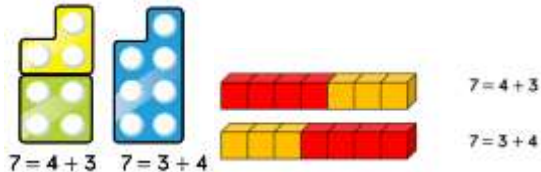
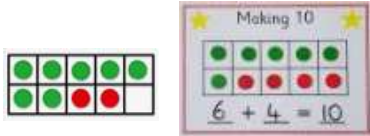



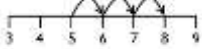
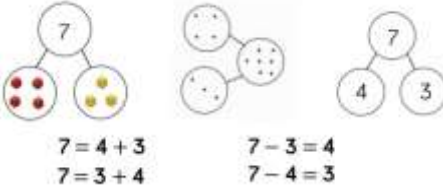

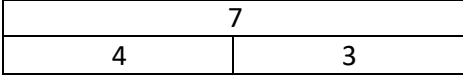
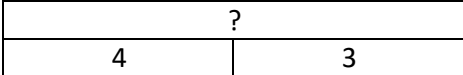


## St Francis Catholic Primary Maths Calculation Policy

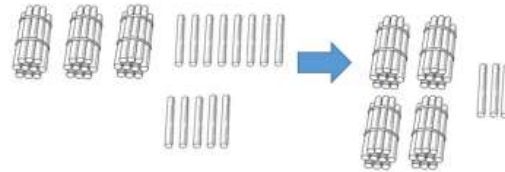
Addition				
Year Group	Vocabulary	Manipulatives and Images	Written Methods	Mental Calculations and Known Facts
Reception	<p>Add, altogether, addition, total, plus, makes, one more</p> <p>How many more to make..? How many more is...than..? How much more is..?</p> <p>Ones</p>	<p><b>Addition</b></p> <p>Add two single numbers through practical activities and discussions, using quantities and objects.</p>  <p>7 = 4 + 3    7 = 3 + 4</p>  <p>Making 10 6 + 4 = 10</p> <p>Consider representations so that children are encouraged to count on in 1s <b>and</b> in groups e.g.</p>   <p>Representation of 4+3 encourages counting on from 4</p> <p>Representation of 4+3 to help visualise 3+3+1</p>	<p>The majority of work in the EYFS will be practical.</p> <p>Children will start by mark marking and move to recording using marks that they can interpret and explain.</p>	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>Mental calculation in the EYFS will be done practically</li> <li>Find the total of two groups by counting them all</li> </ul> <p><b>Known Facts</b></p> <ul style="list-style-type: none"> <li>Cardinality –for example ‘the eightness of eight’</li> <li>Say which number is more than a given number to 10</li> <li>Say the number one more than a given number</li> <li>Number bonds up to and including 5</li> <li>Some number bonds to 10</li> </ul>

Abstract maths will be called ‘number sentences’ rather than ‘sums’, which describes an addition.

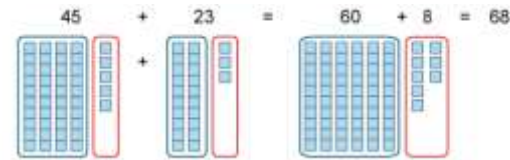
## St Francis Catholic Primary Maths Calculation Policy

<p>Year 1</p>	<p>Number bonds, number line Add, more, plus, make, sum, total, altogether Inverse Double, near double Equals, is the same as (including equals sign) Counting on How many more to make...? How many more is...than...? How much more is...? Tens and ones</p>	<p><b>Cardinal</b>  The 'eightness' of 8 Visual, word and digits.</p> <p><b>Ordinal</b> Counting in 1s on a number line</p>  <p style="text-align: center;"><math>5 + 3 = 8</math></p>  <p>Bar model is introduced using objects / squares then numbers in bars.</p>  <p>Bar model is then used to support problem solving.</p>  <p style="text-align: center;"><math>3 + 4 = 7</math></p>  <p style="text-align: center;"><math>4 = ? - 3</math></p>	<p>Children will record their work using diagrams and pictures including part part whole models. Begin to use mathematical symbols such as '+' and '=' to write simple number sentences with numbers up to 20.</p>	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>Recap cardinality – for example 'the eightness of eight'</li> <li>Ordinality – where does this number sit on a number line?</li> <li>Initially use counting on as an addition strategy but move towards more mental strategies</li> <li>Number bonds up to and including 20.</li> </ul> <p><b>Known Facts</b></p> <ul style="list-style-type: none"> <li>Number bonds up to and including 10.</li> </ul>
<p>Year 2</p>	<p>Partition, combine Tens and ones</p>	<p><b>Regrouping</b> Individual straws and bundles of 10 straws are used to illustrate making groups of 10. <math>38 + 5 = 43</math></p>	<p>Add two two-digit numbers using concrete objects, pictorial representations progressing to recording using</p>	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>Counting on in 10s from any number using Numicon models, then a</li> </ul>

## St Francis Catholic Primary Maths Calculation Policy

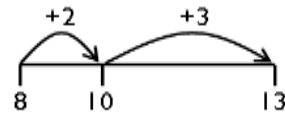


### Partitioning



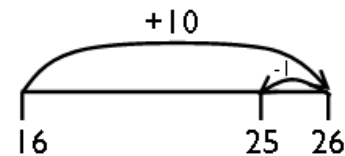
### Bridging

Represent using tens frames then record using number lines e.g.  $8 + 5 = 13$



### Compensating

$$16 + 9 = 25$$



$$16 + 11 = 27$$

number lines, part part whole diagrams and as a number sentence.

hundred square and progressing to adding mentally

- Check that children are not getting stuck in a counting in 1s strategy. A good sense check is that they don't add 10 (e.g.  $25 + 10$ ) by counting on, on their fingers but instead think '2 tens and 5 ones plus 1 ten = 3 tens and 5 ones'

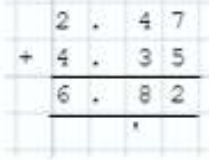
### **Known Facts**

- Multiples of 10 which total 100
- Number bonds up to and including 20

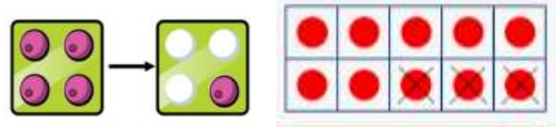
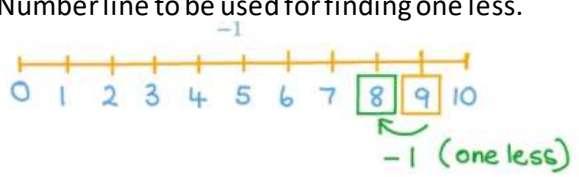
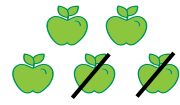
## St Francis Catholic Primary Maths Calculation Policy

Year 3	Column addition, carrying Hundreds, tens and ones	<p><b>Column addition</b> Calculate with dines then move to written method once secure.</p> <p>Model using dines to show the carrying into the next column e.g. <math>378 + 148</math></p>	<p><b>Column addition</b> Add three digit numbers involving bridging 10 or 100.</p> $\begin{array}{r} \text{H T O} \\ 239 \\ + 154 \\ \hline 393 \end{array}$ <p>Encourage children to choose the most efficient method for calculations e.g. <math>100 - 99</math> does not need to be done using a column method.</p>	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>• Adding two digit numbers mentally e.g. <math>36 + 19</math></li> <li>• Adding multiples of 10 and 100 to any given number including across 10 and 100 boundaries</li> <li>• Teach adding strings of single digit numbers, e.g. <math>6 + 3 + 4 + 9</math> = by finding number bonds to 10 first</li> </ul> $\begin{array}{r} 6 + 3 + 4 + 9 \\ \hline 10 + 12 = 22 \end{array}$
Year 4	As previous year groups Thousands, hundreds, tens, ones and tenths. Hundredths may be	<p><b>Addition facts for decimals</b> Introduce using dines <math>0.6 + 0.5 = 1.1</math></p>	<p><b>Column addition</b> Used to add numbers with up to 4 digits</p> <p>May be appropriate for adding decimals in relation to money.</p>	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>• Calculate complements to 1000 for multiples of 10 e.g. <math>340 + ? = 1000</math></li> </ul>

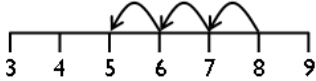

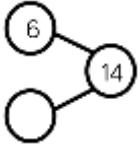

## St Francis Catholic Primary Maths Calculation Policy

	used in relation to money.			<ul style="list-style-type: none"> <li>Derive addition facts for tenths up to 0.9 e.g. <math>0.7 + 0.9 = 1.6</math></li> <li>When working with money, children should use compensating to add amounts quickly e.g. <math>£2.99 + £5.99</math> is the same as <math>£3 + £6 - 2p</math></li> </ul>
Year 5	Efficient written method Millions, hundred thousands, ten thousands, thousands, tens, ones, tenths, hundredths, thousandths	Continue to use models from previous years to support children's understanding as required.	<p><b>Column addition</b> Used for adding whole numbers with more than 4 digits.</p> <p>Used for adding decimals where appropriate.</p> 	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>Addition facts for hundredths up to 0.09 e.g. <math>0.07 + 0.09 = 0.16</math></li> <li>Add mentally using increasingly large numbers</li> </ul>
Year 6	Order of operations Ten millions, millions, hundred thousands, ten thousands, thousands, tens, ones, tenths, hundredths and thousandths	Continue to use models from previous years to support children's understanding as required.	Year 6 will continue to build on the addition skills taught in Year 5.	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>Perform mental calculations, including with mixed operations and large numbers</li> </ul>

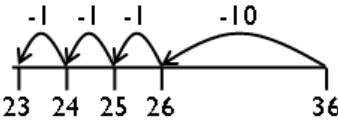
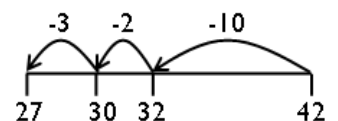
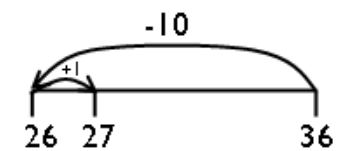
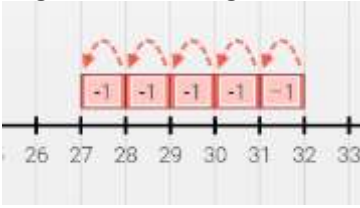
## St Francis Catholic Primary Maths Calculation Policy

Subtraction				
Year Group	<b>Vocabulary</b> New vocabulary will be used alongside previously taught vocabulary. <b>Note: we refer to ones rather than units.</b>	<b>Manipulatives and Images</b> Models and images from previous year groups will continue to be used and built upon using new models.	<b>Written Methods</b>	<b>Mental Calculations and Known Facts</b>
Reception	Take away, minus, subtract, hide, one less How many fewer is...than..? How much less is..? Ones	<p><b>Subtraction</b> Subtract two single digit numbers through practical activities and discussions, using quantities and objects.</p> <p style="text-align: center;"><math>4 - 3 = 1</math>                      <math>10 - 3 = 7</math></p> <div style="text-align: center;">  </div> <p style="text-align: center;">Number line to be used for finding one less.</p> <div style="text-align: center;">  </div>	<p>The majority of work in the EYFS will be practical.</p> <p>Children will start by mark marking and move to recording using marks that they can interpret and explain.</p>	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>Say which number is less than a given number to 10</li> </ul>
Year 1	Number bonds, number lines Inverse Equals, is the same as (including equals sign) Difference between Counting back	<p>Subtraction is understood as taking away objects from a set.</p> <div style="text-align: center;">  </div> <p style="text-align: center;">Initially subtract by counting back <b>but</b> move on to subtraction through use of known facts</p>	<p>Children will record their work using diagrams and pictures including part part whole models.</p> <p>Begin to use mathematical symbols such as '-' and '=' to write simple number</p>	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>Finds one less than a given number to 10</li> <li>Express known addition facts as subtraction facts e.g. <math>10 - 5 = 5</math></li> </ul>

## St Francis Catholic Primary Maths Calculation Policy


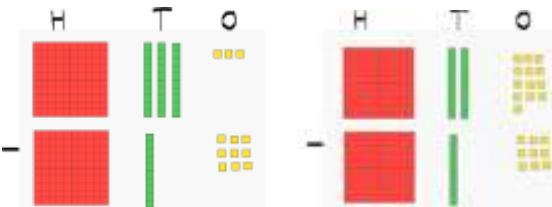
	<p>How many fewer is...than...? How much less is..? Tens and ones</p>		<p>sentences with numbers up to 20.</p>	<ul style="list-style-type: none"> <li>Subtract 2 from numbers to 10 using odds and evens counting pattern.</li> </ul> <p><b>Known Facts</b></p> <ul style="list-style-type: none"> <li>Know 'one less' than numbers to 20 e.g. <math>12 - 1</math></li> </ul>
<p>Year 2</p>	<p>As previous year groups</p> <p>Note: 'How many more' should be introduced in addition contexts and not related to subtraction at this stage e.g. Do <math>8 = 11 - ?</math> in addition contexts. Don't do <math>8 + ? = 11</math> in subtraction contexts.</p>	<p><b><u>Subtraction Facts</u></b></p>  <p><math>9 - 3 = 6</math></p> <p>Use Numicon to model the partitioned addition facts required for related subtraction facts.</p> <p><math>14 - 6 = 8</math></p>  <p>Use part, part whole model to link to addition facts especially for those which bridge 10, eg <math>14 - 6 = 8</math>.</p> <p><b><u>Subtracting 10 with Numicon</u></b></p> <p><math>25 - 10 = 15</math></p>  <p>Need to be secure with this before progressing to number lines.</p> <p><b><u>Counting back</u></b> e.g. <math>36 - 13</math></p>	<p>Subtract two two-digit numbers using concrete objects, pictorial representations progressing to recording using number lines, part part whole diagrams and as a number sentence e.g. <math>36 - 13 = 23</math>. This needs to include bridging 10 e.g. <math>42 - 15 = 27</math></p>	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>Counting back in 10s from any number using Numicon models, then a hundred square and progressing to adding mentally</li> </ul> <p><b>Known Facts</b></p> <ul style="list-style-type: none"> <li>Subtraction facts from 10 (use knowledge of partitioned addition facts e.g. <math>9 = 3 + 6</math> to relate to subtraction facts "9 is made of 3 and 6")</li> </ul>

**St Francis Catholic Primary**  
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		 <p><b>Bridging</b> e.g. <math>42 - 15</math></p>  <p><b>Compensating</b> e.g. <math>36 - 9</math></p> 		
Year 3	<p>Column subtraction Exchanging</p> <p>Explicitly teach children that we never partition to take away and reinforce this constantly.</p>	<p><b>Counting back on a number line</b> For taking away a small amount/numbers with a large difference e.g. <math>32 - 5</math></p>  <p><b>Finding the difference (counting on)</b> For numbers with a small difference/ that are close together e.g. <math>32 - 28</math></p>	<p><b>Column subtraction</b> Begin to use column method for 3 digit numbers</p> $\begin{array}{r} 3 \overset{5}{\cancel{6}} \overset{1}{2} \\ - 124 \\ \hline 238 \end{array}$ <p>Subtract decimals in the context of money where bridging not required.</p>	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>All subtraction facts from numbers to 20 (derived using bridging, compensating or near doubles)</li> <li>Subtract 2 digit numbers mentally e.g. calculate <math>63 - 26</math> using counting on or counting back strategies as appropriate including bridging and compensating</li> </ul>






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		 <p>Model how we only need to focus on the gap between numbers by crossing out either side.</p> <p>Children need lots of practice choosing when to use counting on (small difference / numbers close together) and when to use counting back (large difference / taking away a small amount).</p> <p><b>Column subtraction</b> Calculate with dines then move to written method once secure. Model using dines for exchanging.</p> 		<ul style="list-style-type: none"> <li>• Complements to 100 e.g. <math>100 - 64</math> (counting on strategy)</li> <li>• Subtraction facts for multiples of 10 e.g. <math>160 - 70 = 90</math></li> <li>• Subtraction facts for HTO – O e.g. <math>193 - 8 = 185</math></li> </ul>
Year 4	Efficient written methods	<p><b>Column subtraction</b> Model exchanges using dines as shown above.</p>	<p>Use column subtraction to subtract decimals to 2 dp.</p> <p>In relation to money, teach that when finding change from a round number (e.g. £5, £10, £20) it is easier to count on, using a number</p>	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>• Continue to use counting on / counting back for all calculations that can and should be done mentally</li> </ul>


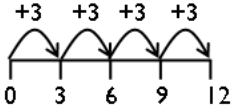


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			line, than use column subtraction.	
Year 5	As previous year groups	Continue to use models from previous years to support children's understanding as required.	<p><b>Column subtraction</b> Subtract whole numbers with more than 4 digits.</p> <p>Subtract numbers that do not have the same number of decimal places. Emphasise alignment of decimal places for column subtraction. Show how a 0 can be used as a place holder e.g. write 0 in for empty hundredths column.</p>	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>Continue to use counting on / counting back for all calculations that can and should be done mentally</li> </ul>
Year 6	Order of operations	Continue to use models from previous years to support children's understanding as required.	Year 6 will continue to build on the addition skills taught in Year 5.	As previous year groups

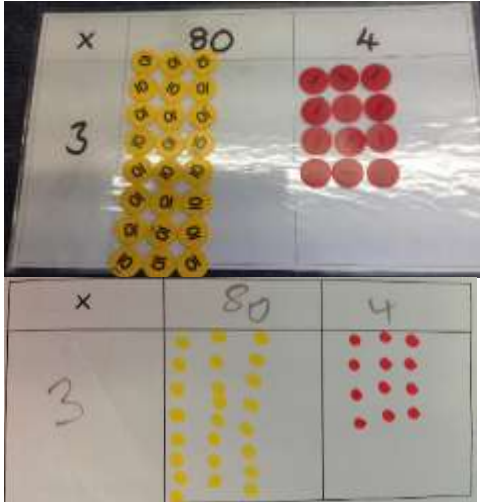
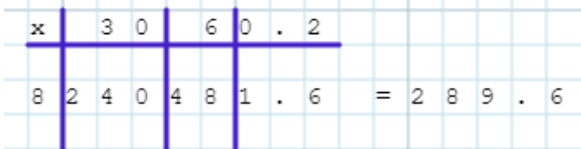
## St Francis Catholic Primary Maths Calculation Policy

<b>Multiplication</b>				
<b>Year Group</b>	<b>Vocabulary</b> New vocabulary will be used alongside previously taught vocabulary.	<b>Manipulatives and Images</b> Models and images from previous year groups will continue to be used and built upon using new models.	<b>Written Methods</b>	<b>Mental Calculations and Known Facts</b>
Reception	Doubling, odds, evens	<p>Begin to count in 2s as even numbers, using objects and representations.</p>  <p>Use objects and models to solve problems related to doubling.</p>  <p>Count repeated groups of the same size e.g. 2 frogs on each lily pad</p> 	<p>The majority of work in the EYFS will be practical.</p> <p>Children will start by mark marking and move to recording and representing double facts, using marks that they can interpret and explain.</p>	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>• Mental calculation in the EYFS will be done practically</li> <li>• Able to calculate some double facts</li> <li>• Begin to count in 2s</li> <li>• Count repeated groups of the same size.</li> <li>• Respond to and make up number stories.</li> </ul> <p><b>Known Facts</b></p> <ul style="list-style-type: none"> <li>• Some double facts using number to 10</li> </ul>
Year 1	Odd, even Count in twos, fives	<p>Children calculate answers using concrete objects, pictorial representations and move on to arrays with support.</p>	<p>Children are not expected to record multiplication formally.</p>	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>• Count in 2s, 5s and 10s (supported by manipulatives)</li> </ul>

## St Francis Catholic Primary Maths Calculation Policy

	<p>Count in tens (forwards from) How many times? Lots of, groups of Once, twice, three times, five times Multiple of, times, multiply, multiply by Repeated addition Array, row, column Double</p>	<p><b>Numicon</b> Practise showing the difference between an addition sentence and a multiplication sentence.</p>  <p><math>2+3 = 5</math>      <math>3 \times 2 = 6</math> (said as 3 two times is 6)</p>		<p><b>Known Facts</b></p> <ul style="list-style-type: none"> <li>• Fluent recall of doubles of numbers to 5</li> </ul>
<p>Year 2</p>	<p>Multiplication facts</p>	<p><b>Repeated addition</b> Use a number line to model multiplication as repeated addition where children are less familiar with counting patterns e.g. <math>3 \times 4 = 12</math></p>  <p><b>Arrays</b> Use these to show that multiplication can be done in any order e.g. draw out how this array shows 3 lots of 4 in each row AND 4 lots of 3 in each column. Both ways make 12 in total.</p>  <p><math>3 \times 4 = 12</math></p> <p><b>Counting stick times tables</b></p>  <p>Use method modelled by Jill Mansergh <a href="https://www.youtube.com/">https://www.youtube.com/</a></p>	<p>Children will move towards recording multiplication using the multiplication sign in a number sentence e.g. <math>2 \times 8 = 16</math></p>	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>• Begin to count in 3s</li> <li>• Start to derive multiplication facts</li> </ul> <p><b>Known Facts</b></p> <ul style="list-style-type: none"> <li>• Doubles of numbers to 10</li> <li>• Begin to develop 2, 5 and 10 times tables</li> </ul>

## St Francis Catholic Primary Maths Calculation Policy

		<a href="https://www.youtube.com/watch?v=yXdHGBfoqfw&amp;safe=active">watch?v=yXdHGBfoqfw&amp;safe=active</a>		
Year 3	Factor, product, multiple / multiples of Scale up by 10	<p><b>Array as a visual representation of grid method</b> e.g. using counters to represent <math>3 \times 84</math></p> 	<p><b>Grid method</b> Multiply a 2 digit number by 2, 3, 4, 5 and 8</p> $\begin{array}{r rr} \times & 80 & 4 \\ \hline 3 & 240 & 12 \end{array} = 252$	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>• Multiply a number by 4 by doubling and doubling again</li> <li>• Multiply a 2 digit whole number by 10</li> <li>• Derive place value calculations from times table facts e.g. <math>70 \times 3</math></li> <li>• Derive facts for 6, 7 and 9 times tables</li> </ul> <p><b>Known Facts</b></p> <ul style="list-style-type: none"> <li>• Double 15, 25, 35, 45</li> <li>• Secure knowledge of 2, 5 and 10 times tables</li> <li>• Develop fluency in 3, 4 and 8 times tables</li> </ul>
Year 4	Inverse Derive Scale up by 10, 100	<p><b>Grid method</b> Extend to use with a single digit multiplied by a decimal e.g. <math>36.2 \times 8</math></p> 	<p><b>Short multiplication</b> Use efficient methods of short multiplication e.g. <math>342 \times 7 = 2394</math></p> $\begin{array}{r} 342 \\ \times 7 \\ \hline 2394 \end{array}$	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>• Derive the doubles of tenths to 0.9</li> <li>• Use place value to multiply a whole number by 10 or 100</li> <li>• Multiply two multiples of 10 together e.g. <math>40 \times 30</math></li> <li>• Derive place value calculations with decimals using times tables e.g. <math>0.7 \times 3</math></li> <li>• Multiply teen numbers by a single digit using visualised partitioning (liked to Y3 grid method)</li> </ul>


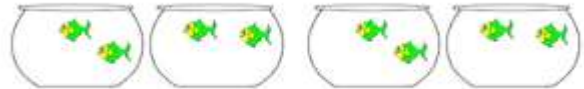
**St Francis Catholic Primary  
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				$\begin{array}{r} 14 \times 6 \\ / \quad \backslash \\ 60 + 24 \end{array} = 84$ <p><b>Known Facts</b></p> <ul style="list-style-type: none"> <li>All multiplication facts up to 12 x 12</li> </ul>
Year 5	Factor pairs Composite numbers, prime number, square number, cubed number, common factors, common multiples Formal written method Scale by 1 tenth, 1 hundredth (dividing by 10 / 100)	Continue to use models from previous years to support children's understanding as required.	Continue to use grid or short multiplication method for calculations where appropriate e.g. decimal numbers by a single digit (31.62 x 8) or a 4 digit number by any 1 digit number.  <p><b>Long Multiplication</b> Used for multiplying any 3 digit number by 2 digit numbers.</p> $\begin{array}{r} 124 \\ \times 26 \\ \hline 744 \\ 2480 \\ \hline 3224 \\ \hline 11 \end{array}$	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>Doubles of hundredths to 0.09 and corresponding halves</li> <li>Multiply decimals and whole numbers by 10, 100 and 1,000</li> <li>Multiply a two digit number by a single digit</li> <li>Derive place value calculations with decimals using times tables e.g. 0.7 x 0.3</li> <li>Recognise and use square numbers and cube numbers</li> </ul> <p><b>Known Facts</b></p> <ul style="list-style-type: none"> <li>Place value calculations using times table knowledge such as 40 x 3</li> </ul>
Year 6	Order of operations Common factors, common multiples, Prime factors	Continue to use models from previous years to support children's understanding as required.	<p><b>Formal written method of long multiplication</b> As Y5, used to multiply multi-digit numbers by 2 digit whole numbers.</p>	As previous year groups.

St Francis Catholic Primary  
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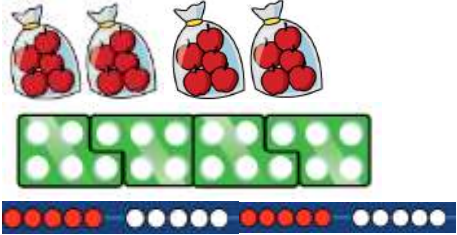


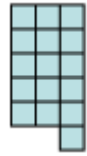
				
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**St Francis Catholic Primary  
Maths Calculation Policy**

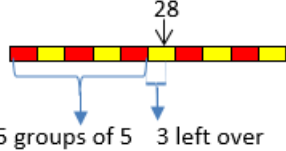
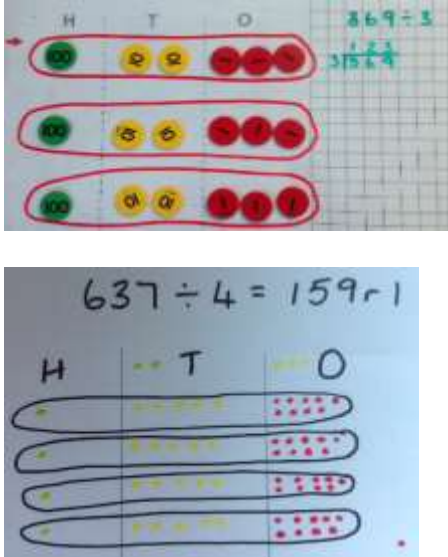
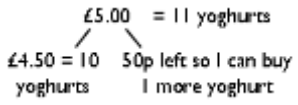
Division				
Year Group	Vocabulary New vocabulary will be used alongside previously taught vocabulary.	Manipulatives and Images Models and images from previous year groups will continue to be used and built upon using new models.	Written Methods	Mental Calculations and Known Facts
Reception	Sharing, equal groups, halving	<p><b>Sharing</b></p>  <p>8 sweets shared between 4 children</p>	<p>The majority of work in the EYFS will be practical.</p> <p>Children will start by mark marking and move to recording and representing how quantities can be distributed evenly using marks that they can interpret and explain.</p>	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>• Explore how quantities can be distributed evenly</li> <li>• Share objects into equal groups and count how many are in each group</li> </ul>
Year 1	<p>Count in tens (backwards from)</p> <p>Halve, half</p> <p>Share, share equally</p> <p>Group in pairs, threes, etc.</p> <p>Equal groups of</p>	<p><b>Sharing</b></p> <p>Can be done in realistic class contexts e.g. sharing out resources in a group context.</p> <p><b>Grouping</b></p> <p>Emphasis on grouping for division to avoid children getting stuck using inefficient methods such as “one for you, one for me”. Instead, children should use their counting in 2s, 5s and 10s to solve division problems. E.g. 2 fish can live in 1 bowl. How many bowls do 8 fish need?</p> 	<p>Children are not expected to record division formally.</p>	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>• Use 2s, 5s and 10s, skip counting to answer questions such as ‘how many groups of 10 make 30?’ with reference to manipulatives</li> </ul> <p><b>Known Facts</b></p> <ul style="list-style-type: none"> <li>• Halves of even numbers to 10</li> </ul>




## St Francis Catholic Primary Maths Calculation Policy

	<p>Divided into groups of</p>	<p>20 apples are put into bags of 5. How many bags are there?</p> 		
<p>Year 2</p>	<p>Division facts</p>	<p><b>Repeated subtraction</b> Use a number line to show both groups and remainders in the context of division problems e.g. 14 apples are put in bags of 3. How many full bags are there and how many apples are left over?</p> 	<p>Children will move towards recording division using the division sign in a number sentence e.g. <math>12 \div 3 = 4</math> (read aloud as 12 divided into groups of 4 makes 3).</p>	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>Use counting up in 3s, 5s and 10s to start to derive division facts as phrased as “How many groups of 3 in 12?”</li> </ul> <p><b>Known facts</b></p> <ul style="list-style-type: none"> <li>Corresponding halves from doubles to 10 e.g. half of 16 is 8</li> </ul>
<p>Year 3</p>	<p>As previous year groups</p>	<p><b>Grouping using partitioning</b> Use a number line to illustrate use of known facts e.g. <math>43 \div 3</math> becomes <math>30 \div 3 = 10</math> and <math>12 \div 3 = 4</math> with a remainder of 1</p>  <p><b>Arrays with remainders</b> e.g. <math>16 \div 3 = 5 \text{ r } 1</math></p> 	<p>Continue to use repeated subtraction on a number line e.g. <math>65 \div 4 = 16 \text{ r } 1</math></p> <p>Children may record jottings to support partitioning e.g. <math>43 \div 3</math></p> <p><math>30 \div 3 = 10</math> <math>12 \div 3 = 10</math></p>	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>Use half and half again for <math>\div 4</math>.</li> <li>Divide whole numbers by 10 (using place value to move digits to the right)</li> <li>Calculate division facts with remainders for 2, 3, 4, 5 and 10 times tables</li> </ul> <p><b>Known Facts</b></p> <ul style="list-style-type: none"> <li>Half of 90, 70, 50 and 30</li> <li>Begin to secure division facts for 3, 4, 5, 8 and 10 times table</li> </ul>



## St Francis Catholic Primary Maths Calculation Policy

		<p><b>Counting Stick</b> Use knowledge of times tables on counting stick to identify where number lies, identify how many groups can be made then find remainder e.g. <math>28 \div 5 = 5 \text{ r } 3</math></p>  <p style="text-align: center;">28</p> <p style="text-align: center;">5 groups of 5    3 left over</p>		
Year 4	As previous year groups	<p><b>Introduce bus stop method using place value counters</b></p> 	<p><b>Bus stop method for single digit division</b> Divide a 2 or 3 digit number by a single digit.</p> $4 \overline{) 159 \text{ r } 1}$	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>• Halves of decimals to 1 dp for even tenths e.g. 5.8</li> <li>• Division facts using place values calculations such as <math>180 \div 3</math></li> <li>• Divide whole numbers by 10 or 100</li> <li>• Teach mental chunking for simple calculations e.g. Yoghurts cost 45p each; how many can I buy for £5?</li> </ul>  <p><b>Known Facts</b></p> <ul style="list-style-type: none"> <li>• All corresponding division facts for times tables up to 12 x 12</li> </ul>
Year 5	Square roots	Continue to use models from previous years to support children's understanding as required.	<b>Bus stop method</b>	<b>Mental Calculations</b>

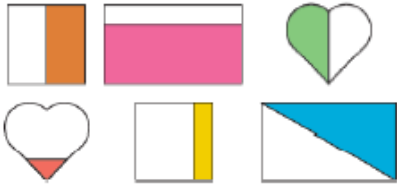
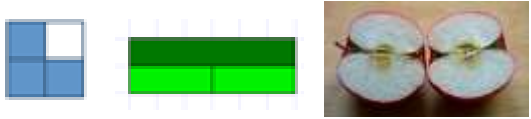
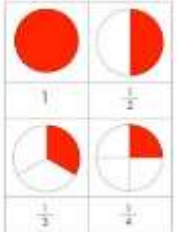

## St Francis Catholic Primary Maths Calculation Policy

			<p>Divide any 3 or 4 digit number by any 1 digit number e.g. <math>432 \div 5 = 86 \text{ r } 2</math></p> $\begin{array}{r} 86 \text{ r } 2 \\ 5 \overline{) 432} \end{array}$ <p>Interpret any remainders appropriately for the context.</p>	<ul style="list-style-type: none"> <li>• Halves of decimals to 1 dp for odd tenths e.g. half of 5.7</li> <li>• Division facts using place values calculations such as <math>1.8 \div 3</math></li> <li>• Divide decimals and whole numbers by 10, 100 and 1000</li> </ul> <p><b>Known Facts</b></p> <ul style="list-style-type: none"> <li>• Prime numbers up to 19</li> </ul>
Year 6	As previous year groups	Continue to use models from previous years to support children's understanding as required.	<p><b>Long division method</b></p> <p>Use the bus stop method as in year 5 and long division method for dividing 3 or 4 digit numbers by 2 digits. Remainders should be expressed as a remainder, decimal fraction, fraction or rounded depending on the context e.g. <math>5634 \div 13 = 433 \text{ remainder } 5</math></p> 	As previous year groups

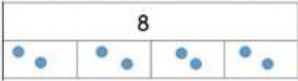
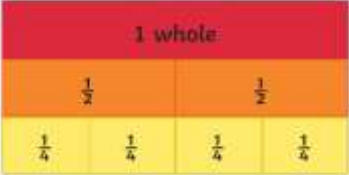
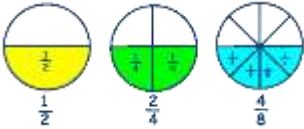

## St Francis Catholic Primary Maths Calculation Policy

Fractions				
Year Group	Vocabulary	Manipulatives and Images	Written Methods	Mental Calculations and Known Facts
<p>Consistent, accurate language for fractions is essential. Children must understand that a fraction is a group, object or a shape which is equally divided and need to be given a wide range of images and representations to help them to identify a range of fractions. They need to be exposed to fractions show in different ways e.g. <math>\frac{6}{9}</math> will have 6 parts out of 9 coloured but they may not be the 6 parts that are adjacent. Children also need experience of seeing and discussing misconceptions where the image is not split equally. They should also be exposed to a fraction as a number on a number line as many children struggle to see <math>\frac{1}{2}</math> as between 0 and 1 on a 0-10 number line.</p>				
Reception	Full, empty, half full, half	 <p>In the context of capacity, children will be exposed to the idea and language of full, empty and half full.</p>  <p>Using resources, children find half of numbers to 10.</p> <p><b>Use the following sentence stems:</b>            We need to find half of <u>8</u>.            So, we need to split <u>8</u> into 2 groups.  <u>8</u> into 2 groups is <u>4</u>.            So, half of <u>8</u> is <u>4</u>.</p>	<p>The majority of work in the EYFS will be practical.</p> <p>Children will start by mark marking and move to recording using marks that they can interpret and explain.</p>	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>Using resources children can find half of numbers to 10.</li> </ul>
Year 1	Whole	<b>Half of shapes</b>		<b>Mental Calculations</b>


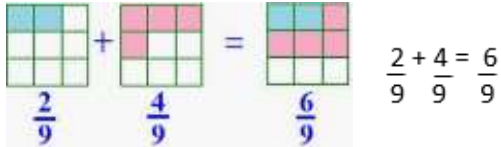
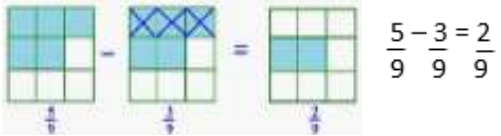
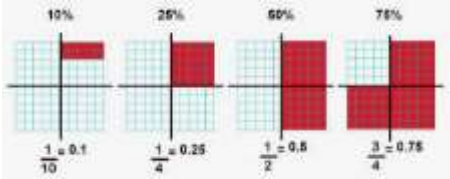
## St Francis Catholic Primary Maths Calculation Policy

	<p>Equal parts Four equal parts One half, two halves A quarter, two quarters</p>	<p>Look at what a half is and what a half isn't.</p>  <p>Children should understand <math>\frac{1}{2}</math> as 1 of 2 equal parts and <math>\frac{1}{4}</math> as 1 of 4 equal parts.</p>  <p><b>Use the following sentence stems:</b> We need to find half of <u>8</u>. So, we need to split <u>8</u> into 2 groups. <u>8</u> into 2 groups is <u>4</u>. So, half of <u>8</u> is <u>4</u>.</p>		<ul style="list-style-type: none"> <li>Find half of all even numbers to 20</li> </ul> <p><b>Known Facts</b></p> <ul style="list-style-type: none"> <li>Half of even numbers to 10</li> </ul>
Year 2	<p>Three quarters, one third, a third Equivalence, equivalent</p>	<p>Practically divide objects, shapes and groups.</p>  <p><b>Bar Model</b> Use the bar model to find unit and non-unit fractions of an amount e.g. <math>\frac{3}{4}</math> of 8 = 6</p>	<p><math>\frac{1}{2}</math> of 30 = 15</p>	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>Counting up in <math>\frac{1}{2}</math>s and <math>\frac{1}{4}</math>s to 10</li> <li>Half of even numbers. As numbers become larger, children should use mental partitioning to find half</li> </ul> 

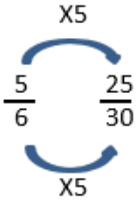
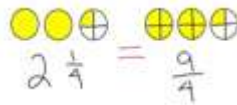
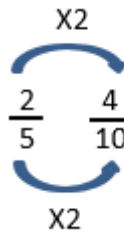
## St Francis Catholic Primary Maths Calculation Policy

		<p style="text-align: center;">Find <math>\frac{3}{4}</math> of 8</p>  <p><b>Equivalence</b> Understand simple equivalence through images such as <math>\frac{1}{2} = \frac{2}{4}</math>.</p> 		<p><b>Known Facts</b></p> <ul style="list-style-type: none"> <li>• Half of even numbers to 20, recognising this as dividing by 2 e.g. <math>16 \div 2</math> finds half of 16</li> </ul>
Year 3	Numerator, denominator Unit fraction, non-unit fraction Compare and order Tenths	<p><b>Equivalence</b> Continue to use images to show equivalence of fraction families.</p>  <p><b>Order fractions</b> With the same denominator/numerator using images.</p>  <p><b>Position fractions</b> Using a number line.</p>	Continue to use the bar model to find unit and non-unit fractions of an amount.	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>• Counting up and down in <math>\frac{1}{10}</math>s</li> <li>• Halves of odd and even numbers</li> <li>• Start to make the link between fractions of an amount and division</li> </ul> <p><b>Known Facts</b></p> <ul style="list-style-type: none"> <li>• Halves of 30, 50, 70, 90</li> </ul>

## St Francis Catholic Primary Maths Calculation Policy

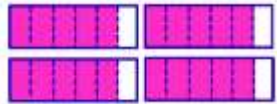

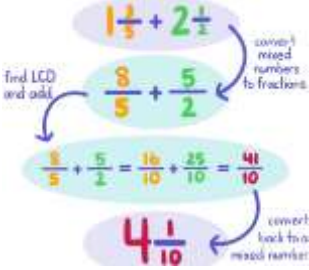
		<p style="text-align: center;">Estimate the position of <math>\frac{1}{3}</math>, <math>\frac{1}{5}</math> and <math>\frac{7}{10}</math></p>  <p><b>Add and subtract fractions</b> With the same denominators using images to support.</p>  		
Year 4	Equivalent decimals and fractions	<p>Year 4 fractions builds on Y3 and should continue to use resources and visual representations for all work as shown in Y3.</p> <p>Link fractions to decimals and percentages through visual representations and understanding % as part of 100.</p> 	Many children will add and subtract fractions with the denominator without images by the end of the year.	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>Counting up and down in 1/100s</li> <li>Mentally calculate a quarter and a fifth of a number through use of known facts.</li> <li>Link between fractions of an amount and division.</li> </ul> <p><b>Known Facts</b></p> <ul style="list-style-type: none"> <li>Half of 1, 3, 5, 7, 9</li> <li>Tenths of numbers including some decimals.</li> </ul>
Year 5	Proper fractions, improper fractions, mixed numbers	Children will start to use more abstract methods to show equivalence and addition of fractions.	Children will record their workings out alongside or	<b>Mental Calculations</b>

## St Francis Catholic Primary Maths Calculation Policy

	<p>Percentage Half, quarter, fifth, two fifths, four fifths Convert Simplify, factors, multiples</p>	<p>Equivalent fractions and comparing by using the same denominator.</p>  <p>Convert between mixed number and improper fractions.</p> $2 \times 4 + 1 = 9$  $9 \div 4 = 2 \frac{1}{4}$ <p>Adding and subtracting fractions with different denominators.</p> $\frac{3}{10} + \frac{2}{5} = \frac{7}{10}$  <p><b>Multiply fractions</b> Children need to understand that a whole number is a number over 1 e.g. <math>\frac{x}{1}</math>. It will help children to show the whole number as over 1 for multiplication so 4 becomes <math>\frac{4}{1}</math>.</p>	<p>within their number sentences e.g.</p> $\frac{1}{2} - \frac{4}{10} = \frac{5}{10} - \frac{4}{10} = \frac{1}{10}$	<ul style="list-style-type: none"> <li>• Find tenths, hundredths, halves, quarters and fifths of an amount quickly.</li> <li>• Link between fractions of an amount and division.</li> <li>• Start to use division facts &amp; place value calculations such as if I know <math>18 \div 3</math> then I know <math>1.8 \div 3</math> and understand that this is the same as <math>1/3</math> of 1.8. Children should use place value to support this.</li> </ul>
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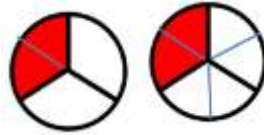


## St Francis Catholic Primary Maths Calculation Policy

		$\frac{5}{6} \times 4 = \frac{20}{6}$  $\frac{20}{6} = 3 \frac{2}{6}$ $\frac{5}{6} \times 4 = 3 \frac{2}{6}$ <p>Multiplying mixed numbers by whole numbers e.g.  <math>1 \frac{1}{2} \times 3 = 4 \frac{1}{2}</math></p> 		
Year 6	As previous year groups	<p>By Y6 the children will have a good understanding of how to represent fractions and will mostly use abstract methods to calculate.</p> <p><b>Adding and subtracting mixed number fractions</b></p>  <p><b>Multiplying fractions</b>          Children need to know that x (multiply) also can be described as 'of', so the number sentence could be read <math>\frac{1}{2}</math> of <math>\frac{1}{3}</math>.</p>	Children should continue to record their working out alongside their number sentences.	<p><b>Mental Calculations</b></p> <ul style="list-style-type: none"> <li>Continue to develop mental maths strategies from year 5.</li> </ul>

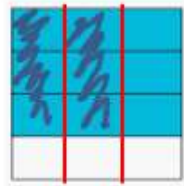
## St Francis Catholic Primary Maths Calculation Policy

$$\frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$$



Show how  $\frac{1}{3}$  is cut into  $\frac{1}{2}$ , but as all parts are equal, all thirds need to be cut into half.

$$\frac{2}{3} \times \frac{3}{4} = \frac{6}{12}$$



Or

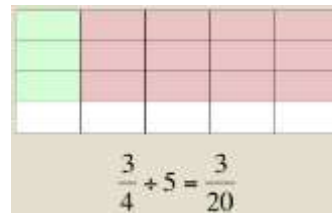


### Division

$$\frac{3}{4} \div 5 =$$

$$\frac{3}{4} \div \frac{5}{1} =$$

$$\frac{3}{4} \times \frac{1}{5} = \frac{3}{20}$$



Make sure to draw out the link between fractions and division e.g.  $\frac{3}{4}$  divided by 3 is  $\frac{1}{4}$  or  $\frac{8}{9}$  divided by 4 is  $\frac{2}{9}$ .