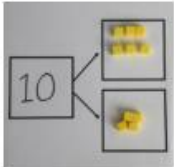
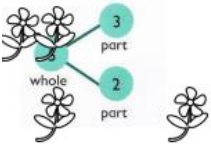
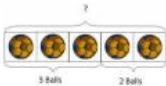

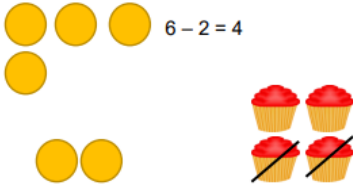
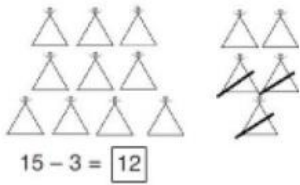


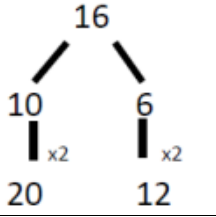

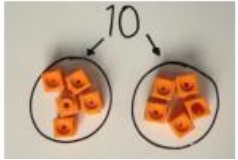



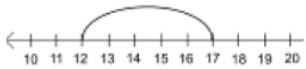
## Calculation Policy

To Be Reviewed: **April 2025**

### Year One

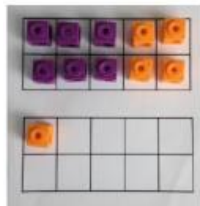
Addition	Subtraction	Multiplication	Division
<p><u>Combining two parts to make a whole: part whole model</u></p> <div data-bbox="174 592 598 759">  <p>Use cubes to add two numbers together as a group or in a bar.</p> </div> <div data-bbox="159 778 586 1023">  <p>Use pictures to add two numbers together as a group or in a bar.</p> <div data-bbox="159 938 324 1023">  <p>3 balls 2 balls</p> </div> </div> <p><u>Starting at the bigger number and counting on</u></p> <div data-bbox="163 1091 582 1203">  </div>	<p><u>Taking ones away</u></p> <p>Use physical objects, counters, cubes etc to show how objects can be taken away.</p> <div data-bbox="786 667 1137 852">  <p><math>6 - 2 = 4</math></p> </div> <p>Cross out drawn objects to show what has been taken away.</p> <div data-bbox="824 986 1122 1171">  <p><math>15 - 3 = 12</math></p> </div>	<p><u>Doubling</u></p> <p>Use practical activities to show how to double a number.</p> <div data-bbox="1352 608 1451 794">  <p>double 4 is 8 <math>4 \times 2 = 8</math></p> </div> <p>Draw pictures to show how to double a number.</p> <div data-bbox="1375 927 1630 995">  <p>Double 4 is 8</p> </div> <div data-bbox="1384 1034 1599 1251">  <p>16 10 x2 20    6 x2 12</p> </div> <p><u>Counting in multiples</u></p> <p>Count in multiples supported by concrete objects in equal groups.</p>	<p><u>Sharing objects into groups</u></p> <div data-bbox="1765 587 1966 735">  <p>I have 10 cubes, can you share them equally in 2 groups?</p> </div> <div data-bbox="1765 746 2002 906">  </div> <p>Children use pictures or shapes to share quantities</p> <div data-bbox="1756 1007 2145 1161">  </div> <div data-bbox="1861 1177 2056 1225"> <p><math>8 \div 2 = 4</math></p> </div> <p><u>Moving on to the abstract <math>9 \div 3 = 3</math></u></p>

$12 + 5 = 17$



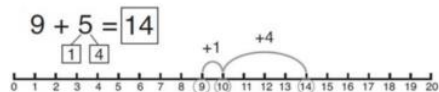
Start at the larger number on the number line and count on in ones or in one jump to find the answer.

Regrouping to make 10



Start with the bigger number and use the smaller number to make 10.

This is an example of a pictorial representation which could be used.



Moving onto the abstract  $5 + 12 = 17$

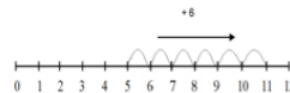
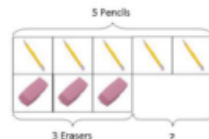
Find the difference

Compare amounts and objects to find the difference.  
Use cubes to build towers or make bars to find the difference.



difference

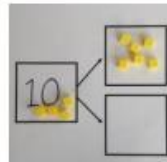
Use basic bar models with items to find the difference.



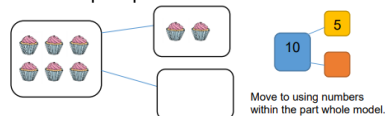
Count on to find the difference.

Part whole model

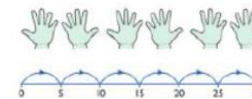
Link to addition- use the part part whole model to help explain the inverse between addition and subtraction.



Use a pictorial representation of objects to show the part part whole model.



Moving onto abstract  $18 - 3 = 15$



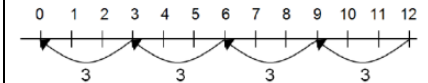
Use a number line or pictures to continue support in counting in multiples.

Count in multiples of a number aloud. Write sequences with multiples of numbers. 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30

Divide quantities into equal groups. Use cubes, counters, objects, or place value counters to aid understanding.


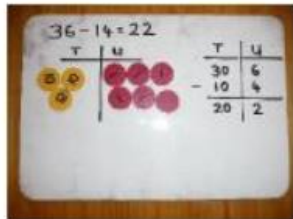
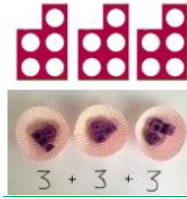




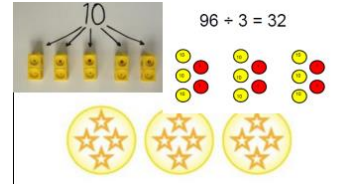
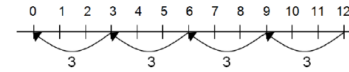
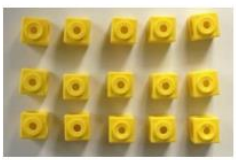


Use a number line to show jumps in groups. The number of jumps equals the number of groups.



Moving onto the abstract  $28 \div 7 = 4$

## Year Two

	Addition	Subtraction	Multiplication	Division																						
Calculation Methods: Concrete Pictorial Abstract	<p><u>Add three single digits</u></p> <p><math>4 + 7 + 6 = 17</math> Put 4 and 6 together to make 10. Add on 7.</p>  <p>Following on from making 10, make 10 with 2 of the digits (if possible) then add on the third digit.</p> <p>Add together three groups of objects. Draw a picture to recombine the groups to make 10.</p> <p><math display="block">\begin{array}{r} 4 + 7 + 6 = 10 + 7 \\ 10 \quad \quad = 17 \end{array}</math></p> <p>Combine the two numbers that make 10 and then add on the remainder.</p> <p><u>Column method- no regrouping</u></p> <p><math>24 + 15 =</math> Add together the ones first then add the tens. Use the Base 10 blocks first before moving onto place value counters.</p> <table border="1" data-bbox="430 1225 739 1331"><tr><td>T</td><td>O</td></tr><tr><td>20</td><td>4</td></tr><tr><td>10</td><td>5</td></tr><tr><td>30</td><td>9</td></tr></table> <p>Focus on dienes</p> <table border="1" data-bbox="580 1267 739 1383"><tr><td>20</td><td>4</td></tr><tr><td>10</td><td>5</td></tr><tr><td>30</td><td>9</td></tr></table> <p>Limit use of PV</p>	T	O	20	4	10	5	30	9	20	4	10	5	30	9	<p><u>Revisit concrete, pictorial, and abstract strategies from Year One:</u></p> <p><b>Taking Away One</b> <b>Counting Back</b> <b>Find the Difference</b> <b>Part Whole Model</b></p> <p><u>Column method without regrouping</u></p> <p>Use Base 10 to make the bigger number then take the smaller number away.</p> <table border="1" data-bbox="902 702 1176 976"><tr><td>Tens</td><td>Ones</td></tr><tr><td>30</td><td>6</td></tr><tr><td>10</td><td>4</td></tr><tr><td>20</td><td>0</td></tr></table> <p>Show how you partition numbers to subtract. Again make the larger number first.</p> 	Tens	Ones	30	6	10	4	20	0	<p><u>Revisit concrete, pictorial, and abstract strategies from Year One:</u></p> <p><b>Doubling</b> <b>Counting in Multiples</b></p> <p><u>Repeated addition</u></p>  <p>Use different objects to add equal groups.</p> <p>There are 3 plates. Each plate has 2 star biscuits on. How many biscuits are there?</p>  <p>2 add 2 add 2 equals 6</p> <p>Write addition sentences to describe objects and pictures.</p>  <p><math>2 + 2 + 2 + 2 + 2 = 10</math></p> <p><u>Arrays showing commutative multiplication</u></p> 	<p><u>Division as grouping</u></p> <p>Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding.</p>   <p><math>96 \div 3 = 32</math></p> <p>Use a number line to show jumps in groups. The number of jumps equals the number of groups.</p>  <p><u>Division within arrays</u></p>  <p>Link division to multiplication by creating an array and thinking about the number sentences that can be created.</p> <p>Eg <math>15 \div 3 = 5</math>    <math>5 \times 3 = 15</math> <math>15 \div 5 = 3</math>    <math>3 \times 5 = 15</math></p>
	T	O																								
20	4																									
10	5																									
30	9																									
20	4																									
10	5																									
30	9																									
Tens	Ones																									
30	6																									
10	4																									
20	0																									

After practically using the base 10 blocks and place value counters, children can draw the counters to help them to solve additions.



Moving onto the abstract

$$21 + 42 =$$

$$\begin{array}{r} 21 \\ + 42 \\ \hline \end{array}$$

Moving onto the abstract

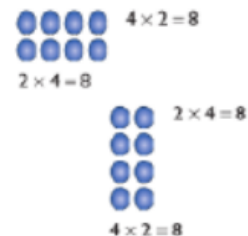
$$47 - 24 = 23$$

$$\begin{array}{r} 40 + 7 \\ - 20 + 4 \\ \hline 20 + 3 \end{array}$$

This will lead to a clear written column subtraction.

$$\begin{array}{r} 32 \\ - 12 \\ \hline 20 \end{array}$$

Draw arrays in different rotations to find commutative multiplication sentences.



Use an array to write multiplication sentences and reinforce repeated addition.

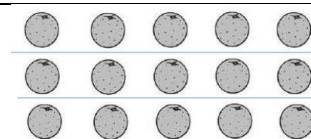


$$5 + 5 + 5 = 15$$

$$3 + 3 + 3 + 3 + 3 = 15$$

$$5 \times 3 = 15$$

$$3 \times 5 = 15$$



Draw an array and use lines to split the array into groups to make multiplication and division sentences.

Also use multiplication triangles

Find the inverse of multiplication and division sentences by creating four linking number sentences.  $7 \times 4 = 28$   $4 \times 7 = 28$   $28 \div 7 = 4$   $28 \div 4 = 7$  "Fact Families"

Moving onto the abstract

$28 \div 7 = 4$  Divide 28 into 7 groups. How many are in each group?

## Year Three

### Calculation Methods:

**Concrete**  
**Pictorial**  
**Abstract**

#### Column method regrouping

Children can draw a pictorial representation of the columns and place value counters to further support their learning and understanding.

Start by partitioning the numbers before moving on to clearly show the exchange below the addition.  
This is expanded form:

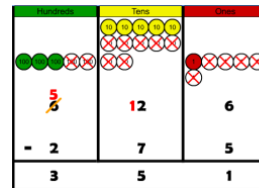
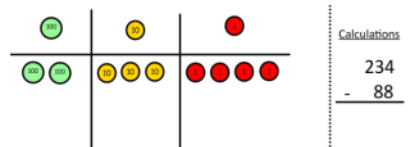
$$\begin{array}{r}
 20 + 5 \\
 40 + 8 \\
 \hline
 60 + 13 = 73
 \end{array}$$

Moving onto the abstract of  
column addition

#### Column method with regrouping

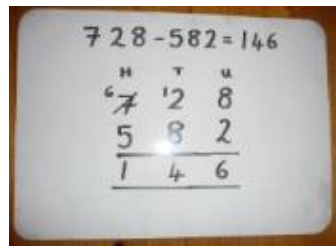
Use Base 10 to start with before moving on to place value counters. Start with one exchange before moving onto subtractions with 2 exchanges.

Make the larger number with the place value counters



Draw the counters onto a place value grid and show what you have taken away by crossing the counters out as well as clearly showing the exchanges you make.

Moving onto the abstract of decomposition

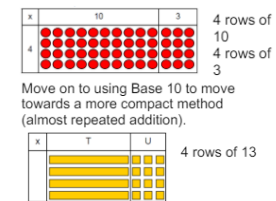


#### Revisit concrete, pictorial, and abstract strategies from Year Two:

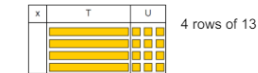
**Repeated Addition**  
**Arrays showing commutative multiplication**

#### Grid Method

Show the link with arrays to first introduce the grid method with counters

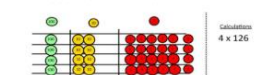


Move on to using Base 10 to move towards a more compact method (almost repeated addition).

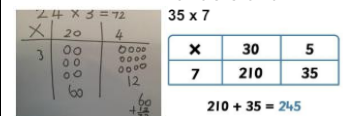


Use base 10 – then, once secure, move on to place value counters to show how we are finding groups of a number. We are multiplying by 4 so we need 4 rows.

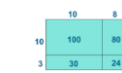
Fill each row with 126.



Children can represent the work they have done with place value counters in a way that they understand.



Moving forward: multiply by a 2 digit number showing the different rows within the grid method.  
18 x 13



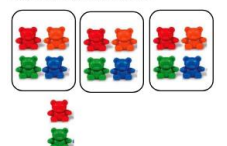
Moving onto the abstract of short  
multiplication

#### Revisit concrete, pictorial, and abstract strategies from Year Two:

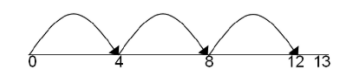
**Division with arrays**

#### Division with a remainder

14 ÷ 3 =  
Divide objects between groups and see how much is left over



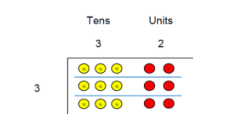
Jump forward in equal jumps on a number line then see how many more you need to jump to find a remainder.



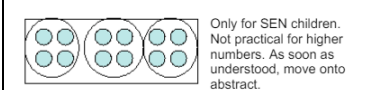
Draw dots and group them to divide an amount and clearly show a remainder.



$$96 \div 3$$



Students can continue to use drawn diagrams with dots or circles to help them divide numbers into equal groups.



#### Moving onto the abstract of short division

Begin with divisions that divide equally with no remainder.

$$\begin{array}{r}
 218 \\
 3 \overline{) 654} \\
 \underline{6} \phantom{00} \\
 0 \phantom{00} \\
 \underline{0} \phantom{00} \\
 0 \phantom{00} \\
 \underline{0} \phantom{00} \\
 0
 \end{array}$$

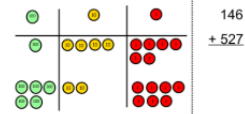


## Year Four

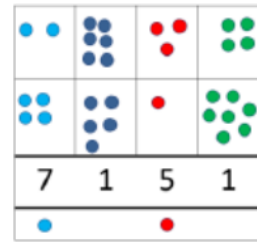
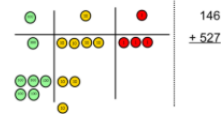
### Calculation Methods: Concrete Pictorial Abstract

#### Column method regrouping

Make both numbers on a place value grid.



Add up the units and exchange 10 ones for one 10.



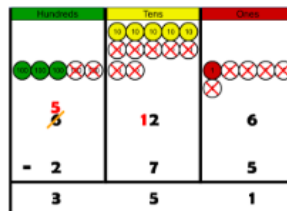
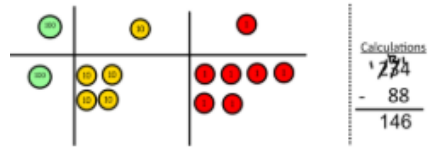
Start by partitioning the numbers before moving on to clearly show the exchange below the addition.

This is expanded form:

$$\begin{array}{r} 20 + 5 \\ 40 + 8 \\ 60 + 13 = 73 \end{array}$$

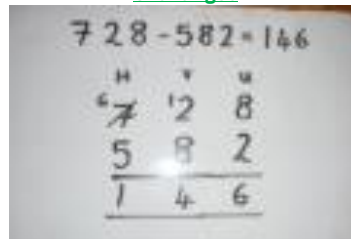
#### Moving onto the abstract of column addition with exchanges

#### Column method regrouping



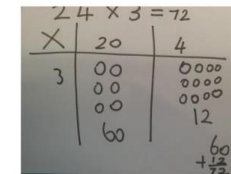
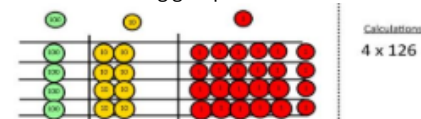
Draw the counters onto a place value grid and show what you have taken away by crossing the counters out as well as clearly showing the exchanges you make.

#### Moving onto the abstract of column subtraction with exchanges



#### Grid Method

Use base 10 – then, once secure, move on to place value counters to show how we are finding groups of a number.



$$35 \times 7$$

$\times$	30	5
7	210	35

$$210 + 35 = 245$$

Bar modelling and number lines can support learners when solving problems with multiplication alongside the formal written methods. (Children need to understand multiplication as repeated addition to use bar modelling for problem solving).

#### Moving onto the abstract of column multiplication

Year 4 – two- and three-digit  $\times$  1 digit

#### Revisit concrete, pictorial, and abstract strategies from Year Three:

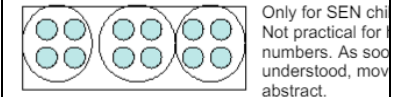
#### Division with arrays Division with a remainder

#### Short division

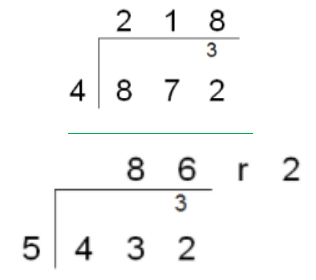
$$96 \div 3$$






Students can continue to use drawn diagrams with or circles to help them divide numbers into equal



#### Moving onto the abstract of short division



## Year Five

	Addition	Subtraction	Multiplication	Division
<b>Calculation Methods:</b> <b>Concrete</b> <b>Pictorial</b> <b>Abstract</b>	<p><b>Column addition including the expanded form to develop reasoning skills</b></p> <p>Start by partitioning the numbers before moving on to clearly show the exchange below the addition.</p> <p>This is expanded form:</p> $\begin{array}{r} 20 + 5 \\ 40 + 8 \\ 60 + 13 = 73 \end{array}$ <p>As the children move on, introduce decimals with the same number of decimal places and different.</p>	<p><b>Expanded subtraction</b></p> <p>(below) to be done in Y3. Then use expanded and compact (second picture) method side by side.</p>   <p>Moving forward the children use a more compact method. This will lead to an understanding of subtracting any number including decimals.</p> $\begin{array}{r} 5 \quad 12 \quad 1 \\ 2 \quad 6 \quad 3 \quad . \quad 0 \\ - \quad 2 \quad 6 \quad . \quad 5 \\ \hline 2 \quad 3 \quad 6 \quad . \quad 5 \end{array}$	<p><b>Column Multiplication</b></p> <p>Start with short multiplication</p> <p><b>Long Multiplication</b></p> <p>If it helps, children can write out what they are solving next to their answer.</p> $\begin{array}{r} 32 \\ \times 24 \\ \hline 8 \quad (4 \times 2) \\ 120 \quad (4 \times 30) \\ 40 \quad (20 \times 2) \\ 600 \quad (20 \times 30) \\ \hline 768 \end{array}$ 	<p><b>Short Division</b></p> $\begin{array}{r} 8 \quad 6 \quad r \quad 2 \\ 3 \overline{) 5432} \\ \underline{54} \phantom{00} \\ 0 \phantom{00} \end{array}$ <p>Move into decimal places to divide the total accurately</p> $\begin{array}{r} 1 \quad 4 \quad . \quad 6 \\ 3 \quad 5 \overline{) 511.0} \\ \underline{35} \phantom{00} \\ 16 \phantom{00} \\ \underline{15} \phantom{00} \\ 1 \phantom{00} \\ \underline{0} \phantom{00} \\ 10 \\ \underline{9} \phantom{00} \\ 1 \phantom{00} \end{array}$ <p><b>Long Division</b></p> <p>Children apply their learning of short division and write the groups underneath to use column subtraction to calculate a remainder. The next digit then meets the remainder rather than carrying the remainder over. For decimal long division, add the decimal point before solving the calculation.</p> 