of long multiplication:

53.2
<u>X 24.0</u>
212.8
<u>1064.0</u>
1276.8

$$\begin{array}{r} 1064.0 \\ \times 24.0 \\ \hline 1276.8 \end{array}$$

Division

FY	Y1	Y2
<p>In practical activities and through discussion they will begin to solve problems involving halving and sharing.</p> <p>Share the apples between two people.</p> <p>'Half of the apples for you and half of the apples for me.'</p> 	<p>Children will start with practical sharing using a variety of resources. They will share objects into equal groups in a variety of situations. They will begin to use the vocabulary associated with division in practical contexts.</p> <p>'Share these eight apples equally between two children. How many apples will each child have?'</p>  <p>Share 20 crayons between the two pots. How many are in each pot?</p>  <p>Use arrays to support early division.</p> <p>How many groups of 2?</p>	<p>Children will use a range of vocabulary to describe division and use practical resources, pictures, diagrams and the ÷ sign to record, using multiples that they know.</p> <p>Writing is as sentences then changing it into a calculation.</p> <p>For example:</p> <p>30 crayons shared equally between three pots. (sharing)</p> <p>We have 30 crayons and put 10 crayons in each pot. How many pots will we need? (grouping)</p> $30 \div 10 = 3$  <p>Use arrays to calculate division.</p>

Y3	Y4	Y5	Y6
<p>Continue to use practical resources, pictures, diagrams, number lines, arrays and the \div sign to record, using multiples that they know, as appropriate.</p> <p>Using an empty number line to count forwards...</p> <p>$24 \div 3 = 8$</p> <p>'How many threes in 24?'</p>  <p>0 3 6 9 12 15 18 21 24</p> <p>Or jump back to make the link with repeated subtraction.</p> <p>Introduce the formal layout.</p> <p>$24 \div 3 = 8$</p> $\begin{array}{r} 8 \\ 3 \overline{) 24} \end{array}$	<p>Continue to write and calculate mathematical statements for division using the multiplication tables that the children know. Introduce remainders.</p> <p>$33 \div 4 = 8r1$</p> $\begin{array}{r} 8 \text{ r}1 \\ 4 \overline{) 33} \end{array}$ <p>This could be modelled on a numberline. Remainders are not specifically referred to until Y5 in the National Curriculum. However, this may be an appropriate point to introduce them using familiar multiplication facts.</p> <p>Division through partitioning.</p> <p>$65 \div 5 = 13$</p> <p>$50 \div 5 = 10$</p> <p>$15 \div 5 = 3$</p>	<p>Continue to practise the formal division methods. There should be opportunities to record remainders.</p> <p>The children can record the remainders as fractions. For example:</p> <p>$33 \div 4 = 8r1$ is the same as $8 \frac{1}{4}$</p>	<p>This is an alternative method for division. It is also known as long division.</p> <p>$524 \div 9 =$</p> $\begin{array}{r} 58 \text{ r}2 \\ 9 \overline{) 524} \\ \underline{45} \\ 74 \\ \underline{72} \\ 2 \end{array}$

