CALCULATION POLICY

Mr J McFarland

BLOXWICH ACADEMY PRIMARY [Company address]

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Place value	**Concrete:** Touch counting **Pictorial:** Number line, pictures in book and 100 square **Abstract:** Mentally	**Concrete:** Base 10 **Pictorial:** Place value grid, number line and part whole model **Abstract:** Place value chart	**Concrete:** Base ten **Pictorial:** Place value grid, number line, part whole model and bar model **Abstract:** Place value chart	**Concrete:** Base ten **Pictorial:** Place value grid, number line, part whole model and bar model **Abstract:** Place value chart	**Concrete:** Base ten **Pictorial:** Place value grid, number line, part whole model and bar model **Abstract:** Place value chart	**Concrete:** Base ten **Pictorial:** Place value grid, number line, part whole model and bar model **Abstract:** Place value chart
Addition	**Concrete:** Touch counting, Numicon and bead string **Pictorial:** Number line and pictures in book **Abstract:** Counting on in head and number bonds	**Concrete:** Base ten and objects **Pictorial:** Place value chart, number line, part whole model and 100 square **Abstract:** Column addition	**Concrete:** Base ten and objects **Pictorial:** Number line, part whole model, bar model and place value grid. **Abstract:** Column addition	**Concrete:** Base ten and objects **Pictorial:** Number line, part whole model, bar model and place value chart. **Abstract:** Column addition	**Concrete:** Base ten and objects **Pictorial:** Number line, part whole model, bar model and place value grid. **Abstract:** Column addition	**Concrete:** Base ten and objects **Pictorial:** Number line, part whole model, bar model and place value chart. **Abstract:** Column addition
Subtraction	**Concrete:** Touch counting, Numicon and bead string **Pictorial:** Number line/track and pictures in book **Abstract:** Counting backwards in head and number bonds	**Concrete:** Base ten and objects **Pictorial:** Place value chart, number line, part whole model and 100 square **Abstract:** Column subtraction	**Concrete:** Base ten and objects **Pictorial:** Number line, part whole model, bar model and place value grid. **Abstract:** Column subtraction	**Concrete:** Base ten and objects **Pictorial:** Number line, part whole model, bar model and place value grid. **Abstract:** Column subtraction	**Concrete:** Base ten and objects **Pictorial:** Number line, part whole model, bar model and place value grid. **Abstract:** Column subtraction	**Concrete:** Base ten and objects **Pictorial:** Number line, part whole model, bar model and place value grid. **Abstract:** Column subtraction

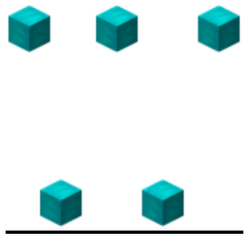
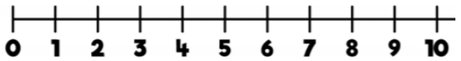
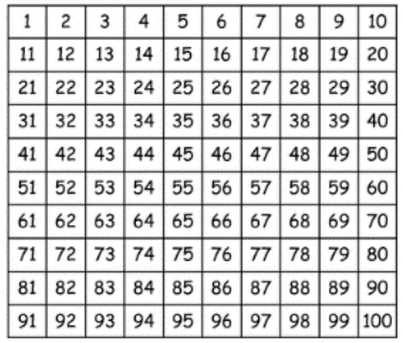
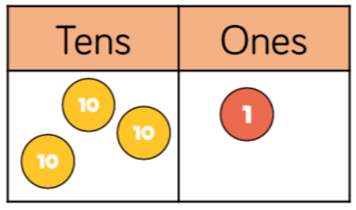
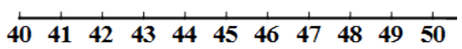
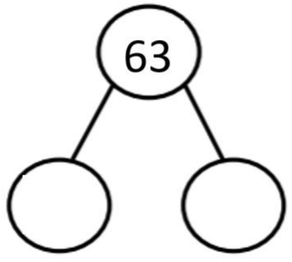
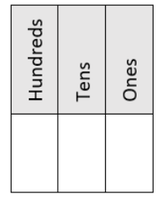
Multiplication	**Concrete:** Making equal groups and Numicon **Pictorial:** Arrays, making equal groups, 100 square and Number lines **Abstract:** Mentally – statements	**Concrete:** Making equal groups and Numicon **Pictorial:** Arrays, making equal groups, 100 square and number line **Abstract:** Repeated addition	**Concrete:** Numicon **Pictorial:** Place value chart and bar model **Abstract:** Expanded column and column multiplication	**Concrete:** Base ten **Pictorial:** Place value chart and bar model **Abstract:** Expanded column and column multiplication	**Pictorial:** X 10, 100 and 1000 **Abstract:** Column multiplication by 1 digit and column multiplication by 2 digits	**Pictorial:** X 10, 100 and 1000 **Abstract:** Column multiplication by 1 digit and column multiplication by 2 digits
Division	**Concrete:** Sharing and grouping objects **Pictorial:** Sharing and grouping pictures and number lines **Abstract:** Mentally – statements	**Concrete:** Sharing and grouping objects **Pictorial:** Sharing and grouping pictures and number lines **Abstract:** Short division	**Concrete:** Sharing/grouping objects **Pictorial:** Short division with pictures **Abstract:** Short division with chunking	**Concrete:** Sharing/grouping objects **Pictorial:** Short division with pictures **Abstract:** Short division with chunking	**Concrete:** Sharing/grouping objects **Pictorial:** Short division with pictures and ÷ 10, 100 and 1000 **Abstract:** Short division with jottings	**Concrete:** Sharing/grouping objects **Pictorial:** Short division with pictures and ÷ 10, 100 and 1000 **Abstract:** Short division with jottings, long division with chunking and long division with jottings
Rounding				**Concrete:** Base ten **Pictorial:** Number line **Abstract:** Rounding method	**Pictorial:** Number line **Abstract:** Rounding method	**Pictorial:** Number line **Abstract:** Rounding method

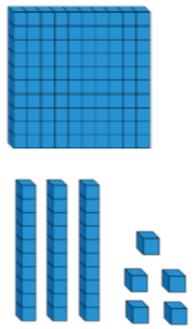
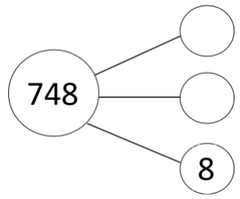
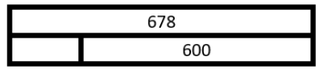
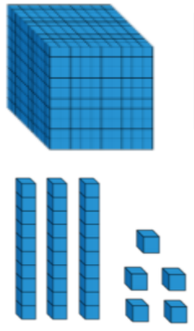
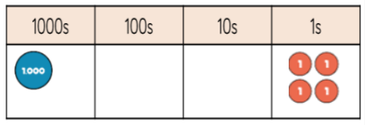
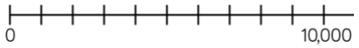
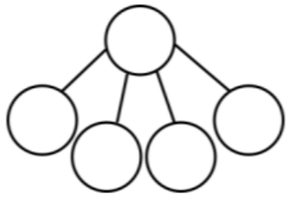
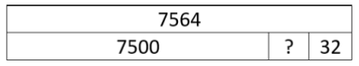
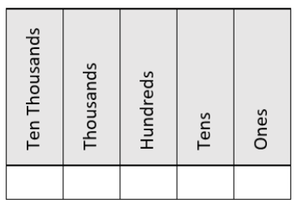
Equivalent fractions	[redacted]	**Concrete:** Fraction walls **Pictorial:** Fraction wall and use of squares in books **Abstract:** Lowest common multiple	**Concrete:** Fraction walls **Pictorial:** Fraction wheels **Abstract:** Mixed numbers, improper fractions, Lowest common multiple and highest common factor	**Concrete:** Fraction walls **Pictorial:** Fraction wheels **Abstract:** Mixed numbers, improper fractions, Lowest common multiple and highest common factor
Percentages	[redacted]	[redacted]	**Concrete:** 100 square **Pictorial:** Bar model **Abstract:** Percentage method	**Concrete:** 100 square **Pictorial:** Bar model **Abstract:** Percentage method and percentage method by multiplying.

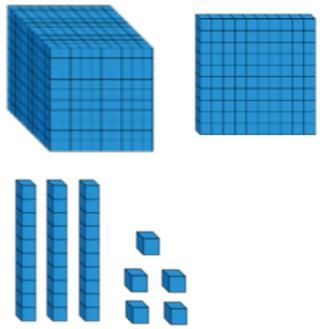
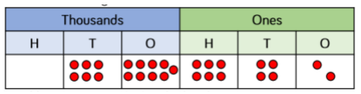
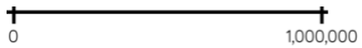
PLACE VALUE

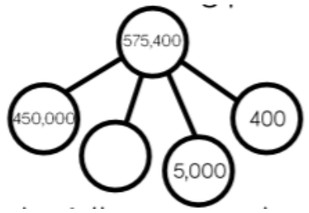
Mr J McFarland

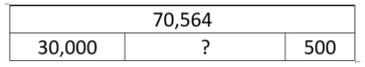
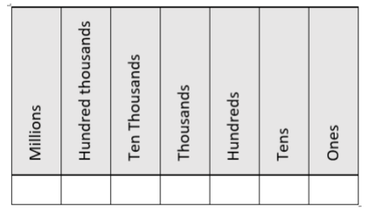
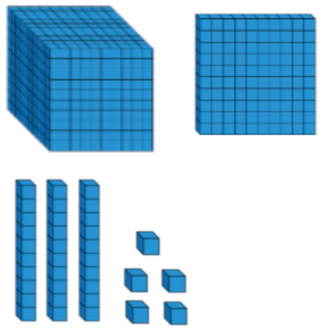
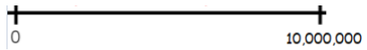
BLOXWICH ACADEMY PRIMARY

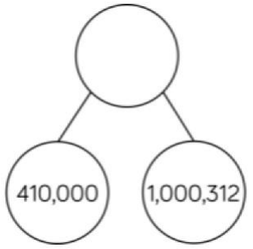
<table>
<tr><th></th><th>Concrete</th><th colspan="3">Pictorial</th><th>Abstract</th></tr>
<tr>
<td>Year 1
(counting)</td>
<td><u>Touch counting:</u>
 
Touching the objects to count them. Can be a range of different objects.</td>
<td><u>Picture in book:</u>
 
Similar to touch counting but is pictures instead of concrete apparatus.</td>
<td><u>Number line:</u>
 
Counting forwards and backwards.</td>
<td><u>100 square:</u>
 
Counting forwards and backwards.</td>
<td><u>Mentally:</u>
Being able to count verbally without the aid of a concrete or pictorial apparatus.</td>
</tr>
<tr>
<td>Year 2</td>
<td><u>Base ten:</u>
 
Children should identify the worth of the individual pieces and link to numerals.</td>
<td><u>Place value grid:</u>
 
Combining the partitioned number to make the whole.</td>
<td><u>Number line:</u>
 
Identifying and ordering numbers.</td>
<td><u>Part whole:</u>
 
Similar to place value grid. Used to partition and combine numbers.</td>
<td><u>Place value chart:</u>
 
Used for identifying the value of the digits in 2- or 3-digit numbers.</td>
</tr>
</table>

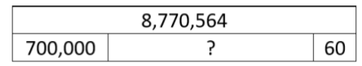
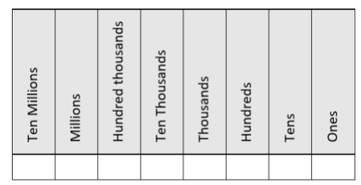
	Concrete	Pictorial				Abstract
Year 3	**Base ten:**  Children should identify the worth of the individual pieces and link to numerals.	**Place value grid:**  Combining the partitioned number to make the whole.	**Number line:**  Identifying and ordering numbers.	**Part whole:**  Similar to place value grid. Used to partition and combine numbers.	**Bar Model:**  Similar to place value grid and part whole model. Used to partition and combine numbers.	**Place value chart:**  Used for identifying the value of the digits up to 4-digits
Year 4	**Base ten:**  Children should identify the worth of the individual pieces and link to numerals.	**Place value grid:**  Combining the partitioned number to make the whole.	**Number line:**  Identifying and ordering numbers.	**Part whole:**  Similar to place value grid. Used to partition and combine numbers.	**Bar Model:**  Similar to place value grid and part whole model. Used to partition and combine numbers.	**Place value chart:**  Used for identifying the value of the digits up to 5-digits

<table>
<tr>
<td>Year 5</td>
<td><u>Base ten:</u>
 
Children should identify the worth of the individual pieces and link to numerals.</td>
<td><u>Place value grid:</u>
 
<table>
<tr><th colspan="3">Thousands</th><th colspan="3">Ones</th></tr>
<tr><th>H</th><th>T</th><th>O</th><th>H</th><th>T</th><th>O</th></tr>
<tr><td></td><td>●●●</td><td>●●●●●</td><td>●●●</td><td>●●</td><td>●●</td></tr>
</table>
Combining the partitioned number to make the whole.</td>
<td><u>Number line:</u>
 

Identifying and ordering numbers.</td>
<td><u>Part whole:</u>
 

Similar to place value grid. Used to partition and combine numbers.</td>
<td><u>Bar Model:</u>
 
<table>
<tr><td colspan="3">70,564</td></tr>
<tr><td>30,000</td><td>?</td><td>500</td></tr>
</table>
Similar to place value grid and part whole model. Used to partition and combine numbers.</td>
<td><u>Place value chart:</u>
 
<table>
<tr><th>Millions</th><th>Hundred thousands</th><th>Ten Thousands</th><th>Thousands</th><th>Hundreds</th><th>Tens</th><th>Ones</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>
Used for identifying the value of the digits up to 7-digits</td>
</tr>
<tr>
<td>Year 6</td>
<td><u>Base ten:</u>
 
Children should identify the worth of the individual pieces and link to numerals.</td>
<td><u>Place value grid:</u>
 
<table>
<tr><th>M</th><th>HTh</th><th>TTh</th><th>Th</th><th>H</th><th>T</th><th>O</th></tr>
<tr><td>●</td><td></td><td>●●</td><td>●</td><td>●●</td><td>●</td><td>●●</td></tr>
</table>
Combining the partitioned number to make the whole.</td>
<td><u>Number line:</u>
 

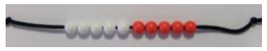
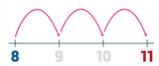
Identifying and ordering numbers.</td>
<td><u>Part whole:</u>
 

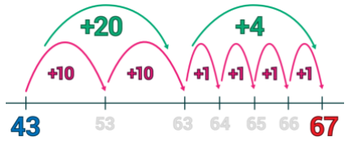
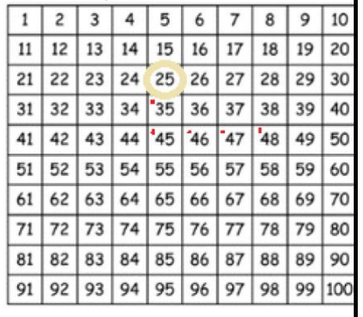
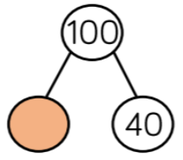
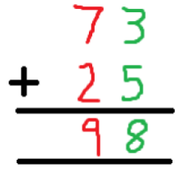
Similar to place value grid. Used to partition and combine numbers.</td>
<td><u>Bar Model:</u>
 
<table>
<tr><td colspan="3">8,770,564</td></tr>
<tr><td>700,000</td><td>?</td><td>60</td></tr>
</table>
Similar to place value grid and part whole model. Used to partition and combine numbers.</td>
<td><u>Place value chart:</u>
 
<table>
<tr><th>Ten Millions</th><th>Millions</th><th>Hundred thousands</th><th>Ten Thousands</th><th>Thousands</th><th>Hundreds</th><th>Tens</th><th>Ones</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>
Used for identifying the value of the digits up to 8-digits</td>
</tr>
</table>

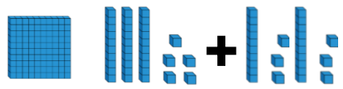
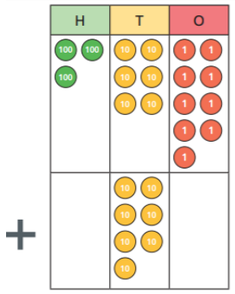
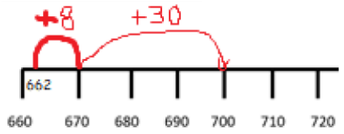
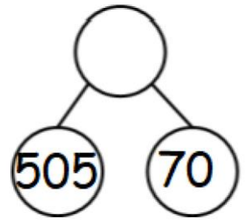
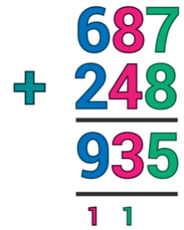
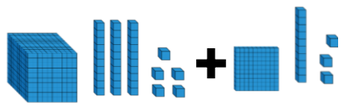
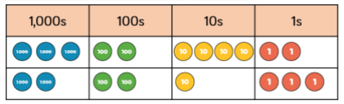
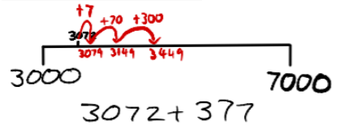
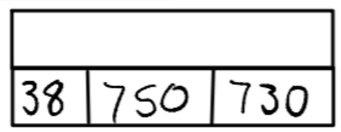
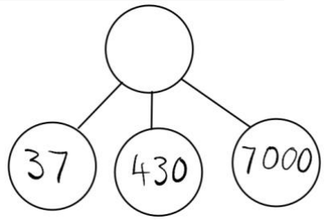
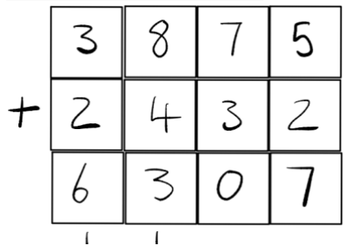
ADDITION

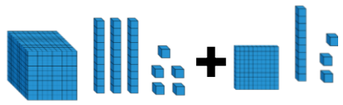
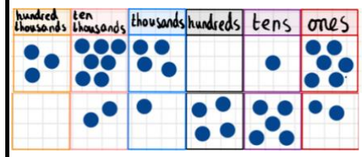
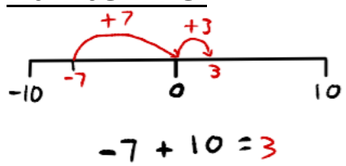
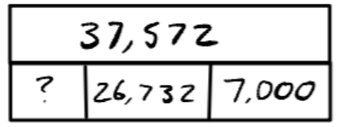
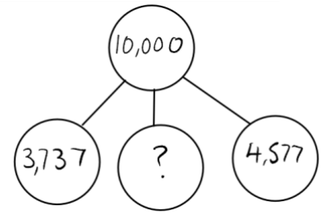
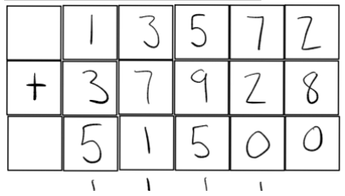
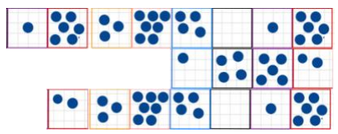
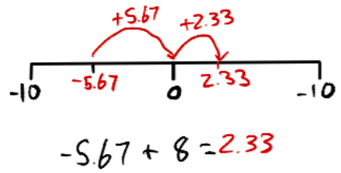
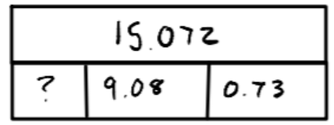
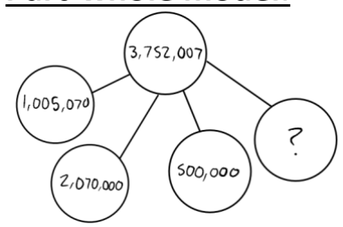
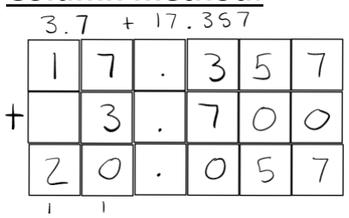
Mr J McFarland

BLOXWICH ACADEMY PRIMARY

	Concrete			Pictorial:		Abstract:	
	Touch counting:	**Numicon:**	**Bead strings:**	**Pictures in book:**	**Number line:**	**Number bonds:**	**Counting on:**
Year 1	 'I have 3 and then get 2 more how many do I have now?' Touching to count the objects to understand the total.	 Can count the circles inside to total the questions. Should also be used to identify number bonds to 10.	 Beads moved appropriately to solve the questions.	 Similar to touch counting but is pictures instead of concrete apparatus.	 8 + 3 = 11 Starting from the initial number and doing jumps of one each time.	5 + __ = 10 3 + 7 = __ + 2 = 10 Solve a range of problems, including missing number, with number bonds to 10.	12 + 7 = __ 13 + 4 = __ 16 + 3 = __ Place the larger number in their head and then count forward. e.g. 16 + 3 -> 16. 17, 18, 19.

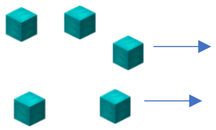
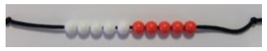
	Concrete	Pictorial:				Abstract:
	Dienes/objects:	**Place value chart:**	**Number line:**	**100 square:**	**Part whole model:**	**Column method:**
Year 2	 Children will count the tens and the ones and then put them back together whilst exchanging ten ones for one ten.	 Using pictures/objects to represent the different numbers and then combine them by counting with exchanging.	 Starting off by jumping up in either 10s or 1s before making larger jumps.	 25 + 23 = 58. Add the 10s individually by moving down on the 100 square and then to the right the number of ones.	 Partitioned numbers used to combine numbers to get the total at the top.	 Similar to the place value chart but with numbers. Add the individual columns starting from the furthest right (at this stage ones) and working left.

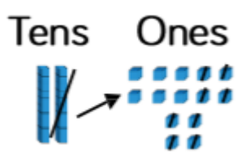
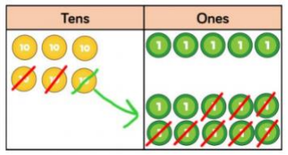
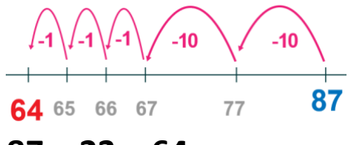
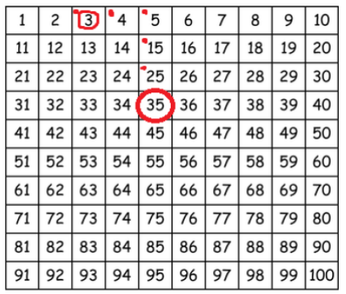
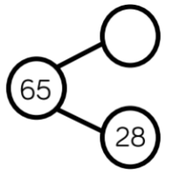
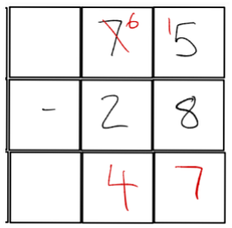
	Dienes/objects:	**Place value grid:**	**Number line:**	**Bar Model:**	**Part-whole model:**	**Column method:**
Year 3	 Children will count the tens and the ones and then put them back together whilst exchanging ten ones for one ten and ten tens for one hundred.	 Count the individual counters or objects and exchanging if need be.	 Using number bonds effectively to make larger jumps when adding numbers up to 4-digits.	 Add the individual parts together to find out the whole. This could be multiple parts that you need to add together.	 Add the individual parts together to find out the whole. This could be multiple parts that you need to add together.	 Similar to the place value chart but with numbers. Add the individual columns starting from the furthest right (at this stage ones) and working left. Exchange underneath if need be.
Year 4	**Dienes/objects:**  Children will count the tens and the ones and then put them back together whilst exchanging ten ones for one ten and ten tens for one hundred etc.	**Place value grid:**  Count the individual counters or objects and exchanging if need be.	**Number line:**  Using number bonds effectively to make larger jumps when adding numbers up to 5-digits building up to no scale.	**Bar Model:**  Add the individual parts together to find out the whole. This could be multiple parts that you need to add together.	**Part-whole model:**  Add the individual parts together to find out the whole. This could be multiple parts that you need to add together.	**Column method:**  Similar to the place value chart but with numbers. Add the individual columns starting from the furthest right (at this stage ones) and working left. Exchange underneath if need be.

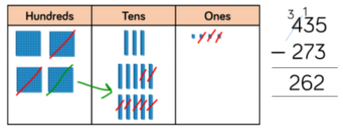
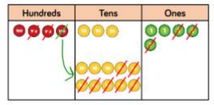
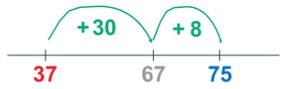
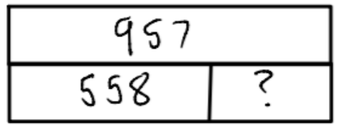
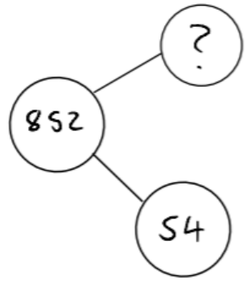
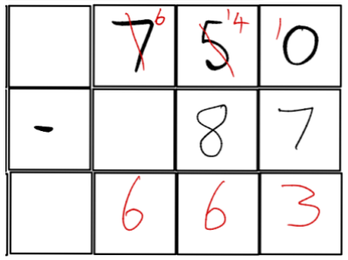
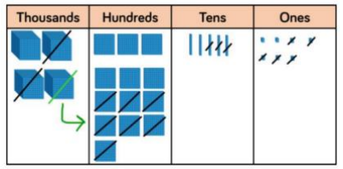
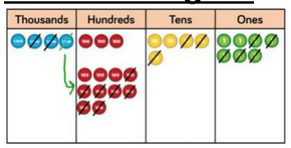
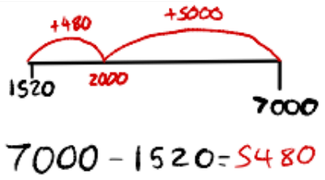
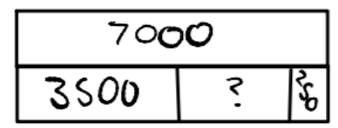
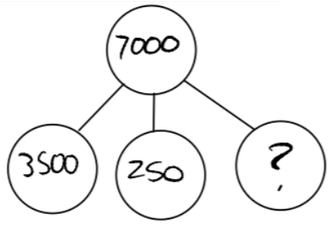
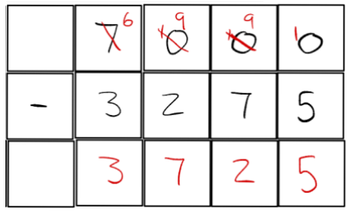
Year 5	**Dienes/objects:**  Children will count the tens and the ones and then put them back together whilst exchanging ten ones for one ten and ten tens for one hundred etc.	**Place value grid:**  Count the individual counters or objects and exchanging if need be.	**Number line:**  Using number bonds effectively to make larger jumps when adding numbers up to 7-digits. Also, working with negative numbers.	**Bar Model:**  Add the individual parts together to find out the whole. This could be multiple parts that you need to add together. Applying to solve missing number problems also.	**Part-whole model:**  Add the individual parts together to find out the whole. This could be multiple parts that you need to add together. Applying to solve missing number problems also.	**Column method:**  Similar to the place value chart but with numbers. Add the individual columns starting from the furthest right (at this stage ones) and working left. Exchange underneath if need be.
Year 6	**Dienes/objects:**  Children will count the tens and the ones and then put them back together whilst exchanging ten ones for one ten and ten tens for one hundred etc.	**Place value grid:**  Count the individual counters or objects and exchanging if need be.	**Number line:**  Using number bonds effectively to make larger jumps when adding numbers up to 9-digits. Also, working with negative numbers.	**Bar Model:**  Add the individual parts together to find out the whole. This could be multiple parts that you need to add together. Applying to solve missing number problems also.	**Part-whole model:**  Add the individual parts together to find out the whole. This could be multiple parts that you need to add together. Applying to solve missing number problems also.	**Column method:**  Add the individual columns starting from the furthest right (at this stage ones) and working left. Exchange underneath if need be. Inserting place holders if there are varying decimal places.

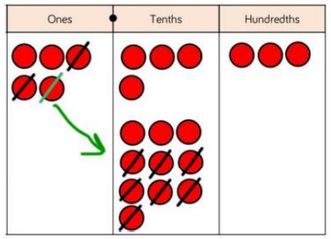
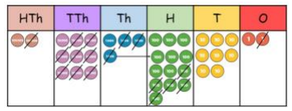
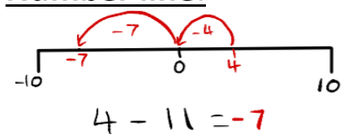
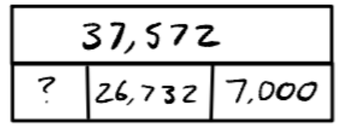
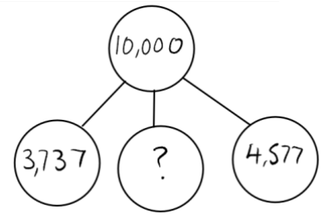
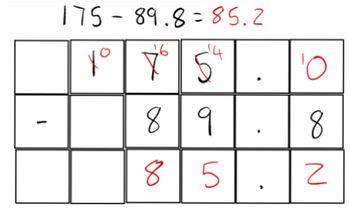
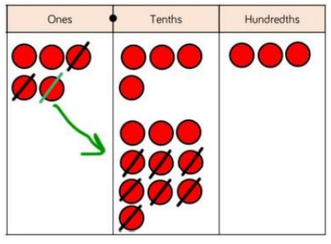
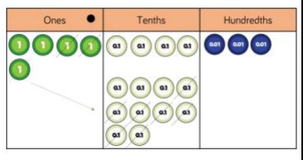
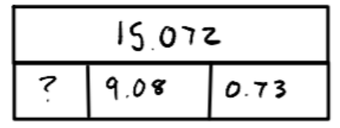
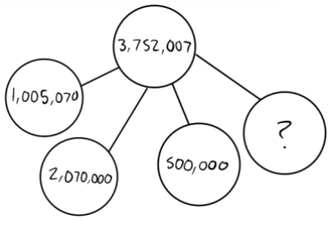
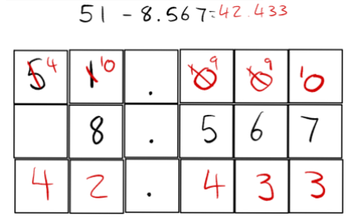
SUBTRACTION

Mr J McFarland
BLOXWICH ACADEMY PRIMARY

	Concrete			Pictorial:		Abstract:	
	Touch counting:	**Numicon:**	**Bead strings:**	**Pictures in book:**	**Number line/ number track:**	**Number bonds:**	**Counting back:**
Year 1	 'I have 5 and then 2 get taken away. How many do I have now?' Touching to count the objects to understand the difference.	 Placing the smaller numicon over the top of the larger one to identify the difference.	 Beads moved appropriately to solve the questions.	 Similar to touch counting but is pictures instead of concrete apparatus.	 Starting from the initial number and doing backward jumps of one each time.	10 - __ = 3 10 - 5 = __ __ - 2 = 8 Solve a range of problems, including missing number, with number bonds to 10.	12 - 7 = __ 13 - 4 = __ 16 - 3 = __ Place the larger number in their head and then count forward. e.g. 16 - 3 -> 16. 15, 14, 13.

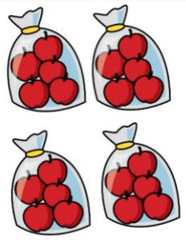
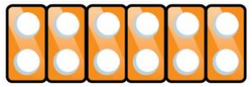
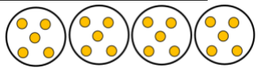
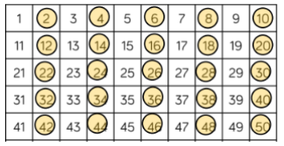
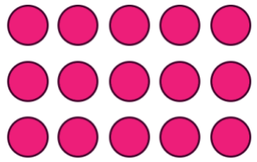
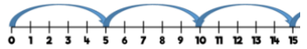
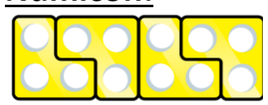
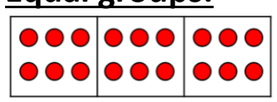
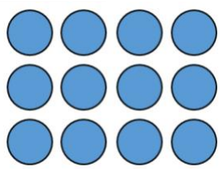
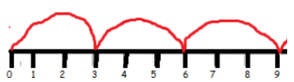
	Concrete	Pictorial:				Abstract:
	Dienes/objects:	**Place value chart:**	**Number line:**	**100 square:**	**Part whole model:**	**Column method:**
Year 2	 **24 – 8 = 16** Children will count the tens and the ones and then put them back together whilst exchanging one ten for ten ones.	 **65 – 28 = 37** Using pictures/objects to represent the different numbers and then combine them by counting with exchanging.	 **87 – 23 = 64** Starting off by jumping back in either 10s or 1s before making larger jumps.	 **35 – 32 = 3** Similar to the number line, moving down to identify a jump of ten and backwards to identify a move of 1.	 Partitioned numbers, used to identify the missing number to reach the total.	 Similar to the place value chart but with numbers. Subtract the numbers in the appropriate columns starting from the right and working left. Exchanging if need be.

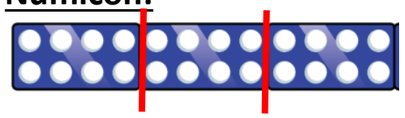
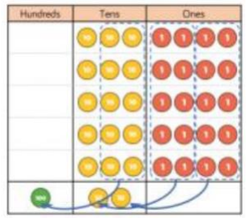
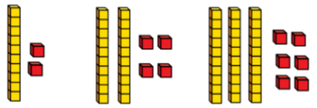
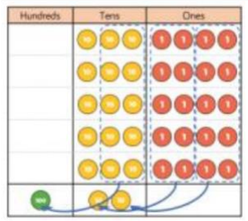
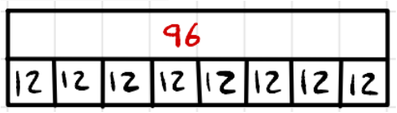
Year 3	**Dienes/objects:**  $\begin{array}{r} {}^{3}\not{4}^{1}35 \\ -\ 273 \\ \hline 262 \end{array}$ Children will count the tens and the ones and then put them back together whilst exchanging one hundred for ten tens etc.	**Place value grid:** $\begin{array}{r} {}^{3}\not{4}^{1}35 \\ -\ 273 \\ \hline 262 \end{array}$  Count the individual counters or objects and exchanging the counters appropriately if need be.	**Number line:**  **75 - 37 = 38** Using number bonds effectively to make larger jumps forwards when subtracting numbers up to 4-digits.	**Bar Model:**  Subtract the parts from the whole to identify what is left over.	**Part-whole model:**  Partitioned numbers, used to identify the missing number to reach the total.	**Column method:**  Similar to the place value chart but with numbers. Subtract the numbers in the appropriate columns starting from the right and working left. Exchanging if need be.
Year 4	**Dienes/objects:**  **4357 – 2735 = 1622** Children will count the tens and the ones and then put them back together whilst exchanging one thousand for ten hundreds etc.	**Place value grid:**  **4357 – 2735 = 1622** Count the individual counters or objects and exchanging the counters appropriately if need be.	**Number line:**  Using number bonds effectively to make larger jumps when subtracting numbers up to 5-digits building up to no scale on the number line.	**Bar Model:**  Subtract the total of the parts from the whole to identify what is left over.	**Part-whole model:**  Partitioned numbers, used to identify the missing number to reach the total.	**Column method:**  Similar to the place value chart but with numbers. Subtract the numbers in the appropriate columns starting from the right and working left. Exchanging if need be.

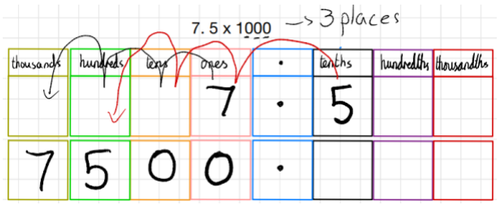
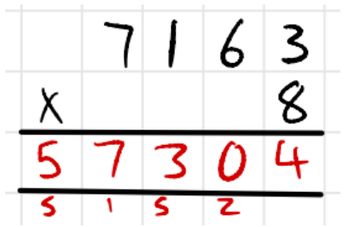
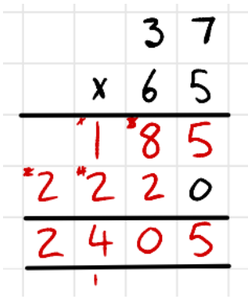
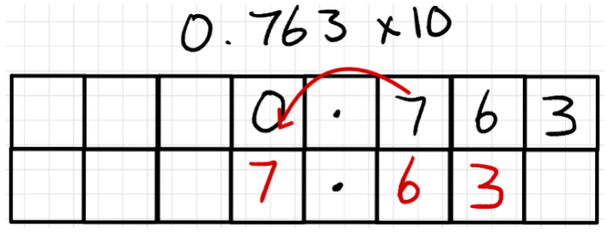
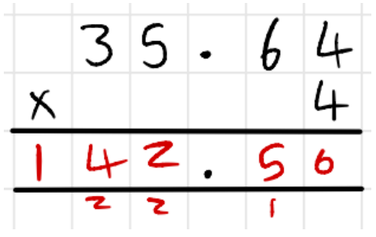
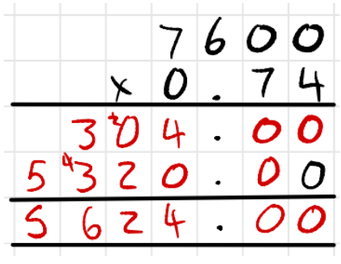
Year 5	**Dienes/objects:**  **5.43 – 2.7 = 2.73** Children will count the tens and the ones and then put them back together whilst exchanging one thousand for ten hundreds etc. Whilst also working with decimals.	**Place value grid:**  **294,382 – 182,501 = 111,881** Count the individual counters or objects and exchanging if need be.	**Number line:**  Using number bonds effectively to make larger jumps when subtracting numbers up to 7-digits. Also, working with negative numbers.	**Bar Model:**  Add the individual parts together to find out the whole. This could be multiple parts that you need to add together. Applying to solve missing number problems also.	**Part-whole model:**  Subtract the total of the parts from the whole to identify what is left over.	**Column method:**  Similar to the place value chart but with numbers. Subtract the numbers in the appropriate columns starting from the right and working left. Exchanging if need be.
Year 6	**Dienes/objects:**  **5.43 – 2.7 = 2.73** Children will count the tens and the ones and then put them back together whilst exchanging one thousand for ten hundreds etc. Whilst also working with decimals.	**Place value grid:**  **5.43 – 2.7 = 2.73** Count the individual counters or objects and exchanging if need be.	**Number line:**  Using number bonds effectively to make larger jumps when subtracting numbers up to 8-digits. Also, working with negative numbers.	**Bar Model:**  Subtract the total of the parts from the whole to identify what is left over.	**Part-whole model:**  Subtract the total of the parts from the whole to identify what is left over.	**Column method:**  Similar to the place value chart but with numbers. Subtract the numbers in the appropriate columns starting from the right and working left. Exchanging if need be. Inserting place holders if there are varying decimal places

MULTIPLICATION

Mr J McFarland
BLOXWICH ACADEMY PRIMARY

	Concrete		Pictorial:				Abstract:
Year 1	**Equal groups:**  Putting groups of objects into sets. This may be linking cubes or various counting objects.	**Numicon:**  **2 x 6 = 12** Getting the correct amount of the same numicon pieces and then counting the total.	**Equal groups:**  Similar to concrete aspect but counting objects drawn into their books.	**100 square:**  Notice patterns on the 100 square for their years groups appropriate times tables.	**Arrays:**  **3 x 5 = 15** Drawing circles where the amount across and down is based on the multiplication question and counting the circles to get the answer.	**Number lines:**  Make the same jump on number lines to solve multiplication problems.	**Statements:** 4 x 5 = 4 x _ = 8 8 x 10 = Memorising the answers to statements through continued practise and applying this to solve missing number problems.
Year 2	**Equal groups:**  Putting groups of objects into sets. This may be linking cubes or various counting objects.	**Numicon:**  **3 x 4 = 12** Getting the correct amount of the same numicon pieces and then counting the total.	**Equal groups:**  Similar to concrete aspect but counting objects drawn into their books.	**100 square:**  Notice patterns on the 100 square for their years groups appropriate times tables.	**Arrays:**  **3 x 4 = 12** Drawing circles where the amount across and down is based on the multiplication question and counting the circles to get the answer.	**Number lines:**  Make the same jump on number lines to solve multiplication problems.	**Repeated addition:** 4 x 5 = 5 + 5 + 5 + 5 3 + 3 + 3 = Understanding the relationship between multiplication and repeated addition and solving without concrete or pictorial assistance.

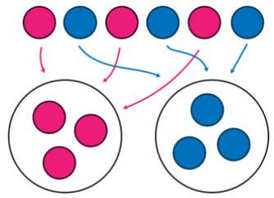
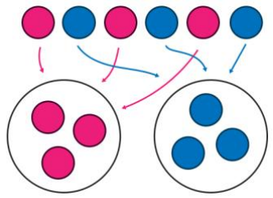
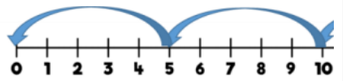
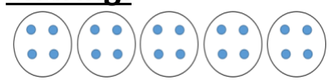
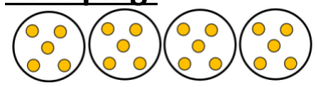
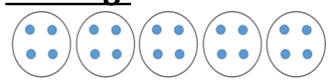
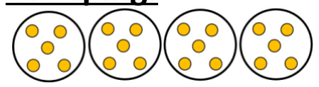
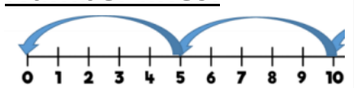
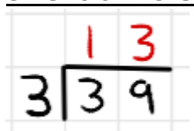
	Concrete	Pictorial:		Abstract:	
Year 3	**Numicon:**  **8 x 3 = 24** Getting the correct amount of the same numicon pieces and then counting the total.	**Place value chart:**  Beginning to multiply two-digit numbers by one-digit. Exchanging appropriately if there is more than 10 in a single column.	**Bar model:**  Using the part whole approach to identify the total from the total amount of parts.	**Expanded column:** 47 x 4 28 (4 x 7) 160 (4 x 40) 188 Starting from the right and working left. Multiplying the digits together but separating the digits before adding them together afterwards.	**Column method:** 47 x 4 188 1 2 Starting from the right and working left. Multiplying the digits together exchanging the numbers underneath if it crosses the ten barrier.
Year 4	**Base ten:**  **12 x 3 = 36** Getting the correct amount of the same base ten pieces and then counting the total.	**Place value chart:**  Beginning to multiply three-digit numbers by one-digit. Exchanging appropriately if there is more than 10 in a single column.	**Bar model:**  Using the part whole approach to identify the total from the total amount of parts.	**Expanded column:** 147 x 4 28 (4 x 7) 160 (4 x 40) 400 (4 x 100) 588 Starting from the right and working left. Multiplying the digits together but separating the digits before adding them together afterwards.	**Column method:** 147 x 4 588 1 2 Starting from the right and working left. Multiplying the digits together exchanging the numbers underneath if it crosses the ten barrier.

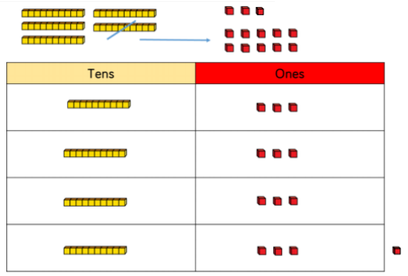
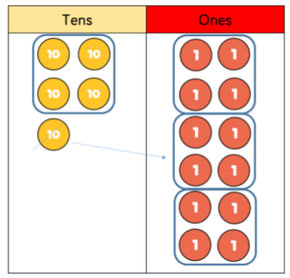
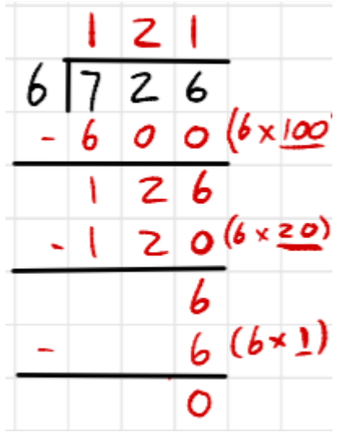
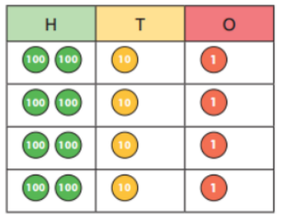
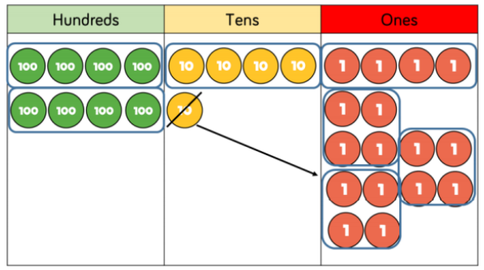
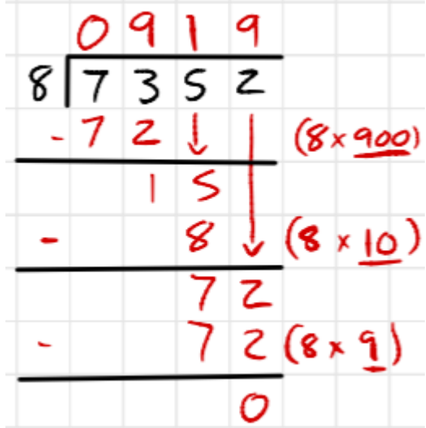
	Pictorial:	Abstract:	
Year 5	**x 10, 100 and 1000:**  Using the place value chart to move the digits left appropriately based on the number you are multiplying by.	**Column x 1:**  Starting from the right and working left. Multiplying the digits together exchanging the numbers underneath if it crosses the ten barrier.	**Column x 2:**  Starting from the right and working left. Multiplying the digits by the first digit on the multiplier whilst exchanging at the top. Adding in a place holder to show that you have multiplied by 10 first before multiplying by the second digit of the multiplier. Then adding to combine.
Year 6	**x 10, 100 and 1000:**  Moving the digits appropriately based on the number you are multiplying by.	**Column x 1:**  Starting from the right and working left. Multiplying the digits together exchanging the numbers underneath if it crosses the ten barrier.	**Column x 2:**  Starting from the right and working left. Multiplying the digits by the first digit on the multiplier whilst exchanging at the top. Adding in a place holder to show that you have multiplied by 10 first before multiplying by the second digit of the multiplier. Then adding to combine. Also multiplying and by decimals.

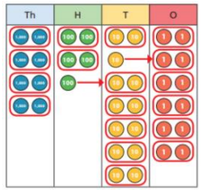
DIVISION

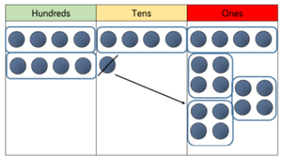
Mr J McFarland

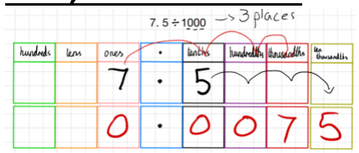
BLOXWICH ACADEMY PRIMARY

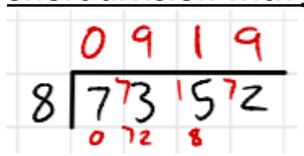
	Concrete		Pictorial:			Abstract:
Year 1	**Sharing:**  **6 ÷ 2 = 3** Moving the objects into the amount you are dividing by with counters or different counting objects.	**Grouping:**  **6 ÷ 2 = 3** Create groups equal to the amount you are dividing by with counters or different counting objects.	**Sharing:**  **6 ÷ 2 = 3** Moving the objects into the amount you are dividing by using pictures in their books.	**Grouping:**  **6 ÷ 2 = 3** Create groups equal to the amount you are dividing by using pictures in their books.	**Number lines:**  Making backwards jumps to 0 the amount you are dividing by. The number of jumps completed is the answer.	**Statements:** 20 ÷ 5 = 40 ÷ _ = 8 50 ÷ 10 = Memorising the answers to statements through continued practise and applying this to solve missing number problems.
Year 2	**Sharing:**  **20 ÷ 5 = 4** Moving the objects into the amount you are dividing by with counters or different counting objects.	**Grouping:**  **20 ÷ 5 = 4** Create groups equal to the amount you are dividing by with counters or different counting objects.	**Sharing:**  **20 ÷ 5 = 4** Moving the objects into the amount you are dividing by using pictures in their books.	**Grouping:**  **20 ÷ 5 = 4** Create groups equal to the amount you are dividing by using pictures in their books.	**Number lines:**  Making backwards jumps to 0 the amount you are dividing by. The number of jumps completed is the answer.	**Short division:**  Using the number you are dividing by to identify ‘how many times it goes into’ the number you are dividing by applying understanding of known multiplication tables.

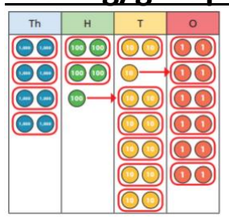
	Concrete	Pictorial:	Abstract:
Year 3	**Sharing/grouping:**  Moving the objects into the amount you are dividing by with counters or different counting objects. Using this to identify remainders also.	**Short division with pictures:**  Using the pictures and grouping them based on the amount you are dividing by. Any remainders will be appropriately exchanged e.g. one ten counter for ten ones counters.	**Short division with chunking:**  Taking away the multiples of the number you are dividing by until you can no longer do so. Noting down the multiplications of the numbers you are subtracting and adding them together to get the answer.
Year 4	**Sharing/grouping:**  Moving the objects into the amount you are dividing by with counters or different counting objects. Using this to identify remainders also.	**Short division with pictures:**  Using the pictures and grouping them based on the amount you are dividing by. Any remainders will be appropriately exchanged e.g. one ten counter for ten ones counters.	**Short division with chunking:**  Taking away the multiples of the number you are dividing by until you can no longer do so. Noting down the multiplications of the numbers you are subtracting and adding them together to get the answer.

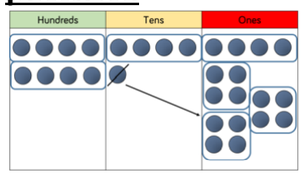
<table>
<tr><th></th><th>Concrete</th><th colspan="2">Pictorial:</th><th colspan="3">Abstract:</th></tr>
<tr><td>Year 5</td><td><u>Sharing/grouping:</u>
 

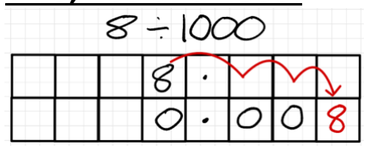
Moving the objects into the amount you are dividing by with counters or different counting objects. Using this to identify remainders also.</td><td><u>Short division with pictures:</u>
 

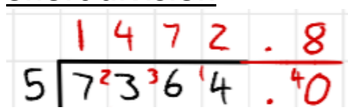
Using the pictures and grouping them based on the number you are dividing by. Any remainders will be appropriately exchanged e.g. one ten counter for ten ones counters.</td><td><u>÷ 10, 100 and 1000:</u>
 

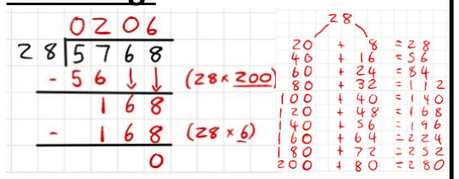
Using the place value chart to move the digits right appropriately based on the number you are multiplying by.</td><td colspan="3"><u>Short division with jottings:</u>
 

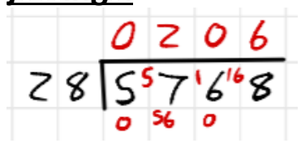
Using the number you are dividing by to identify ‘how many times it goes into’ the number you are dividing by applying understanding of known multiplication tables. Jotting the times table underneath to help with identifying the number that needs exchanging.</td></tr>
<tr><td>Year 6</td><td><u>Sharing/grouping:</u>
 

Moving the objects into the amount you are dividing by with counters or different counting objects. Using this to identify remainders also.</td><td><u>Short division with pictures:</u>
 

Using the pictures and grouping them based on the number you are dividing by. Any remainders will be appropriately exchanged e.g. one ten counter for ten ones counters.</td><td><u>÷ 10, 100 and 1000:</u>
 

Using the place value chart to move the digits left appropriately based on the number you are multiplying by.</td><td><u>Short division</u>
 

Using the number you are dividing by to identify ‘how many times it goes into’ the number you are dividing by applying understanding of known multiplication tables. Jotting the times table underneath to help with identifying the number that needs exchanging.</td><td><u>Long division with chunking:</u>
 

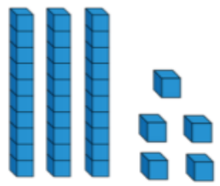
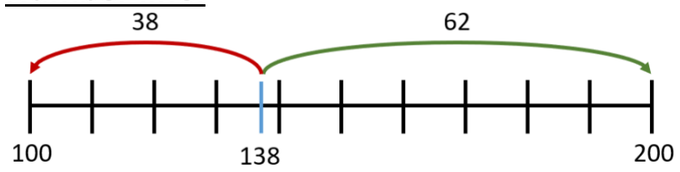
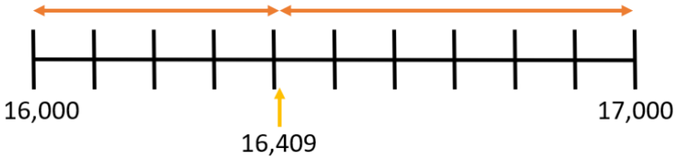
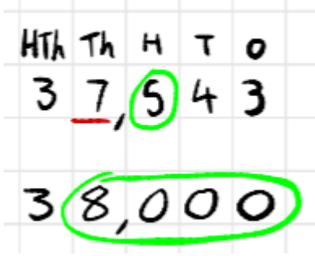
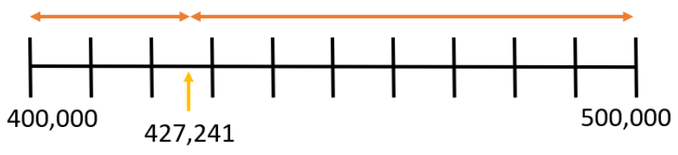
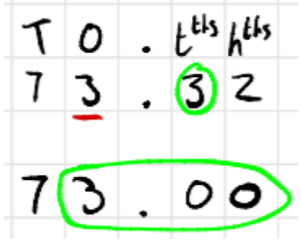
Taking away the multiples of the number you are dividing by until you can no longer do so. Noting down the multiplications of the numbers you are subtracting and adding them together to get the answer.</td><td><u>Long division with jottings:</u>
 

Using the number you are dividing by to identify ‘how many times it goes into’ the number you are dividing by applying understanding of known multiplication tables. Jotting the times table underneath to help with identifying the number that needs exchanging.</td></tr>
</table>

ROUNDING

Mr J McFarland

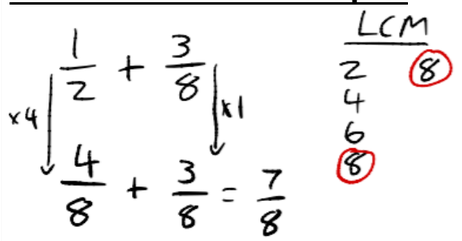
BLOXWICH ACADEMY PRIMARY

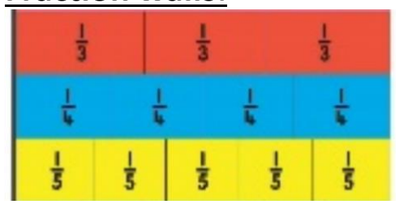
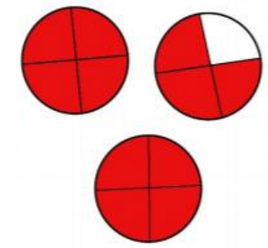
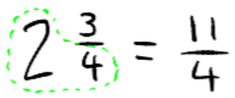
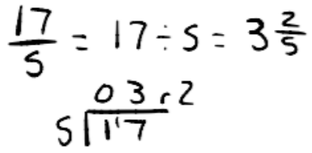
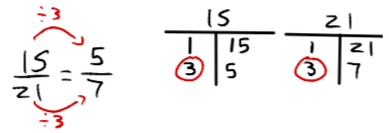
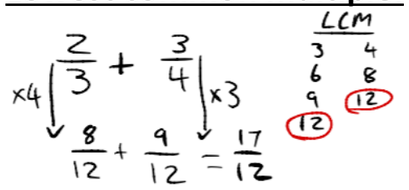
	Concrete	Pictorial:	Abstract:
Year 4	**Base 10:**  Using base ten to identify which power of 10 the number you are rounding is closer to.	**Number line:**  Positioning the number you are rounding between the two powers of 10 you are rounding to, to visually see which number it is closer to.	**Rounding method:**  Underlining the digit you are rounding to and circling the digit to the right of this and asking is it '5 or more or 4 and less' and rounding it appropriately.
Year 5	[redacted]	**Number line:**  Positioning the number you are rounding between the two powers of 10 you are rounding to, to visually see which number it is closer to.	**Rounding method:**  Underlining the digit you are rounding to and circling the digit to the right of this and asking is it '5 or more or 4 and less' and rounding it appropriately.
Year 6		**Number line:**  Positioning the number you are rounding between the two powers of 10 you are rounding to, to visually see which number it is closer to.	**Rounding method:**  Underlining the digit you are rounding to and circling the digit to the right of this and asking is it '5 or more or 4 and less' and rounding it appropriately.

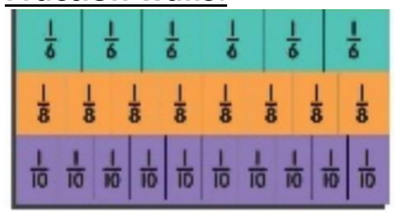
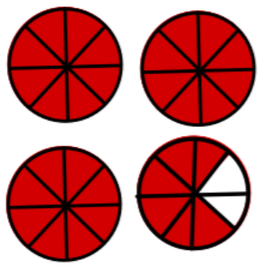
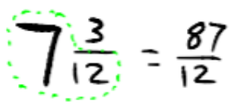
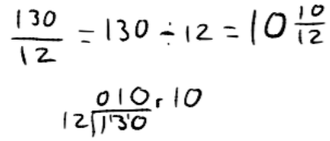
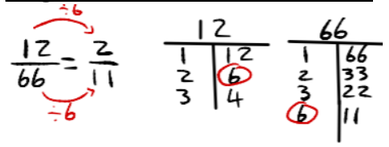
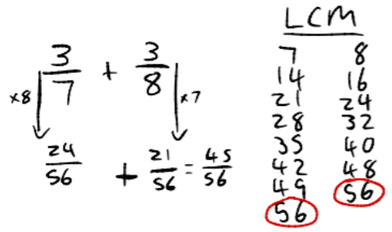
EQUIVALENT FRACTIONS

Mr J McFarland

BLOXWICH ACADEMY PRIMARY

	Concrete	Pictorial:	Abstract:
Year 4	**Fraction walls:**  Use of concrete fraction wall to move and manipulate to identify equivalent fractions.	**Fraction walls:**  Use of pictorial fraction wall drawn into books to move and manipulate to identify equivalent fractions.	**Lowest common multiple:**  Write down the appropriate multiplication tables of the denominators of the fractions you are working with and using this to adapt fractions for various purposes.

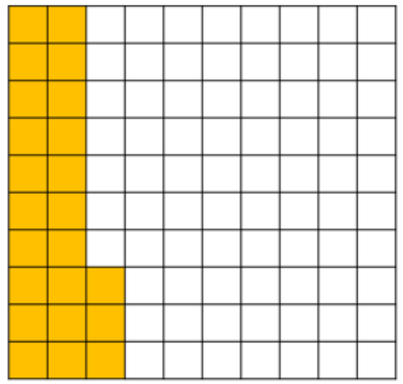
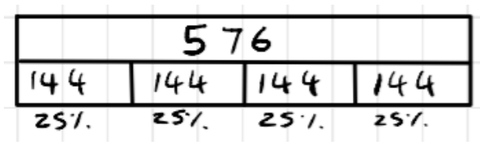
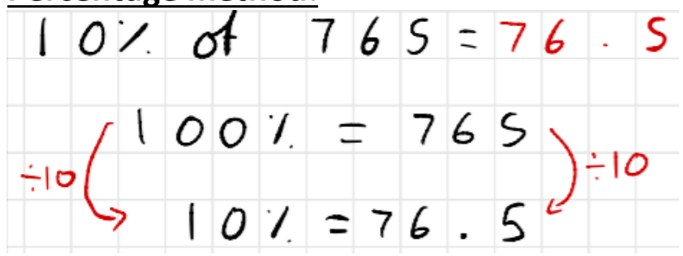
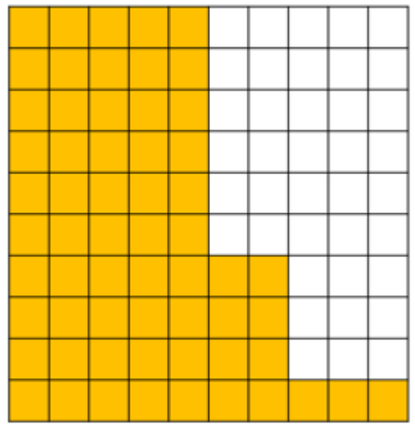
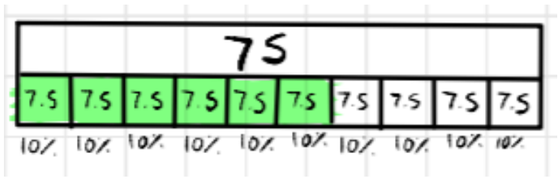
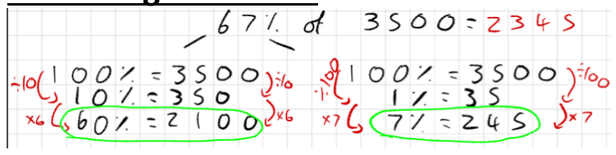
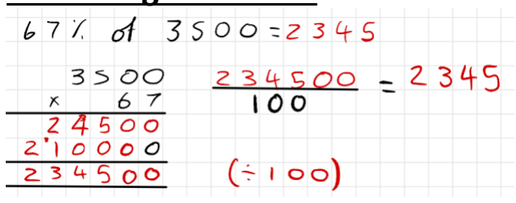
	Concrete	Pictorial:	Abstract:			
Year 5	**Fraction walls:**  Use of concrete fraction wall to move and manipulate to identify equivalent fractions.	**Fraction wheels:**  Use of fraction wheels drawn into books segmented into various pieces to identify the links between improper and mixed numbers.	**Mixed numbers:**  Converting from mixed numbers to improper fractions by multiplying the whole by the denominator and then adding to the numerator.	**Improper fractions:**  Converting from improper fractions to mixed numbers by dividing the numerator by the denominator and representing the remainder as a fraction.	**Highest common factor:**  Write down the appropriate factors of the numerator and denominator to identify the highest common factor and divide both the numerator and denominator by this to simplify the fraction.	**Lowest common multiple:**  Write down the appropriate multiplication tables of the denominators of the fractions you are working with to identify the lowest common multiple between them and using this to adapt fractions for various purposes.

Year 6	**Fraction walls:**  Use of concrete fraction wall to move and manipulate to identify equivalent fractions.	**Fraction wheels:**  Use of fraction wheels drawn into books segmented into various pieces to identify the links between improper and mixed numbers.	**Mixed numbers:**  Converting from mixed numbers to improper fractions by multiplying the whole by the denominator and then adding to the numerator.	**Improper fractions:**  Converting from improper fractions to mixed numbers by dividing the numerator by the denominator and representing the remainder as a fraction.	**Highest common factor:**  Write down the appropriate factors of the numerator and denominator to identify the highest common factor and divide both the numerator and denominator by this to simplify the fraction.	**Lowest common multiple:**  Write down the appropriate multiplication tables of the denominators of the fractions you are working with and using this to adapt fractions for various purposes.

PERCENTAGES

Mr J McFarland

BLOXWICH ACADEMY PRIMARY

	Concrete	Pictorial:	Abstract:	
Year 5	**100 square:**  Use the relationship between percentages and the number 100 to solve simple percentages of amounts using a 100 square.	**Bar model:**  Split the parts into the appropriate percentages of amounts for their year group to identify the relationship between the equal parts and 100%.	**Percentage method:**  Identifying the link between 100% and how to work out the various percentages to work out simple percentages of amounts.	
Year 6	**100 square:**  Use the relationship between percentages and the number 100 to solve percentages of amounts using a 100 square.	**Bar model:**  Split the parts into the appropriate percentages of amounts for their year group to identify the relationship between the equal parts and 100%.	**Percentage method:**  Apply understanding of the relationship of 100%, 10% and 1%. Multiplying the answer to this to find all percentages of amounts	**Percentage method:**  We apply the understanding that percentage means out of 100 and use this to solve complex percentages of amounts. We multiply by the percentage and then divide by 100 afterwards.