Calculations Policy

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Staploe Education Trust
Excellence through partnership

Contents

Progression towards a standard written method of calculation

Introduction

This calculation policy has been written in line with the programmes of study taken from the revised **National Curriculum for Mathematics (2014).** It provides guidance on appropriate calculation methods and progression. The content is set out in progressive steps under the following headings: addition, subtraction, multiplication and division.

Children will use mental methods as their first port of call when appropriate, but for calculations that they cannot do in their heads, they will need to use an effective written method confidently and accurately.

Aims of the Policy

- To ensure consistency and progression in our approach to calculation
- To ensure that children develop an efficient, reliable, formal written method of calculation for all operations.
- To ensure that children can use these methods accurately with confidence and understanding.

How to Use this Policy

- Use the policy as the basis of planning but ensure you use previous or following steps guidance to allow for personalised learning.
- Always use ‘Assessment for Learning’ to identify suitable next steps in calculation for groups of children to the previous stage in calculation.
- Always use suitable resources, models and images to support children’s understanding of calculation and place value, as appropriate at all stages. All children, regardless of age and ability should make progress through a ‘C.P.A’ approach (Concrete, Pictorial, Abstract).
- Encourage children to make sensible choices about the methods they use when solving problems.

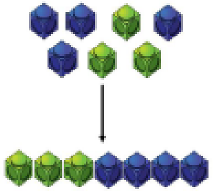
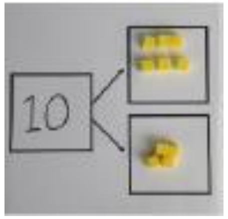
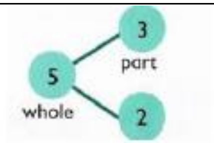
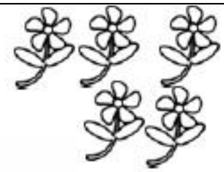
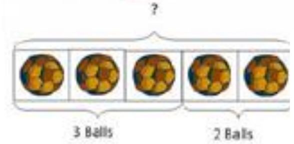
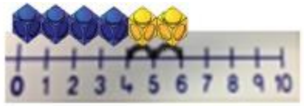
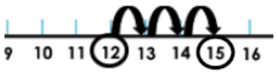
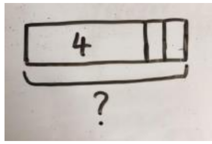
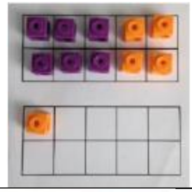
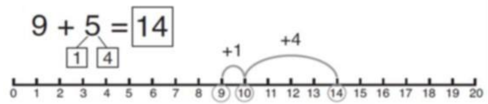
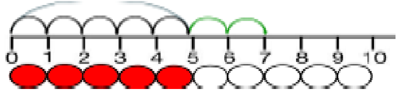
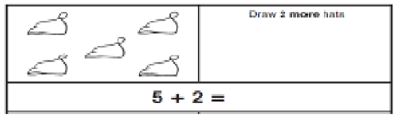
This policy has been largely adapted from the White Rose Maths Hub Calculation Policy with further material added. It is a working document and will be revised and amended as necessary.

Key Language

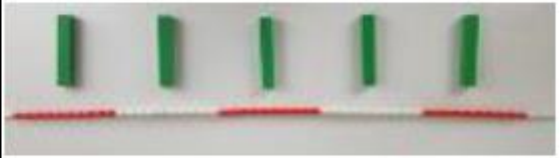
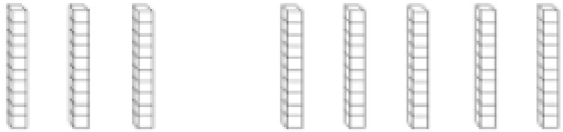
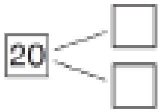
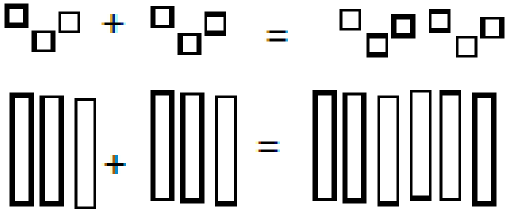
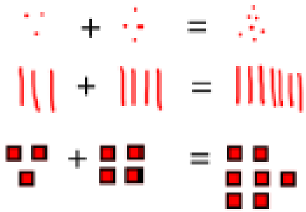
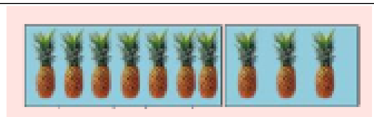
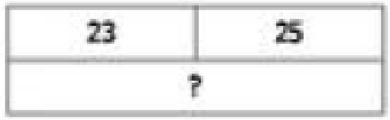
	EYFS/Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Key Language: Addition	sum, total, parts and wholes, plus, add, altogether, more, greater, 'is equal to' 'is the same as', parts, whole.					
Addition	Combining two parts to make a whole: part whole model. Starting at the bigger number and counting on- using cubes. Regrouping to make 10 using ten frame.	Adding three single digits. Use of base 10 to combine two numbers.	Column method regrouping. Using place value counters (up to 3 digits).	Column method regrouping. Using place value counters (up to 3 digits).	Column method regrouping. Use of place value counters for adding decimals.	Column method regrouping. Abstract methods. Place value counters to be used for adding decimal numbers.
Key Language: Subtraction	take away, less than, the difference, subtract, minus, fewer, decrease, parts, whole.					
Subtraction	Taking away ones Counting back Find the difference Part whole model Make 10 using the ten frame	Counting back Find the difference Part whole model Make 10 Use of base 10	Column method with regrouping. (up to 3 digits using place value counters)	Column method with regrouping. (up to 4 digits)	Column method with regrouping. Abstract for whole numbers. Start with place value counters for decimals- with the same amount of decimal places.	Column method with regrouping. Abstract methods. Place value counters for decimals- with different amounts of decimal places.

	EYFS/Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Key Language: Multiplication	double, times, multiplied by, the product of, groups of, lots of, equal groups/parts.					
Multiplication	Recognising and making equal groups. Doubling Counting in multiples Use cubes, Numicon and other objects in the classroom.	Arrays- showing commutative multiplication	Arrays 2d × 1d using base 10	Column multiplication- introduced with place value counters. (2 and 3 digit multiplied by 1 digit)	Column multiplication. Abstract only but might need a repeat of year 4 first (up to 4 digit numbers multiplied by 1 or 2 digits)	Column multiplication Abstract methods (multi-digit up to 4 digits by a 2 digit number)
Key Language: Division	share, group, divide, divided by, half, equal groups/parts.					
Division	Sharing objects into groups Division as grouping e.g. I have 12 sweets and put them in groups of 3, how many groups? Use cubes and draw round 3 cubes at a time.	Division as grouping Division within arrays- linking to multiplication Repeated subtraction	Division with a remainder-using lollipop sticks, times tables facts and repeated subtraction. 2d divided by 1d using base 10 or place value counters	Division with a remainder Short division (up to 3 digits by 1 digit- concrete and pictorial)	Short division (up to 4 digits by a 1 digit number including remainders)	Short division Long division with place value counters (up to 4 digits by a 2 digit number) Children should exchange into the tenths and hundredths column too

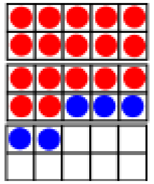
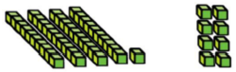
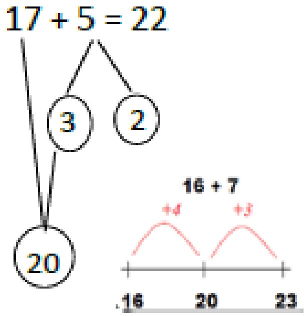
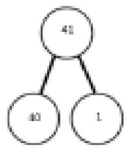
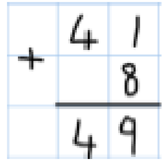
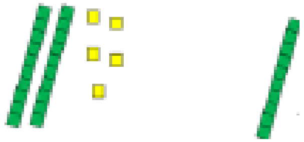
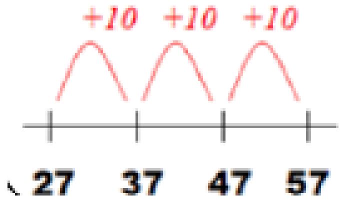
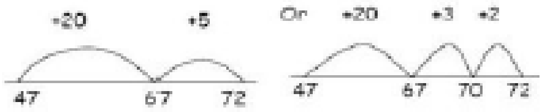
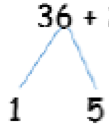
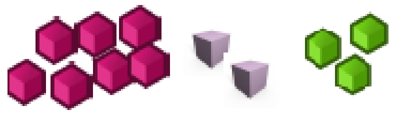
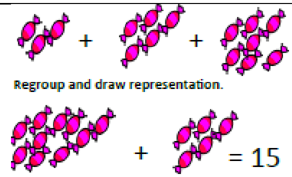
Year 1 Addition

Objective & Strategy	Concrete	Pictorial	Abstract
Combining two parts to make a whole: part- whole model	Use part-part whole model. Use cubes to add two numbers together as a group or in a bar (use other resources too e.g. eggs, shells, teddy bears, cars). 	 Children to represent the cubes using dots or crosses. They could put each part on a part whole model too.	4 + 3 = 7 Four is a part, 3 is a part and the whole is seven.
Starting at the bigger number and counting on	Start with the larger number on the bead string and then count on to the smaller number 1 by 1 to find the answer. 	Start at the larger number on the number line and count on in ones or in one jump to find the answer.  A bar model encourages the children to count on, rather than count all.	5 + 12 = 17 Place the larger number in your head and count on the smaller number to find your answer.
Regrouping to make 10. *This is an essential skill for column addition later.*	Start with the bigger number and use the smaller number to make 10. Use ten frames. 	Use pictures or a number line. Regroup or partition the smaller number using the part part whole model to make 10. 	7 + 4= 11 If I am at seven, how many more do I need to make 10? How many more do I add on now?
Represent & use number bonds and related subtraction facts within 20	 2 more than 5.		Emphasis should be on the language '1 more than 5 is equal to 6.' *'2 more than 5 is 7.'* *'8 is 3 more than 5.'*

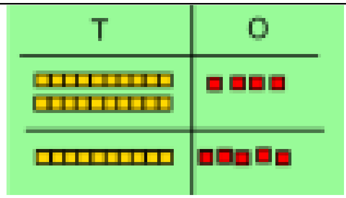
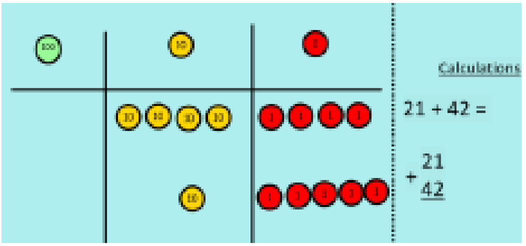
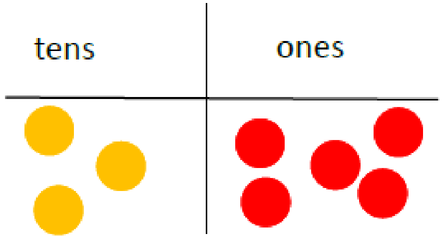
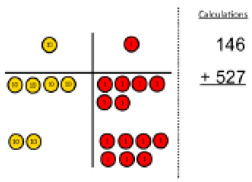
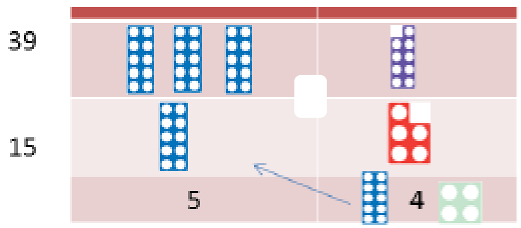
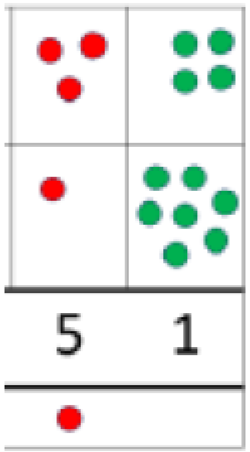
Year 2 Addition

Objective & Strategy	Concrete	Pictorial	Abstract
Adding multiples of ten	Model using dienes and bead strings 50= 30 = 20 	Use representations for base ten.  3 tens + 5 tens = _____ tens 30 + 50 = _____	20 + 30 = 50 70 = 50 + 20 40 + □ = 60
Use known number facts Part part whole	Children explore ways of making numbers within 20 	 □ + □ = 20 20 − □ = □ □ + □ = 20 20 − □ = □	□ + 1 = 16 16 − 1 = □ 1 + □ = 16 16 − □ = 1
Using known facts		Children draw representations of H,T and O 	3 + 4 = 7 *leads to* 30 + 40 = 70 *leads to* 300 + 400 = 700
Bar model	 3 + 4 = 7	 7 + 3 = 10	 23 + 25 = 48

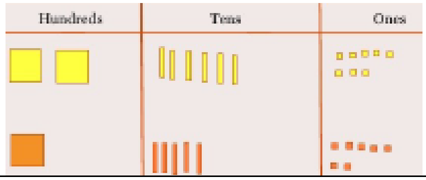
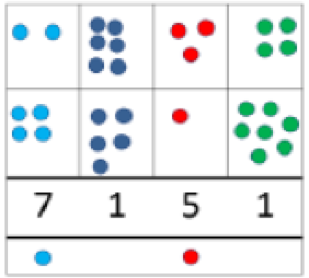
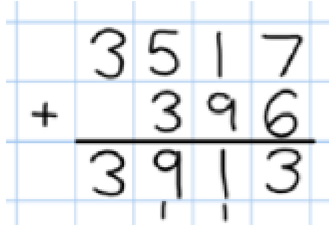
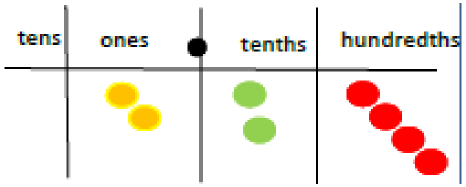
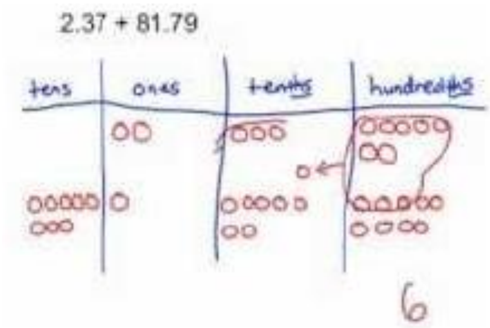
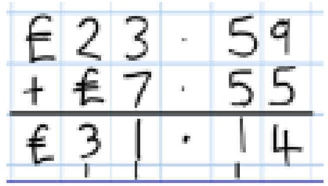
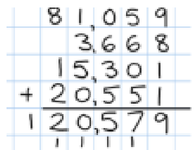
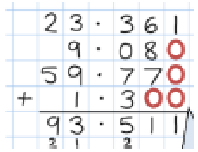
Year 2 Addition

Objective & Strategy	Concrete	Pictorial	Abstract
Add a two digit number and ones	 17 + 5 = 22 Use ten frame to make 'magic ten Children explore the pattern. 17 + 5 = 22 27 + 5 = 32 	Use part part whole and number line to model. 	41 + 8  1 + 8 = 9 40 + 9 = 49 
Add a 2 digit number and tens	 25 + 10 = 35 Explore that the ones digit does not change	27 + 30 	27 + 10 = 37 27 + 20 = 47 27 + □ = 57
Add two 2-digit numbers	 Model using dienes , place value counters and numicon	 Use number line and bridge ten using part whole if necessary.	36 + 25=  30 + 20 = 50 5 + 5 = 10 50 + 10 + 1 = 61 Formal method: 36 +25 61 1
Add three 1-digit numbers	 Combine to make 10 first if possible, or bridge 1o then add third digit		4 + 7 + 6 = $\boxed{10}$ + $\boxed{7}$ 10 = $\boxed{17}$ Combine the two numbers that make/ bridge ten then add on the third.

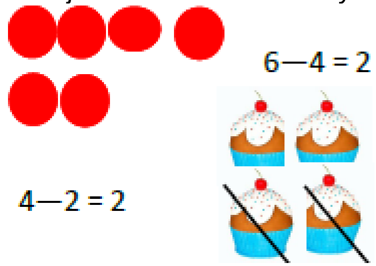
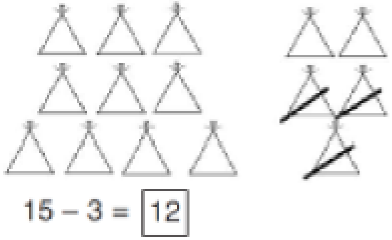
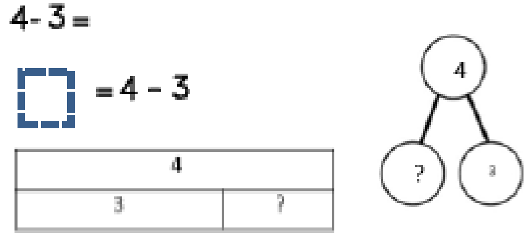
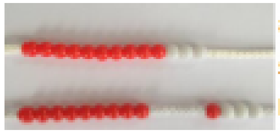
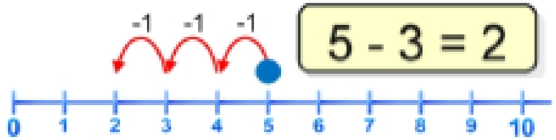
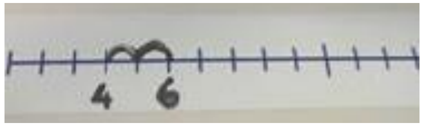
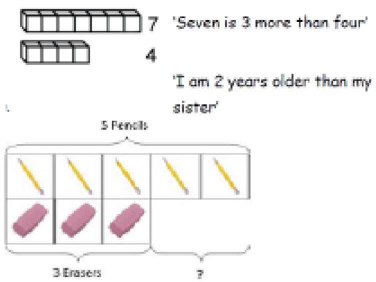
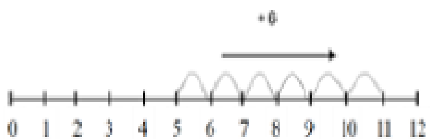
Year 3 – Addition

Objective & Strategy	**Concrete**	**Pictorial**	**Abstract**
Column Addition—no regrouping (friendly numbers) Add two or three 2 or 3-digit numbers.	Model using Dienes or numicon  Add together the ones first, then the tens.  Move to using place value counters	Children move to drawing the counters using a tens and one frame. 	Add the ones first, then the tens, then the hundreds. $\begin{array}{r} 2\ 2\ 3 \\ +\ 1\ 1\ 4 \\ \hline 3\ 3\ 7 \end{array}$
Column Addition with regrouping.	 Exchange ten ones for a ten. Model using numicon and pv counters. 	 Children can draw a representation of the grid to further support their understanding, carrying the ten **underneath** the line	$\begin{array}{rcl} 20 & + & 5 \\ 40 & + & 8 \\ \hline 60 & + & 13 \end{array} = 73$ Start by partitioning the numbers before formal column to show the exchange. $\begin{array}{r} 536 \\ +\ 85 \\ \hline 621 \\ \hline 1\ 1 \end{array}$

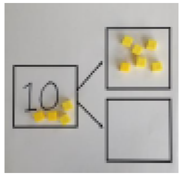
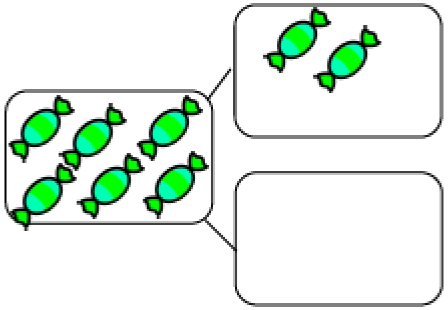
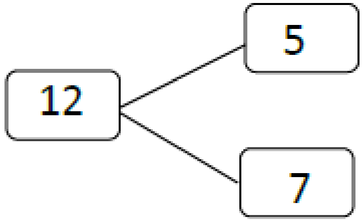
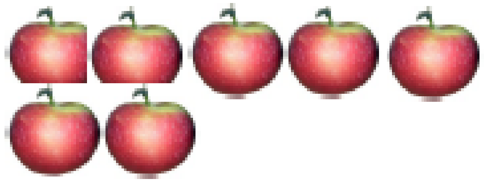
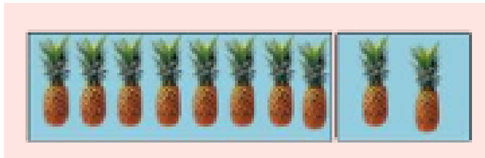
Year 4 –6 Addition

Objective & Strategy	Concrete	Pictorial	Abstract
Y4—add numbers with up to 4 digits.	Children continue to use dienes or pv counters to add, exchanging ten ones for a ten and ten tens for a hundred and ten hundreds for a thousand. Move to using place value counters 	Draw representations using pv grid. 	Continue from previous work to carry hundreds as well as tens. 
5 - add numbers with more than 4 digits. Add decimals with 2 dec-imal places, including money.	As year 4  Introduce decimal place value counters and model exchange for addition.		 Relate to money and measures.
Y6 - add several numbers of increasing complexity Including adding money, measure and decimals with different numbers of decimal points.	As Y5	As Y5	 Insert zeros for place holders. 

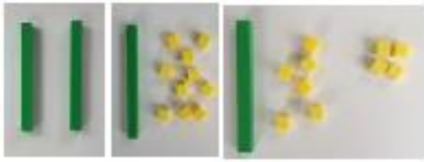
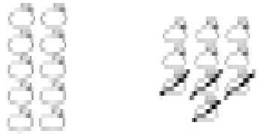
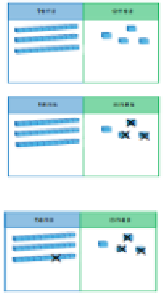
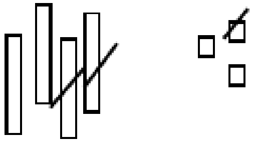
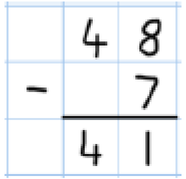
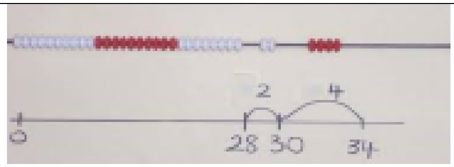
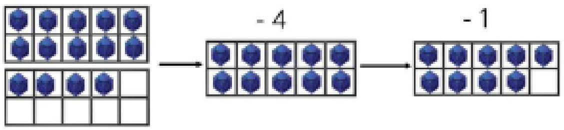
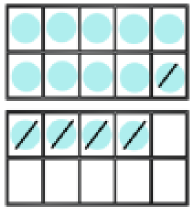
Year 1 Subtraction

Objective & Strategy	Concrete	Pictorial	Abstract
Taking away ones	Use physical objects, counters, cubes etc to show how objects can be taken away. 	 Cross out drawn objects to show what has been taken away.	
Counting back	 Move objects away from the group, counting backwards.  Move the beads along the bead string as you count backwards.	 Count back in ones using a number line.	Put 13 in your head, count back 4. What number are you at? 
Find the Difference	Compare objects and amounts  Lay objects to represent bar model.	Count on using a number line to find the difference. 	Hannah has 12 sweets and her sister has 5. How many more does Hannah have than her sister?

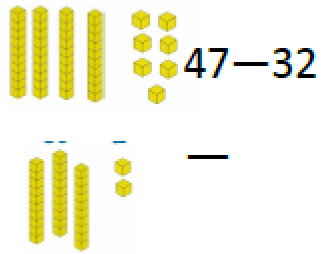
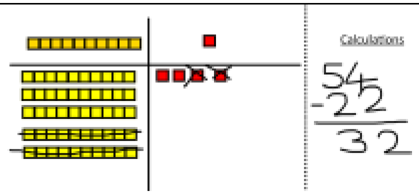
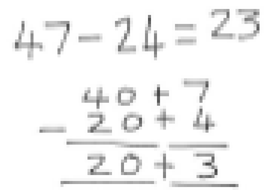
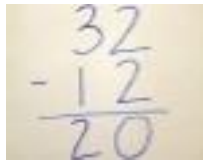
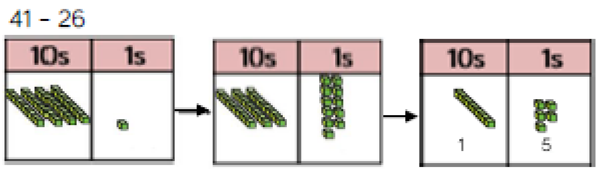
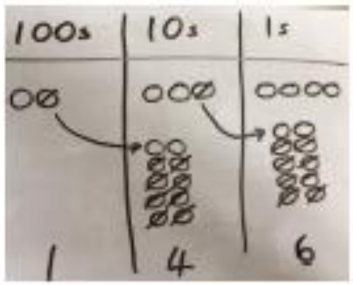
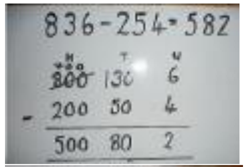
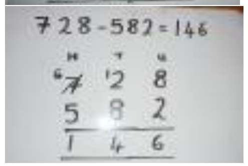
Year 1 Subtraction

Objective & Strategy	Concrete	Pictorial	Abstract
Represent and use number bonds and related subtraction facts within 20 Part Part Whole model	 Link to addition. Use PPW model to model the inverse. If 10 is the whole and 6 is one of the arts, what s the other part? 10—6 = 4	 Use pictorial representations to show the part.	Move to using numbers within the part whole model. 
Make 10	14—9  Make 14 on the ten frame. Take 4 away to make ten, then take one more away so that you have taken 5.	13—7  Jump back 3 first, then another 4. Use ten as the stopping point.	16—8 How many do we take off first to get to 10? How many left to take off?
Bar model	 5—2 = 3		 10 = 8 + 2 10 = 2 + 8 10—2 = 8 10—8 = 2

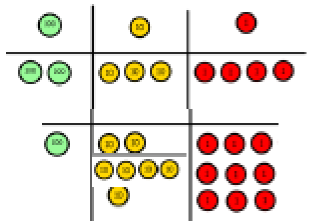
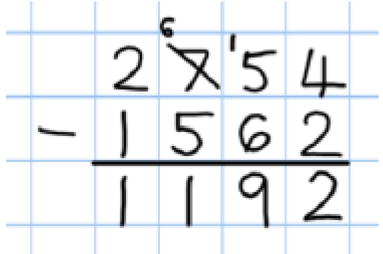
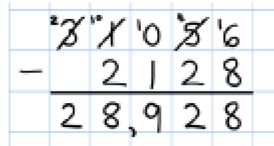
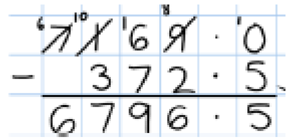
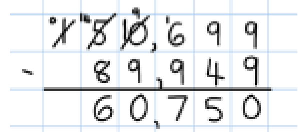
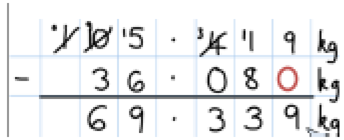
Year 2 Subtraction

Objective & Strategy	Concrete	Pictorial	Abstract
Regroup a ten into ten ones	 Use a PV chart to show how to change a ten into ten ones, use the term 'take and make'	 20 − 4 =	20—4 = 16
Partitioning to subtract without regrouping. *'Friendly numbers'*	 34—13 = 21 Use Dienes to show how to partition the number when subtracting without regrouping.	Children draw representations of Dienes and cross off.  43—21 = 22	43—21 = 22 
Make ten strategy *Progression should be crossing one ten, crossing more than one ten, crossing the hundreds.*	 34—28 Use a bead bar or bead strings to model counting to next ten and the rest.	 Use a number line to count on to next ten and then the rest.	93—76 = 17
	Making 10 using ten frames. 14 – 5 	 Children to present the ten frame pictorially and discuss what they did to make 10.	14 - 5 = 9 4 1 14 - 4 = 10 10 - 1 = 9 Children to show how they can make 10 by partitioning the subtrahend.

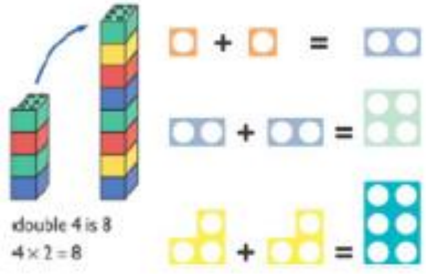
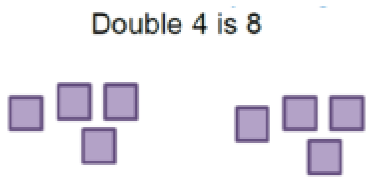
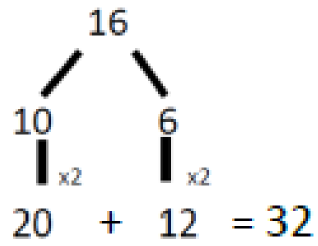
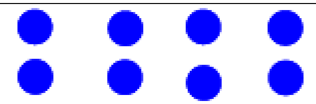
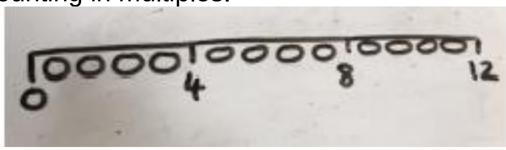
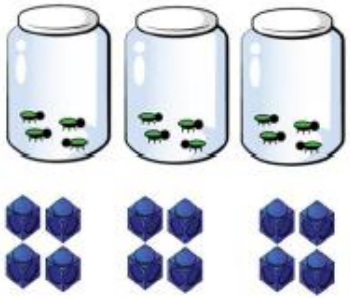
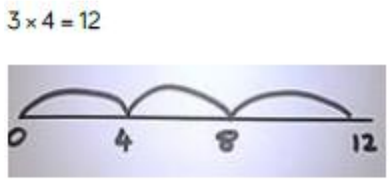
Year 3 Subtraction

Objective & Strategy	Concrete	Pictorial	Abstract
Column subtraction without regrouping (friendly numbers)	 Use base 10 or Numicon to model	 Draw representations to support understanding	Intermediate step may be needed to lead to clear subtraction understanding.  
Column subtraction with regrouping	 Begin with base 10 or Numicon. Move to pv counters, modelling the exchange of a ten into ten ones. Use the phrase 'take and mae' for exchange.	 Children may draw base ten or PV counters and cross off.	 Begin by partitioning into pv columns  Then move to formal method.

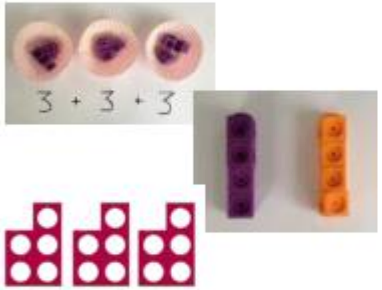
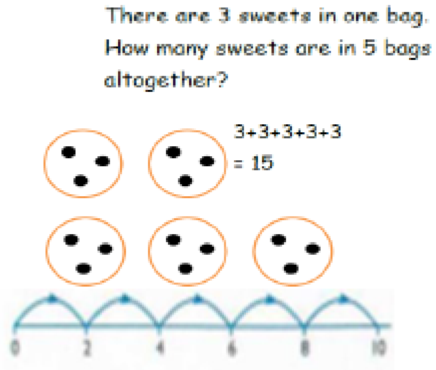
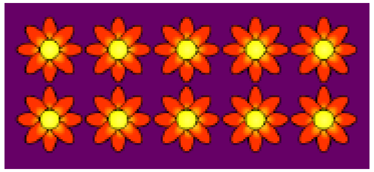
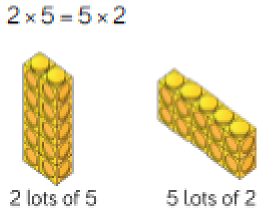
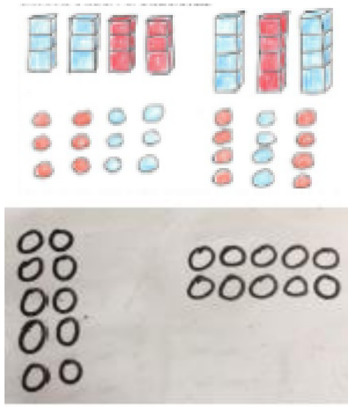
Year 4 - 6 Subtraction

Objective & Strategy	**Concrete**	**Pictorial**	**Abstract**
Subtracting tens and ones Year 4 subtract with up to 4 digits. *Introduce decimal subtraction through context of money*	Model process of exchange using Numicon, base ten and then move to PV counters. 234 - 179 	Children to draw pv counters and show their exchange—see Y3	Exchanging 
Year 5- Subtract with at least 4 digits, including money and measures. *Subtract with decimal values, including mixtures of integers and decimals and aligning the decimal*	As Year 4	Children to draw pv counters and show their exchange—see Y3	 Use zeros for place holders. 
Year 6—Subtract with increasingly large and more complex numbers and decimal values.			 

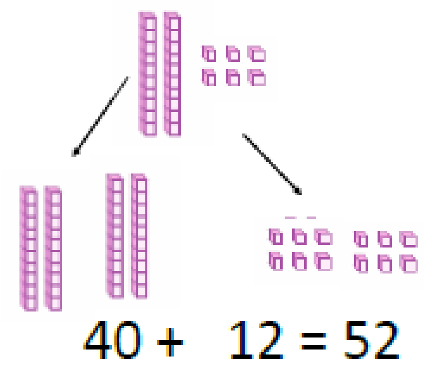
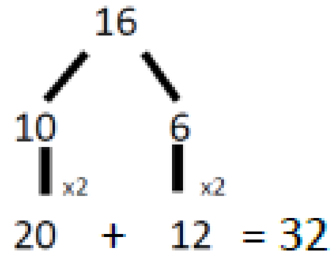
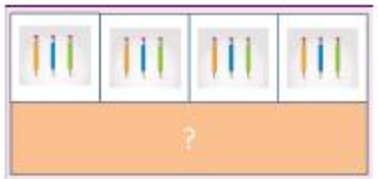
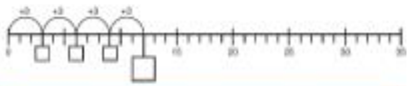
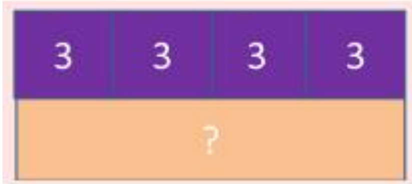
Year 1 Multiplication

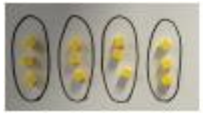
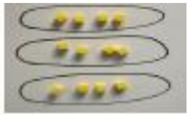
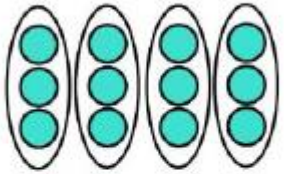
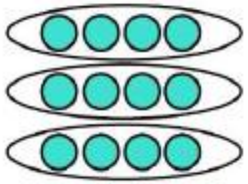
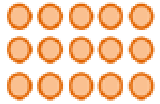
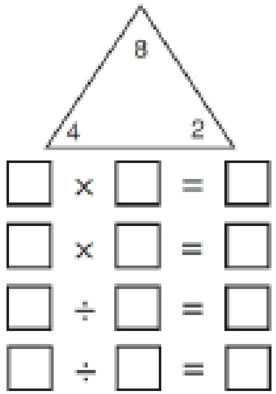
Objective & Strategy	**Concrete**	**Pictorial**	**Abstract**
Doubling	Use practical activities using manipulatives including cubes and Numicon to demonstrate doubling 	Draw pictures to show how to double numbers 	Partition a number and then double each part before recombining it back together. 
Counting in multiples	Count the groups as children are skip counting, children may use their fingers as they are skip counting. 	 Children make representations to show counting in multiples. 	Count in multiples of a number aloud. Write sequences with multiples of numbers. 2, 4, 6, 8, 10 5, 10, 15, 20, 25 , 30
Making equal groups and counting the total	Use manipulatives to create equal groups. 	Draw and make representations 	

Year 1 Multiplication

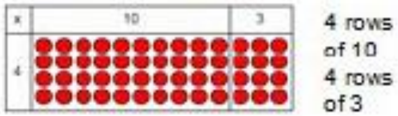
Objective & Strategy	Concrete	Pictorial	Abstract
Repeated addition	Use different objects to add equal groups 	Use pictorial including number lines to solve problems 	Write addition sentences to describe objects and pictures. 
Understanding arrays	Use objects laid out in arrays to find the answers to 2 lots 5, 3 lots of 2 etc.  	Draw representations of arrays to show understanding 	3 x 2 = 6 2 x 5 = 10

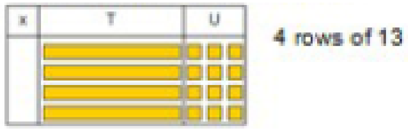
Year 2 Multiplication

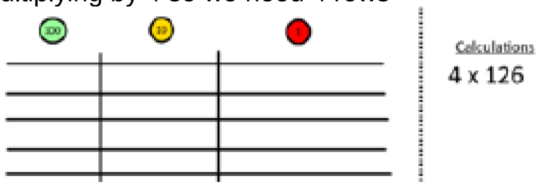
Objective & Strategy	**Concrete**	**Pictorial**	**Abstract**
Doubling	Model doubling using dienes and PV counters. 	Draw pictures and representations to show how to double numbers	Partition a number and then double each part before recombining it back together. 
Counting in multiples of 2, 3, 4, 5, 10 from 0 (repeated addition)	Count the groups as children are skip counting, children may use their fingers as they are skip counting. Use bar models.   	Number lines, counting sticks and bar models should be used to show representation of counting in multiples.    	Count in multiples of a number aloud. Write sequences with multiples of numbers. 0, 2, 4, 6, 8, 10 0, 3, 6, 9, 12, 15 0, 5, 10, 15, 20, 25 , 30 $4 \times 3 = \square$

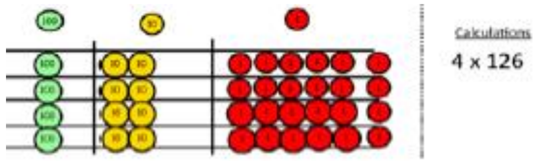
Objective & Strategy	Concrete	Pictorial	Abstract
Multiplication is commutative	Create arrays using counters and cubes and numic    Pupils should understand that an array can represent different equations and that, as multiplication is commutative, the order of the multiplication does not affect the answer.  	Use representations of arrays to show different calculations and explore commutativity.  	$12 = 3 \times 4$ $12 = 4 \times 3$ Use an array to write multiplication sentences and reinforce repeated addition.  $5 + 5 + 5 = 15$ $3 + 3 + 3 + 3 + 3 = 15$ $5 \times 3 = 15$ $3 \times 5 = 15$
Using the Inverse *This should be taught alongside division, so pupils learn how they work alongside each other.*			$2 \times 4 = 8$ $4 \times 2 = 8$ $8 \div 2 = 4$ $8 \div 4 = 2$ $8 = 2 \times 4$ $8 = 4 \times 2$ $2 = 8 \div 4$ $4 = 8 \div 2$ Show all 8 related fact family sentences.

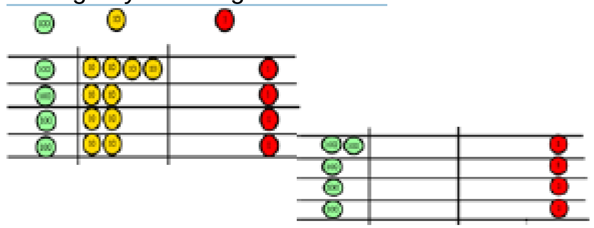
Year 3 Multiplication

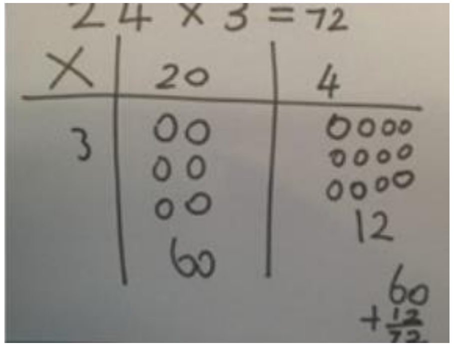
<table>
<tr><th>Objective & Strategy</th><th>Concrete</th><th>Pictorial</th><th>Abstract</th></tr>
<tr>
<td>Grid method</td>
<td>Show the links with arrays to first introduce the grid method


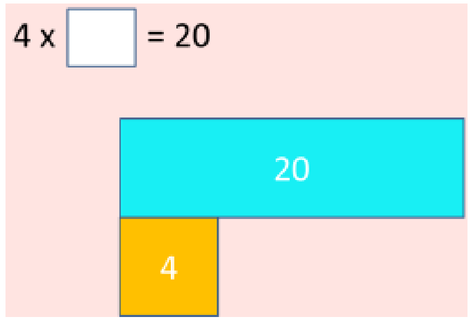
Move onto base ten to move towards a more compact method.


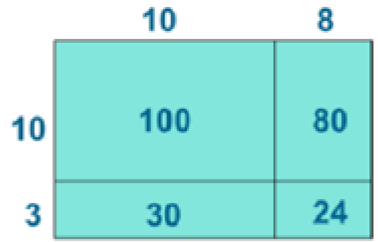
Move on to place value counters to show how we are finding groups of a number. We are multiplying by 4 so we need 4 rows


Fill each row with 126


Add up each column, starting with the ones making any exchanges needed
</td>
<td>Children can represent their work with place value counters in a way that they understand.

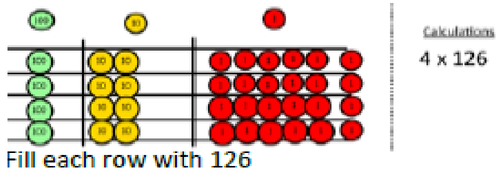
They can draw the counters using colours to show different amounts or just use the circles in the different columns to show their thinking as shown below.


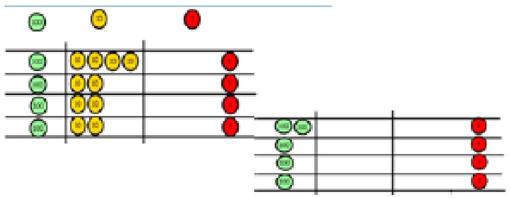
Bar model are used to explore missing numbers

</td>
<td>Start with multiplying by one digit numbers and showing the clear addition alongside the grid.
<table><tr><th>×</th><th>30</th><th>5</th></tr><tr><td>7</td><td>210</td><td>35</td></tr></table>
210 + 35 = 245

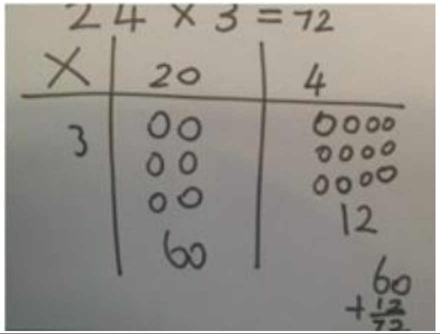
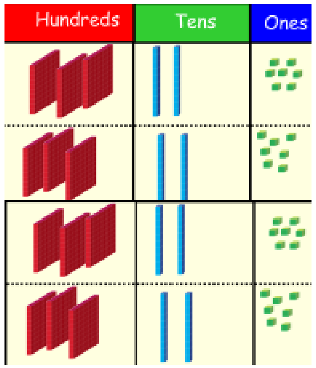
Moving forward, multiply by a 2 digit number showing the different rows within the grid method.

</td>
</tr>
</table>

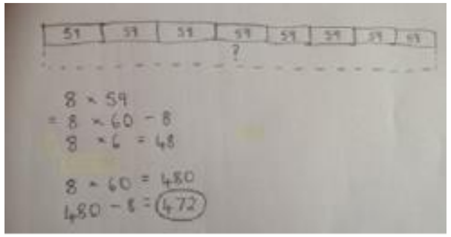
Year 4 Multiplication

<table>
<tr><th>Objective & Strategy</th><th>Concrete</th><th>Pictorial</th><th>Abstract</th></tr>
<tr>
<td>Grid method recap from year 3 for 2 digits x 1 digit

Move to multiplying 3 digit numbers by 1 digit. (year 4 expectation)</td>
<td>Use place value counters to show how we are finding groups of a number. We are multiplying by 4 so we need 4 rows


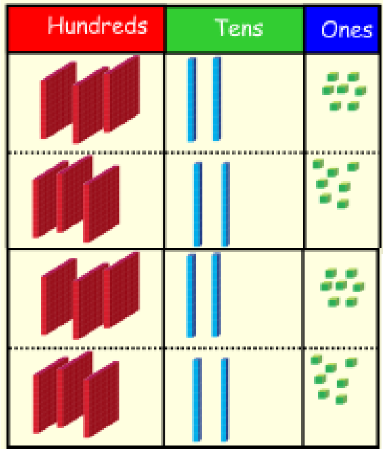

Add up each column, starting with the ones making any exchanges needed</td>
<td>Children can represent their work with place value counters in a way that they understand.

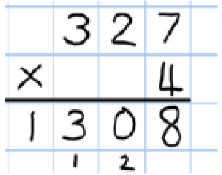
They can draw the counters using colours to show different amounts or just use the circles in the different columns to show their thinking as shown below.

</td>
<td>Start with multiplying by one digit numbers and showing the clear addition alongside the grid.
<table>
<tr><td>×</td><td>30</td><td>5</td></tr>
<tr><td>7</td><td>210</td><td>35</td></tr>
</table>
210 + 35 = 245</td>
</tr>
<tr>
<td>Column multiplication</td>
<td>Children can continue to be supported by place value counters at the stage of multiplication. This initially done where there is no regrouping. 321 x 2 = 642


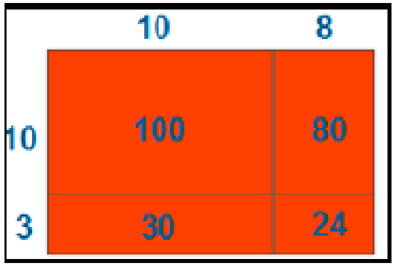
It is important at this stage that they always multiply the ones first.
The corresponding long multiplication is modelled alongside</td>
<td>
<table>
<tr><td>x</td><td>300</td><td>20</td><td>7</td></tr>
<tr><td>4</td><td>1200</td><td>80</td><td>28</td></tr>
</table>
The grid method maybe used to show how this relates to a formal written method.


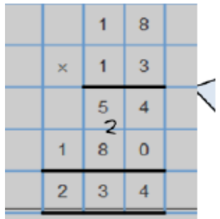
Bar modelling and number lines can support learners when solving problems with multiplication alongside the formal written methods.</td>
<td>327
x 4
28
80
1200
1308
<table>
<tr><td></td><td>3</td><td>2</td><td>7</td></tr>
<tr><td>×</td><td></td><td></td><td>4</td></tr>
<tr><td>1</td><td>3</td><td>0</td><td>8</td></tr>
<tr><td></td><td>1</td><td>2</td><td></td></tr>
</table>
This may lead to a compact method.</td>
</tr>
</table>

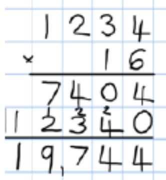
Year 5 – 6 Multiplication

<table>
<tr><th>Objective & Strategy</th><th>Concrete</th><th>Pictorial</th><th>Abstract</th></tr>
<tr>
<td>Column Multiplication for 3 and 4 digits x 1 digit.</td>
<td>

It is important at this stage that they always multiply the ones first.
Children can continue to be supported by place value counters at the stage of multiplication. This initially done where there is no regrouping. 321 x 2 = 642</td>
<td><table><tr><td>x</td><td>300</td><td>20</td><td>7</td></tr><tr><td>4</td><td>1200</td><td>80</td><td>28</td></tr></table></td>
<td>327
x 4
28
80
1200
1308


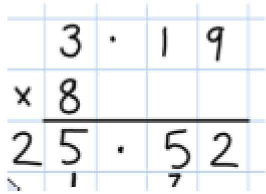
This will lead to a compact method.</td>
</tr>
<tr>
<td>Column multiplication</td>
<td>Manipulatives may still be used with the corresponding long multiplication modelled alongside.</td>
<td>

Continue to use bar modelling to support problem solving</td>
<td>

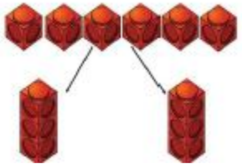
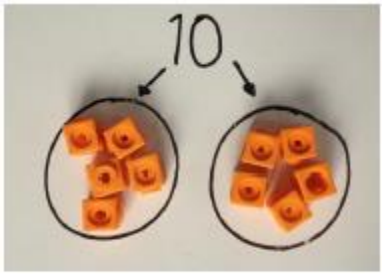
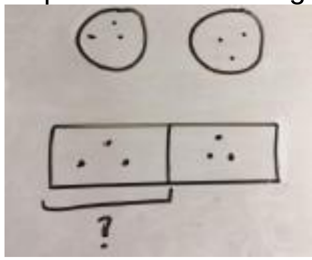
18 x 3 on the first row
(8 x 3 =24, carry-ing the 2 for 20, then 1 x 3)
18 x 10 on the 2nd row. Show multiplying by 10 by putting zero in units first


(1234 x 6)
(1234 x 10)</td>
</tr>
</table>

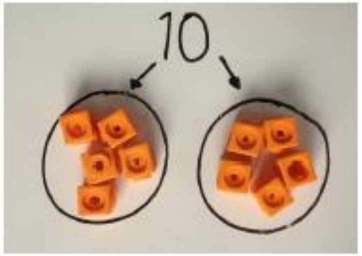
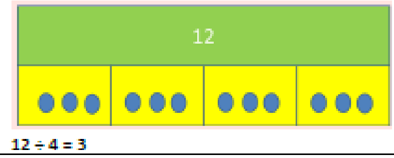
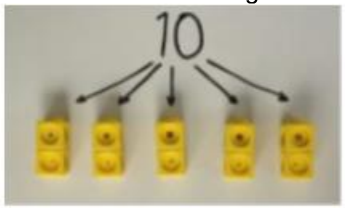
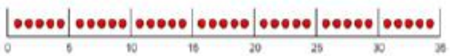
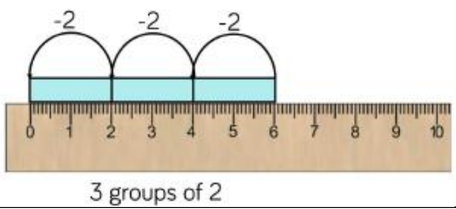
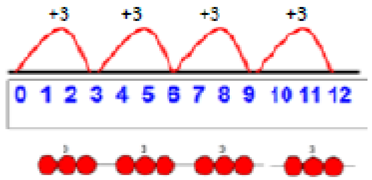
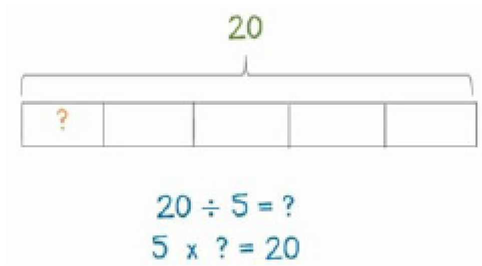
Year 6 Multiplication

Objective & Strategy	Concrete	Pictorial	Abstract
Multiplying decimals up to 2 decimal places by a single digit.			Remind children that the single digit belongs in the ones column. Line up the decimal points in the question and the answer. 

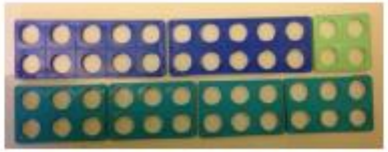
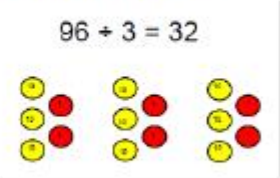
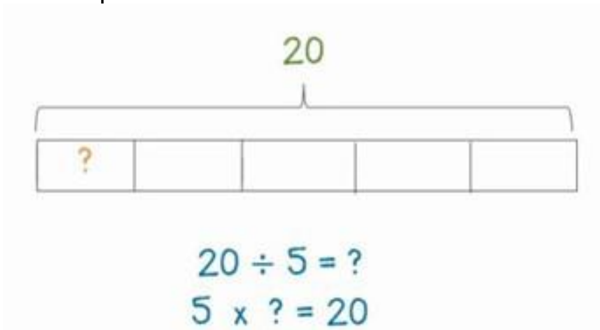
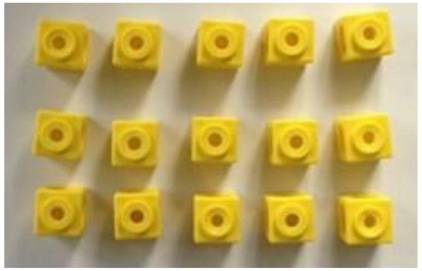
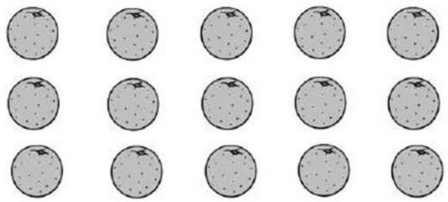
Year 1 Division

Objective & Strategy	Concrete	Pictorial	Abstract
Division as sharing	Sharing using a range of objects. 6 ÷ 2      I have 10 cubes, can you share them equally in 2 groups?	Represent the sharing pictorially.  Children use pictures or shapes to share quantities. 	12 shared between 3 is 4

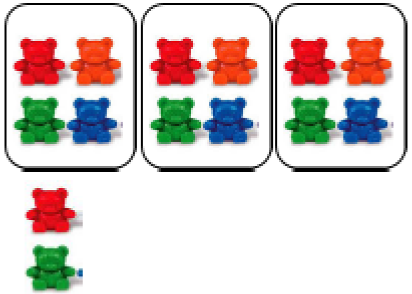
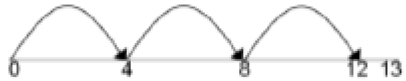
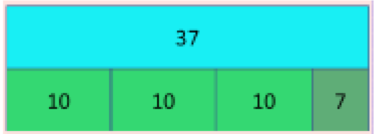
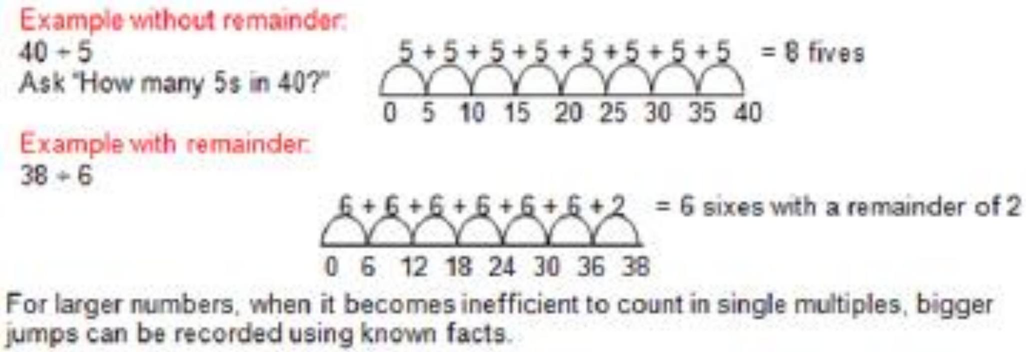
Year 2 Division

Objective & Strategy	Concrete	Pictorial	Abstract
Division as sharing	 I have 10 cubes, can you share them equally in 2 groups?	Children use pictures or shapes to share quantities.  Children use bar modelling to show and support understanding. 	$12 \div 3 = 4$
Division as grouping	Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding.   	Use number lines for grouping  Think of the bar as a whole. Split it into the number of groups you are dividing by and work out how many would be within each group. 	$28 \div 7 = 4$ Divide 28 into 7 groups. How many are in each group?

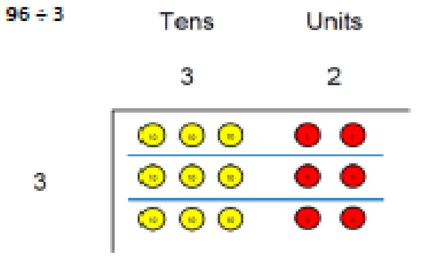
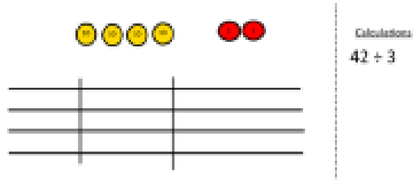
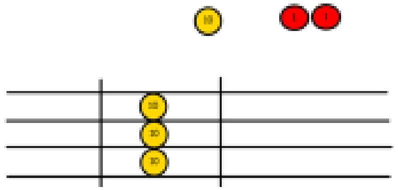
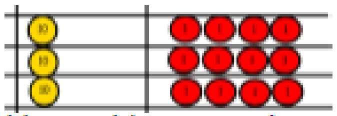
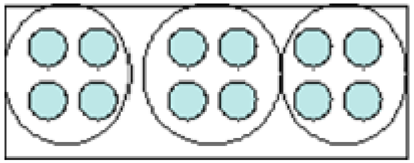
Year 3 Division

Objective & Strategy	Concrete	Pictorial	Abstract
Division as grouping	Use cubes, counters, objects or place value counters to aid understanding.  24 divided into groups of 6 = 4  	Continue to use bar modelling to aid solving division problems.  	How many groups of 6 in 24? 24 ÷ 6 = 4
	 Link division to multiplication by creating an array and thinking about the number sentences that can be created. Eg 15 ÷ 3 = 5 5 x 3 = 15 15 ÷ 5 = 3 3 x 5 = 15	Draw an array and use lines to split the array into groups to make multiplication and division sentences 	Find the inverse of multiplication and division sentences by creating eight linking number sentences. 7 x 4 = 28 4 x 7 = 28 28 ÷ 7 = 4 28 ÷ 4 = 7 28 = 7 x 4 28 = 4 x 7 4 = 28 ÷ 7 7 = 28 ÷ 4

Year 3 Division

Objective & Strategy	Concrete	Pictorial	Abstract
Division with remainders.	4 ÷ 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.  Use bar models to show division with remainders.  	Complete written divisions and show the remainder using r. 

Year 4-6 Division

Objective & Strategy	Concrete	Pictorial	Abstract
Divide at least 3 digit numbers by 1 digit. Short Division	 Use place value counters to divide using the bus stop method alongside  42 ÷ 3= Start with the biggest place value, we are sharing 40 into three groups. We can put 1 ten in each group and we have 1 ten left over.  We exchange this ten for ten ones and then share the ones equally among the groups.  We look how much in 1 group so the answer is 14.	Students can continue to use drawn diagrams with dots or circles to help them divide numbers into equal groups.  Encourage them to move towards counting in multiples to divide more efficiently.	Begin with divisions that divide equally with no remainder. $$\begin{array}{r\|l} & 2\;\;1\;\;8 \\ \hline 4 & 8\;\;{}^{3}7\;\;2 \end{array}$$ Move onto divisions with a remainder. $$\begin{array}{r\|l} & \;\;8\;\;6\;\;r\;2 \\ \hline 5 & 4\;\;{}^{3}3\;\;2 \end{array}$$ Finally move into decimal places to divide the total accurately. $$\begin{array}{r\|l} & \;\;1\;\;4\;.\;6 \\ \hline 35 & 5\;\;1\;\;{}^{16}1\;.\;{}^{21}0 \end{array}$$ $$\begin{array}{r\|l} & 0\;\;6\;\;6\;\;3\;r\;5 \\ \hline 8 & 5\;\;{}^{5}3\;\;{}^{5}0\;\;{}^{2}9 \end{array}$$

Year 6 Long Division

Step 1 – a remainder in the ones

```
      h t o
      0 4 1 R1
  4 ) 1 6 5
```

4 does not go into 1 (hundred). So combine the 1 hundred with the 6 tens (160).

4 goes into 16 four times.

4 goes into 5 once, leaving a remainder of 1.

```
      th h t o
      0  4 0 0 R7
  8 ) 3  2 0 7
```

8 does not go into 3 of the thousands. So combine the 3 thousands with the 2 hundreds (3,200).

8 goes into 32 four times (3,200 ÷ 8 = 400)
8 goes into 0 zero times (tens).
8 goes into 7 zero times, and leaves a remainder of 7.

```
      h t o
      0 6 1
  4 ) 2 4 7
        - 4
          3
```

When dividing the ones, 4 goes into 7 one time. Multiply 1 × 4 = 4, write that four under the 7, and subract. This finds us the remainder of 3.

Check: 4 × 61 + 3 = 247

```
      th h t o
      0  4 0 2
  4 ) 1  6 0 9
           - 8
             1
```

When dividing the ones, 4 goes into 9 two times. Multiply 2 × 4 = 8, write that eight under the 9, and subract. This finds us the remainder of 1.

Check: 4 × 402 + 1 = 1,609

Year 6 Long Division

Step 2—a remainder in the tens

1. Divide.	2. Multiply & subtract.	3. Drop down the next digit.
t o 2 2) 5 8 Two goes into 5 two times, or 5 tens ÷ 2 = 2 whole tens -- but there is a remainder!	t o 2 2) 5 8 - 4 1 To find it, multiply 2 × 2 = 4, write that 4 under the five, and subtract to find the remainder of 1 ten.	t o 2 9 2) 5 8 - 4 ↓ 1 8 Next, drop down the 8 of the ones next to the leftover 1 ten. You combine the remainder ten with 8 ones, and get 18.

1. Divide.	2. Multiply & subtract.	3. Drop down the next digit.
t o 2 9 2) 5 8 - 4 1 8 Divide 2 into 18. Place 9 into the quotient.	t o 2 9 2) 5 8 - 4 1 8 - 1 8 0 Multiply 9 × 2 = 18, write that 18 under the 18, and subtract.	t o 2 9 2) 5 8 - 4 1 8 - 1 8 0 The division is over since there are no more digits in the dividend. The quotient is 29.

Year 6 Long Division

Step 3—a remainder in any of the place values

1. Divide.	2. Multiply & subtract.	3. Drop down the next digit.
h t o 1 2) 2 7 8 Two goes into 2 one time, or 2 hundreds ÷ 2 = 1 hundred.	h t o 1 2) 2 7 8 - 2 0 Multiply 1 × 2 = 2, write that 2 under the two, and subtract to find the remainder of zero.	h t o 1 3 2) 2 7 8 - 2 ↓ 0 7 Next, drop down the 7 of the tens next to the zero.
Divide.	**Multiply & subtract.**	**Drop down the next digit.**
h t o 1 3 2) 2 7 8 - 2 0 7 Divide 2 into 7. Place 3 into the quotient.	h t o 1 3 2) 2 7 8 - 2 0 7 - 6 1 Multiply 3 × 2 = 6, write that 6 under the 7, and subtract to find the remainder of 1 ten.	h t o 1 3 2) 2 7 8 - 2 0 7 - 6 1 8 Next, drop down the 8 of the ones next to the 1 leftover ten.
1. Divide.	**2. Multiply & subtract.**	**3. Drop down the next digit.**
h t o 1 3 9 2) 2 7 8 - 2 0 7 - 6 1 8 Divide 2 into 18. Place 9 into the quotient.	h t o 1 3 9 2) 2 7 8 - 2 0 7 - 6 1 8 - 1 8 0 Multiply 9 × 2 = 18, write that 18 under the 18, and subtract to find the remainder of zero.	h t o 1 3 9 2) 2 7 8 - 2 0 7 - 6 1 8 - 1 8 0 There are no more digits to drop down. The quotient is 139.