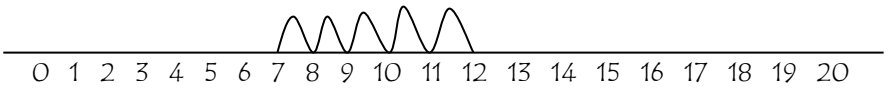
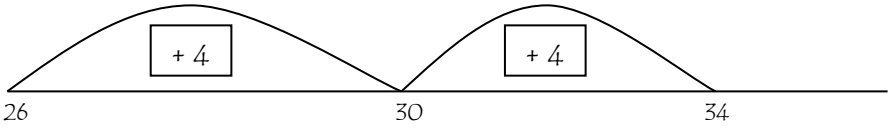
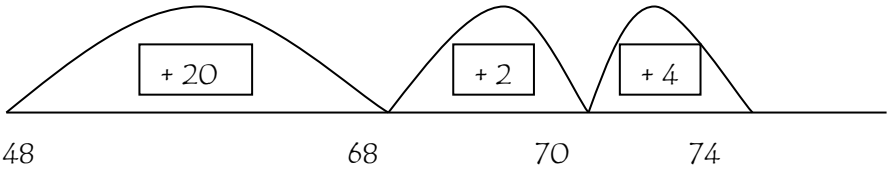
St Mary's Catholic Primary School's Calculation

These are the methods which we use to teach addition. Although the stages are assigned to year groups, this very much depends on the child's level of understanding and therefore they will work on a method that is suitable for them. The images for all methods are repeatedly used from R to Year 6 to help consolidate understanding.

U = units T = tens H = hundreds

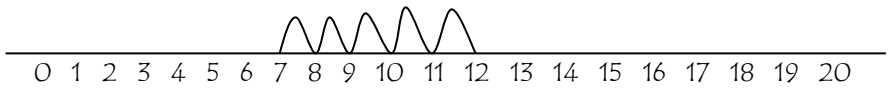
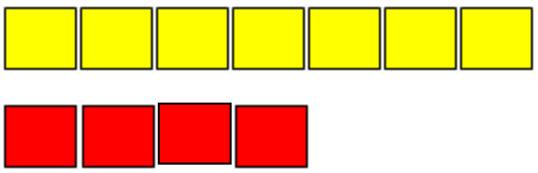
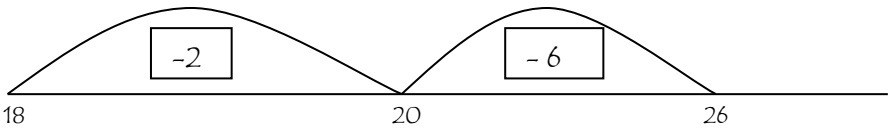
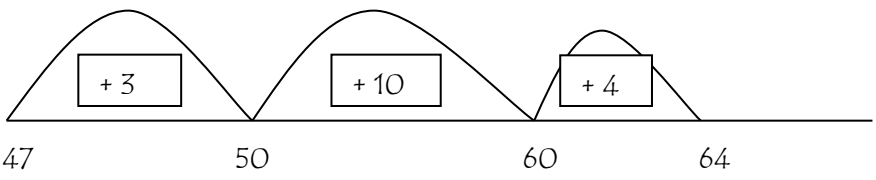
Stage 1 Reception	Counting sets of objects or pictures of objects reliably.	Starting off by counting how many objects in 1 group by pointing with their finger whilst counting out loud.
Stage 2 Reception	Combining 2 sets of objects into 1 group and counting practically.	So for **6 +2 =** ☐ the child may get 6 cubes and then 2 more and then count how many altogether.
Stage 3 Reception	Drawing pictures/dots (informal jottings) then counting how many altogether.	**4 + 2 = 6** * * * * + * *
Stage 4 Year 1	Counting on using a marked number line.	**7 + 5 = 12** 
Stage 5 Year 1	Counting on using a blank number line and jump sizes of the child's choosing – starting on the largest number.	**8 + 26 = 34** 
Stage 6 Year 1	Partitioning the smaller number into T and U to count on an empty number line – starting on the largest number.	**26 + 48 = 74** 20 6 

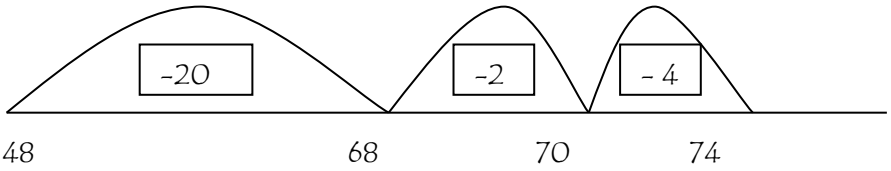
Stage 7 Year 1 and 2	Partitioning the smaller number into T and U and then counting on mentally, recording each stage.	**32 + 56 = 88** 56 + 32 56 + 30 = 86 86 + 2 = 88
Stage 8 Year 2	Expanded column method – partitioning the numbers and starting with the H	137 + 152 = 289 100 + 30 + 7 100 + 50 + 2 200 + 80 + 9 289
Stage 9 Year 3	Expanded column method – partitioning the numbers to then add starting with the U.	2 4 6 + 1 7 8 1 4 1 1 0 3 0 0 4 2 4
Stage 10 Year 3	Compact column method where digits are carried to the next column – calculating should naturally start at the U	2 4 6 + 1 7 8 4 2 4
Stage 11 Year 4 and 5	Compact column method, starting at U using 4 and 5 digit numbers.	2 2 4 6 +4 1 7 8 6 4 2 4
Stage 12 Year 5	Compact column method, starting at U using more than two numbers, decimals or larger 5 digit+ numbers	£3 4. 6 7 + £1 2. 4 6 + £1 1. 3 5 £ 5 8. 4 8

Stage 12 Year 5/6	By year 5/6 children should have developed the full range of methods so that they can move on to choosing suitable methods for a wide variety of maths
Vocabulary for addition	addition altogether total sum of plus add

St Mary's Catholic Primary School's Calculation

These are the methods which we use to teach subtraction. Although the stages are assigned to year groups, this very much depends on the child's level of understanding and therefore they will work on a method that is suitable for them. The images for all methods are repeatedly used from R to Year 6 to help consolidate understanding.

Stage 1 Reception	Practically getting a set of objects or pictures of objects and then taking some away.	Can you take away 3 from this group? Here are 7 cubes, can you take away 4?
Stage 2 Reception	Practically taking away objects and counting how many are left.	So for 6 – 2 = ☐ the child may get 6 cubes and then take away 2 cubes and then count how many left.
Stage 3 Reception/ Year 1	Drawing pictures/dots (informal jottings) then crossing out the number to take away and then counting how many are left.	6 – 2 = 4 ○ ○ ○ ○ Ø Ø
Stage 4 Year 1	Counting back using a marked number line. Starting to look practically at finding the difference – using objects like cubes.	12 – 5 = 7   What is the difference between 7 and 4?
Stage 5 Year 1 and 2	Counting back using a blank number line and jump sizes of the child's choosing. Starting to look at finding the difference using an empty number line and counting on from the smallest number in steps of the child's choosing. They	26 – 8 = 18  64 – 47 = 17 

	then add the numbers in the bridges.	
Stage 6 Year 2	Partitioning the smaller number into T and U to count back on an empty number line.	**74 – 26 = 48** 20 6 
Stage 7 Year 2	Expanded column method – partitioning the numbers and starting with the H	357 – 132 = 25 300 + 50 + 7 100 + 30 + 2 200 + 20 + 5 25
Stage 8 Year 3	Partitioning the numbers and arranging them in the column – using sharing to show how the next stage of the column method works.	**74 – 27 = 47** 70 + 4 - 20 + 7 60 1 ~~70~~ + 4 - 20 + 7 40 + 7 = 47 **741 – 367 = 374** 700 + 40 + 1 - 300 + 60 + 7 600 130 1 ~~700~~ + ~~40~~ + 1 - 300 + 60 + 7 300 + 70 + 4 = 374
Stage 9 Year 4	Column method –starting with the U.	1 13 2 ~~4~~ 16 - 1 7 8 6 8
Stage 10 Year 5 and 6	By year 6 children should have developed the full range of methods so that they can move on to choosing suitable methods for a wide variety of maths.	

Vocabulary for subtraction	subtraction take away difference how many more than how many left how many more needed

St Mary's Catholic Primary School's Calculation

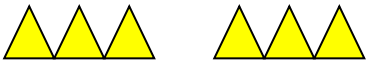
These are the methods which we use to teach multiplication. Although the stages are assigned to year groups, this very much depends on the child's level of understanding and therefore they will work on a method that is suitable for them. The images for all methods are repeatedly used from R to Year 6 to help consolidate understanding.

<table>
<tr><td>Learning the times tables</td><td colspan="2">By end of Year 2 to be able to recite: x2, x5, x10, x9, x11

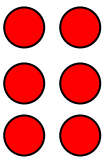
By end of Year 4 to be able to recite: x3, x4, x6, x7, x8, x12

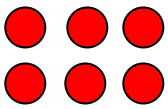
Ideally, children should know the times tables up to 12 x 12 before entering Year 5 so that they focus on more in depth maths rather than getting stuck on times tables e.g working on fractions of amounts and then getting stuck on the 6 times table.</td></tr>
<tr><td>Stage 1

Reception</td><td>Counting practically in repeated groups.</td><td>A child may be presented with 5 groups of 2, they would be asked how many each each group (2) and how many altogether.</td></tr>
<tr><td>Stage 2

Year 1</td><td>Grouping objects and totalling up. A child uses objects to present their understanding of 3 x 2 before using them to calculate the answer.</td><td>3 x 2 = 6
 
= 6
OR
 
= 6

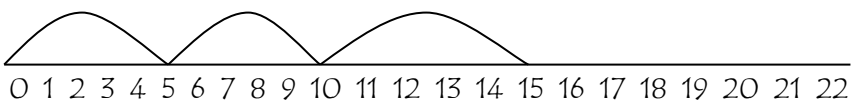
At this stage children can record this calculation in either of the two ways described above as they build the understanding that multiplication (like addition) can be done in any order.</td></tr>
<tr><td>Stage 3

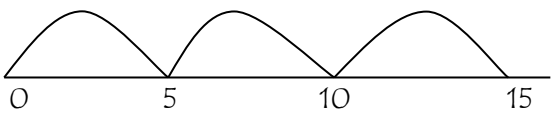
Year 1 & 2</td><td>Presenting and reading arrays. Understanding that multiplication is repeated addition.</td><td>3 x 2 = 6
 
3 + 3 = 6

2 x 3 = 6
 
2 + 2 + 2 = 6</td></tr>
<tr><td>Stage 4

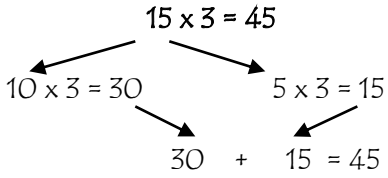
Year 2</td><td>Using knowledge of repeated addition to show multiplication on a marked number line.

THEN

Repeating the same on an empty number line</td><td>5 x 3 = 15 (5 + 5 + 5)
 
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

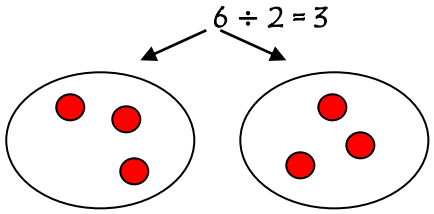
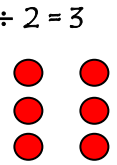
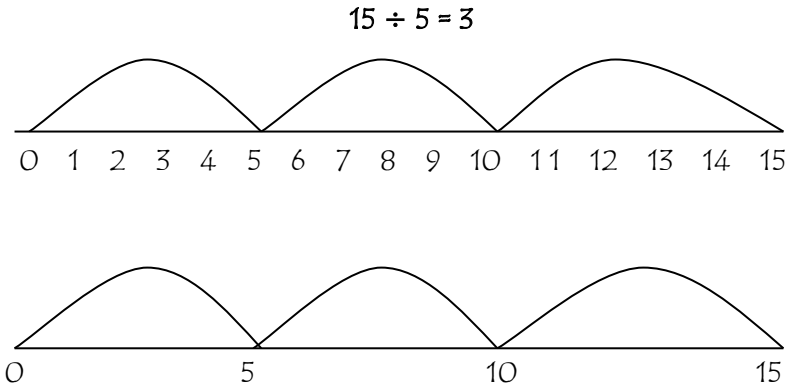
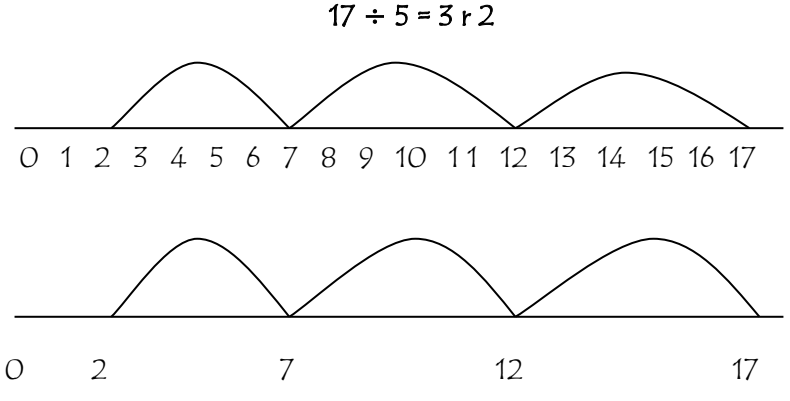
 
0 5 10 15</td></tr>
</table>

Once children enter into Year 3 they shall be taught that **3 x 2** means the number 3 two times. Therefore **2 x 3** means the number 2 three times. This understanding is important as it leads on to understanding sequences of calculations in higher maths once into KS3 and KS4.

Stage 5 Year 3	At this stage children need to understand the effect of multiplying a number by 10 and 100. Even though they will be taught to add a place holder/s at the end of the number they will be shown why this is.	**13 x 10 = 130** H T U ← 1 3 1 3 0 **13 x 100 = 1300** Th H T U ← 1 3 1 3 0 0 Understanding of this is crucial to help with the partitioning method in the next stage.
Stage 6 Year 3/4	Partitioning the numbers enables chidlren to see how the method in the next stage is built up.	
Stage 7 Year 4/5	Long multiplication – children should describe what they do by saying the actual values of the digits in the columns. For example, the second step in 38 × 7 is 'thirty multiplied by seven', not 'three times seven'.	38 x 7 56 (8 x 7) 210 (30 x 7) 266 56 x 27 42 (6 x 7) + 350 (50 x 7) 120 (6 x 20) 1000 (50 x 20) 1512
Stage 8 Year 6	In Year 6 the children will learn how to record short and long multiplication in a formal way without the necessary expanding of partitioning.	38 x 7 266 This requires adding the 210 made by 30 x 7 to the 50 recorded by the 5. 56 x 27 392 1120 1512
Vocabulary for multiplication	groups of lots of repeated addition times arrays multiplied by product	

St Mary's Catholic Primary School's Calculation

These are the methods which we use to teach division. Although the stages are assigned to year groups, this very much depends on the child's level of understanding and therefore they will work on a method that is suitable for them. The images for all methods are repeatedly used from R to Year 6 to help consolidate understanding.

Stage 1 Reception	Sharing out objects practically.	A child might be given 10 cubes and asked to share them out between the 5 bears. They would do this by giving one cube to each bear and then repeating this action until all cubes have been shared out. They then count how many cubes the bears have – recognising that they have an equal amount which is fair.
Stage 2 Year 1	Children start to look at the symbol for division with the understanding that it means sharing and then using grouping to help calculate. They would do this practically then recorded as so.	
Stage 3 Year 1 and 2	Children will be looking at arrays at this stage for multiplication and so they can form the same for division.	The children need to start off by putting the start of 2 groups and then continue sharing between each group as they count to 6. They then count how many in each group. 
Stage 4 Year 2	Using knowledge of repeated subtraction to show division on a marked number line. THEN Repeating the same on an empty number line	
Stage 5 Year 2	Children will look at how to record remainders in division.	

Stage 6 Year 3	Children will start to record their subtractions in a vertical manner. Children will already know what remainders are and how to record them.	3 | 72 -30 (3 x 10) 42 -30 (3 x 10) 12 -6 (3 x 2) 6 -6 (3 x 2) 0 Answer = 24
Stage 7 Year 4 and 5	Children will be calculating HTU ÷ U using the previous method and refining this for methods of short division HTU ÷ T	362 ÷ 7 = 51 r5 7 | 3 6 12 362 ÷ 7 = 51 r5
Stage 8 Year 5 and 6	Children will move on to long division for HTU ÷ TU.	2191 4 | 8764 8↓ 07 4↓ 36 36↓ 04 4 0 21 216 | 4536 432↓ 216 216 0 17 r 19 31 | 546 31↓ 236 217 19
Vocabulary for division	share how many groups how many lots of divide array divisor repeated subtraction dividend *Please note, at KS2 we use the correct terminology for the methods we are learning (short division, long division, arrays, repeated subtraction etc) as opposed to 'Bus Stop', 'Dave the Dividing Dog' etc*	