BLEAN PRIMARY SCHOOL

Calculation Policy

Policy Review Date: December 2024

Headteacher: Mr I Rowden

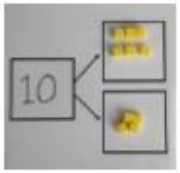
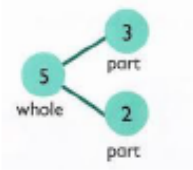
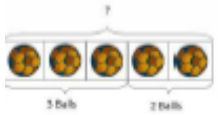
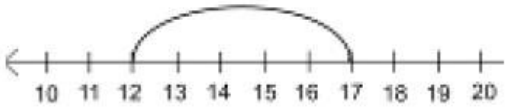
Chair of Governors: Mr H Samuelson

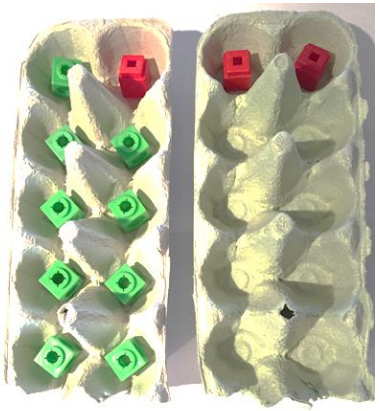
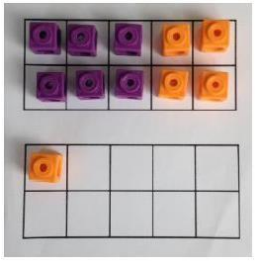
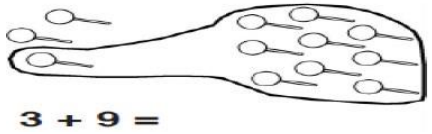
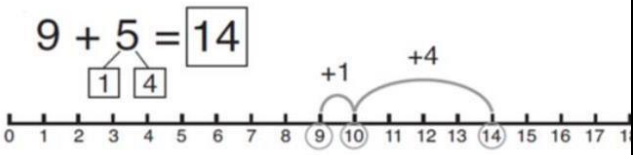
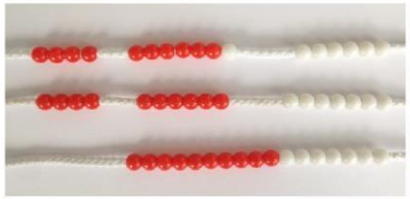
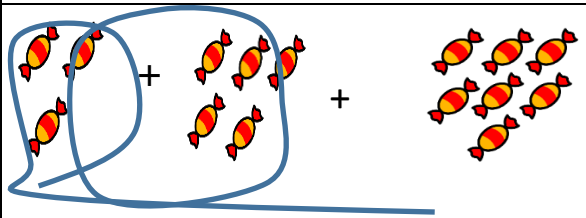
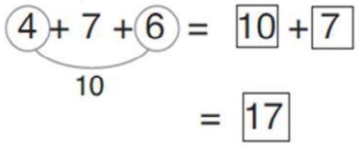
Date of Next Review: December 2026

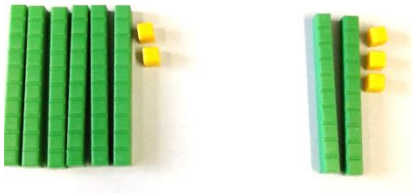
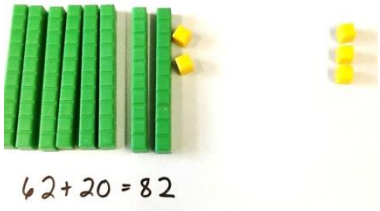
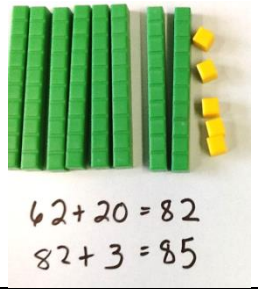
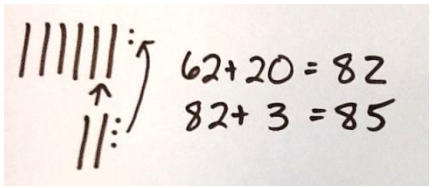
Blean Primary School's Progression in Calculations:

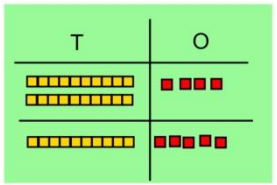
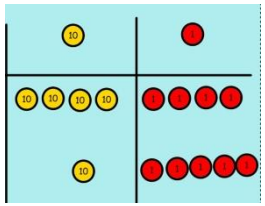
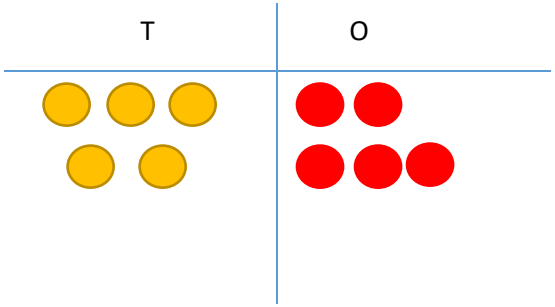
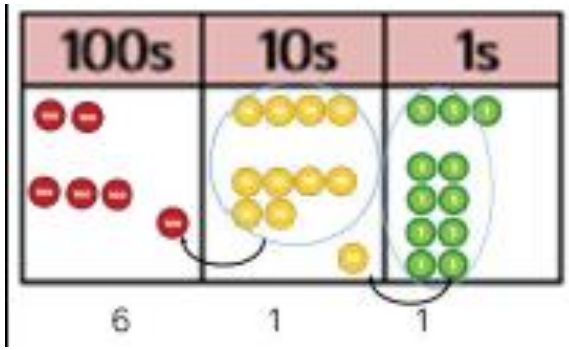
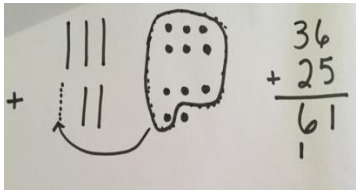
Adapted from the White Rose Maths Hub's calculation policy. This policy will be used in conjunction with the Blean Sequence of Learning for Mathematics to deliver the content set out in the Statutory Framework for the Early Years Foundation Stage and the National Curriculum for Key Stage 1 and Key Stage 2.

Addition

Objective and Strategies	Concrete	Pictorial	Abstract
Combining two parts to make a whole: Part/Part Whole *Children will use this model from EYFS onwards.*	  Use cubes to add two numbers together as a group or in a bar. 	  Use pictures to add two numbers together as a group or in a bar.  	4 + 3 = 7 10= 6 + 4  Use the part-part whole diagram as shown above to move into the abstract.
Starting at the bigger number and counting on *Children will use this method from Year 1 onwards.*	 Start with the larger number on the bead string and then count on to the smaller number 1 by 1 to find the answer.	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.	5 + 12 = 17 Place the larger number in yo head and count on the smalle number to find your answer.

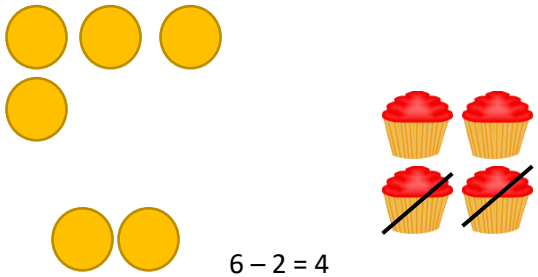
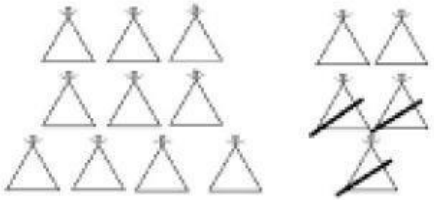
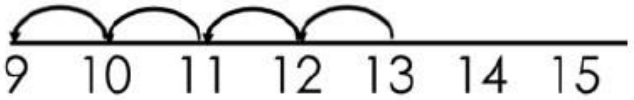
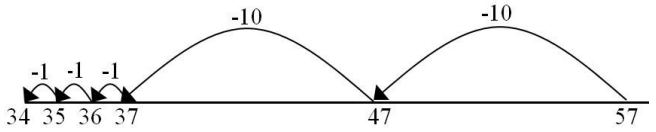
Regrouping to make 10. *Children will use this method from Year 1 onwards.*	Egg boxes can be used in the same way as 10s frames to show bridging 10. 9 + 3 = 9+1+2 = 12  6 + 5 = 6+4+1 = 11  Start with the bigger number and use the smaller number to make 10.	 Use pictures or a number line. Regroup or partition the smaller number 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?
Adding three single digits *Children will use this method from Year 1 onwards.*	4 + 7 + 6= 17 Put 4 and 6 together to make 10. Add on 7.  Following on from making 10, make 10 with 2 of the digits (if possible) then add on the third digit.	 *10* Add together three groups of objects. Draw a picture to recombine the groups to make 10.	 Combine the two numbers that make 10 and then add on the remainder.

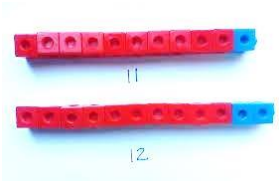
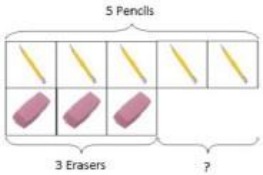
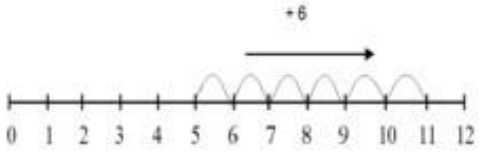
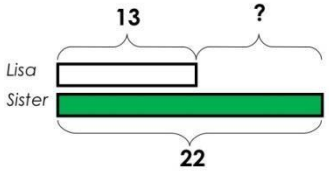
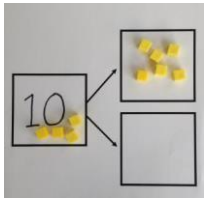
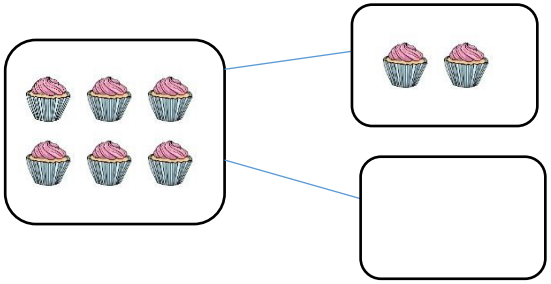
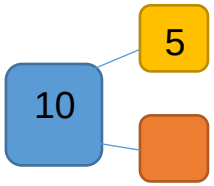
Mental addition with 2 digit numbers *Children will use this method from Year 2 onwards.*	Children should use Dienes to model what happens when multiples of 10 are added to a 2 (or more) digit number. When this is secure, they can move on to carrying out a further calculation to add ones. E.g. 62 + 23 =  First add the tens e,g. 20: 62 + 20 = 82  Then add the ones e.g. 3: 82 + 3  	Children can draw a representation of the first number using 'chips and peas' and then add the second number in stages.  	Children can use informal jottings to support these calculations if it is too hard to hold all the numbers 'in their head'.

Column method- no regrouping *Children will use this practical method alongside other methods from Year 2 onwards. They will not use a column method.*	24 + 15= Add together the ones first then add the tens. Use the Base 10 blocks first before moving onto place value counters.  	After practically using the base 10 blocks and place value counters, children can draw the counters to help them to solve additions.  	Calculations 21 + 42 = 21 + 42
Column method- regrouping *Children will use this practical method from Year 3 using the expanded method when they move away from manipulatives and jottings. They should use the compact method alongside jottings of dienes.*	Make both numbers on a place value grid using Dienes blocks or place value counters. As children move on to decimals, money and decimal place value counters can be used to support learning.  	Children can draw a pictorial representation of the columns and place value counters (or Dienes) to further support their learning and understanding.  	They should then begin to use the compact method alongside doing the calculation with Dienes or place value counters. 536 + 85 621 1 1 They will also do this alongside a pictorial representation, before using it without the support of a visual representation. As the children move on, introduce decimals with the same number of decimal places and different. Money can be used here.

			72.8 + 54.6 127.4 1 1 £ 2 3 . 5 9 + £ 7 . 5 5 £ 3 1 . 1 4 1 1 1 2 3 . 3 6 1 9 . 0 8 0 5 9 . 7 7 0 + 1 . 3 0 0 9 3 . 5 1 1 2 1 2

Subtraction

Objective and Strategies	Concrete	Pictorial	Abstract
Taking away ones *Children will use this model from EYFS onwards.*	Use physical objects, counters, cubes etc to show how objects can be taken away.  6 – 2 = 4	Cross out drawn objects to show what has been taken away.  15 – 3 = 12	18 -3= 15 8 – 2 = 6
Counting back *Children will use this model from Year 1 onwards.*	Make the larger number in your subtraction. Move the beads along your bead string as you count backwards in ones. 13 – 4  Use counters and move them away from the group as you take them away counting backwards as you go. 	Count back on a number line or number track  9 10 11 12 13 14 15 Start at the bigger number and count back the smaller number showing the jumps on the number line. Encourage the use of 'Make 10' strategy for calculations that bridge 10.  -10 -10 -1 -1 -1 34 35 36 37 47 57 This can progress all the way to counting back using two 2 digit numbers.	Put 13 in your head, count back 4. What number are you at? Use your fingers to help keep track of how many you have taken away if you need to.

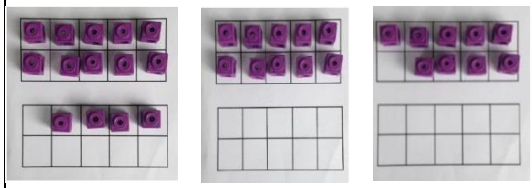
Find the difference *Children will use this model from Year 1 onwards.* *This calculation method should be used in money: finding change and time duration.*	Compare amounts and objects to find the difference.  Use cubes to build towers or make bars to find the difference Use basic bar models with items to find the difference  	 Count on to find the difference. Draw bars to find the difference between 2 numbers. **Comparison Bar Models** *Lisa is 13 years old. Her sister is 22 years old. Find the difference in age between them.*  	Hannah has 23 sandwiches, Helen has 15 sandwiches. Find the difference between the number of sandwiches.
Part Part Whole Model *Children will use this model from EYFS onwards.*	 Link to addition- use the part whole model to help explain the inverse between addition and subtraction. If 10 is the whole and 6 is one of the parts. What is the other part? 10 - 6 =	Use a pictorial representation of objects to show the part part whole model. 	 Move to using numbers within the part whole model.

Make 10

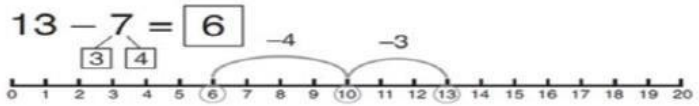
Children will use this model from Year 1 onwards.

As children become fluent, this should turn into a mental method.

14 – 9 =



Make 14 on the ten frame. Take away the four first to make 10 and then take away one more so you have taken away 5. You are left with the answer of 9.



Start at 13. Take away 3 to reach 10. Then take away the remaining 4 so you have taken away 7 altogether. You have reached your answer.

16 – 8=

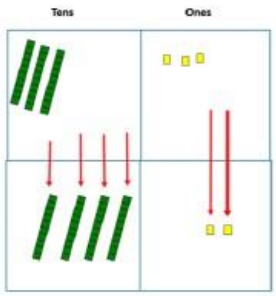
How many do we take away to reach the next 10?

How many do we have left to take away?

Column method without regrouping

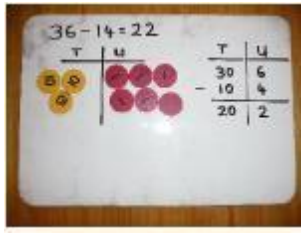
Children will use this model from Year 2 onwards.

Children should be taught to consider the best strategy for the calculation they have. E.g. 100 – 54, a number line might be the best strategy.

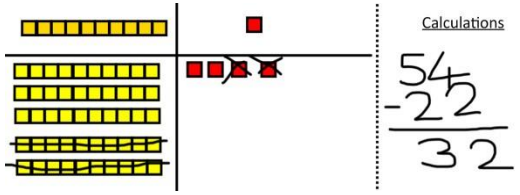


75-42 =

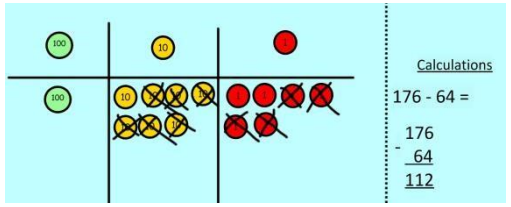
Use Base 10 to make the bigger number then take the smaller number away by physically moving the Dienes.



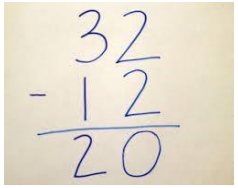
Show how you partition numbers to subtract.
Again make the larger number first.



Draw the Base 10 or place value counters alongside the written calculation to help to show working.



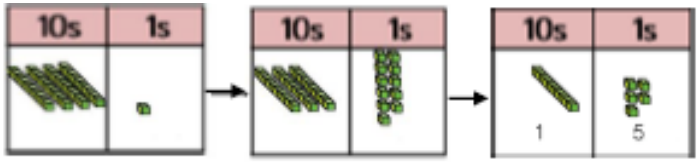
As the children gain confidence with understanding the manipulatives, they should begin to record in this manner:



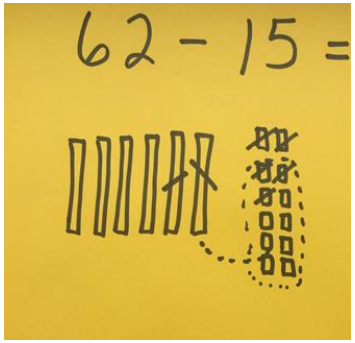
Column method with regrouping

Children will use this model from Year 2 onwards, and the compact method of recording will be introduced in Year 3.

Use Dienes to model regrouping. 41 - 26



Children can draw a representation of the larger number using place value counters. They can show regrouping by crossing through a ten and drawing an arrow to the 10 ones that have been 'exchanged'.



$$\begin{array}{r} \cancel{6}^{5}\,\cancel{2}^{12} \\ -\ 1\ 5 \\ \hline 4\ 7 \end{array}$$

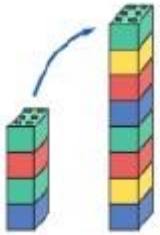
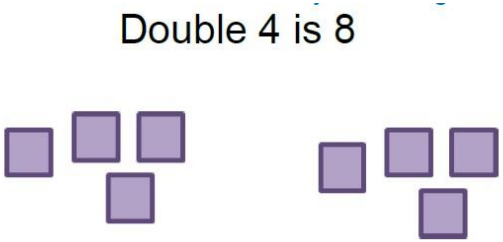
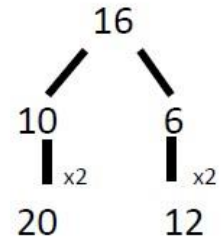
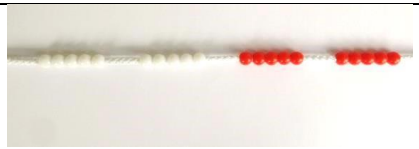
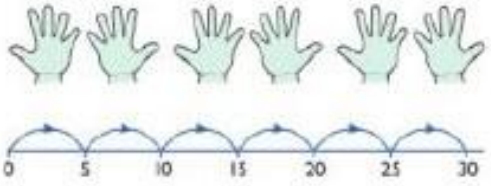
Moving forward the children use a more compact method.

$$\begin{array}{r} 3\,\cancel{4}^{1}\,5 \\ -\ 1\ 8 \\ \hline 2\ 7 \end{array}$$

This will lead to an understanding of subtracting any number including decimals.

$$\begin{array}{r} \ 5\ \ 12\ \ \ 1 \\ 2\ \cancel{6}\ \cancel{3}\ .\ \mathbf{0} \\ -\ \ \ 2\ 6\ .\ 5 \\ \hline 2\ 3\ 6\ .\ 5 \end{array}$$

Multiplication

Objective and Strategies	Concrete	Pictorial	Abstract
Doubling *Children will use this model from EYFS onwards.*	Use practical activities to show how to  double a number.	Draw pictures to show how to double a number.  	 Partition a number and then double each part before recombining it back together.
Counting in multiples *Children will use this model from Year 1 onwards.*	  Count in multiples supported by concrete objects in equal groups.	 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 5, 10, 15, 20, 25, 30

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Repeated addition

Children will use this model from Year 1 onwards.

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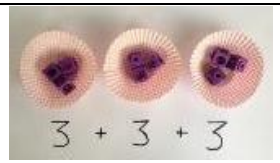

Use different objects to add equal groups.

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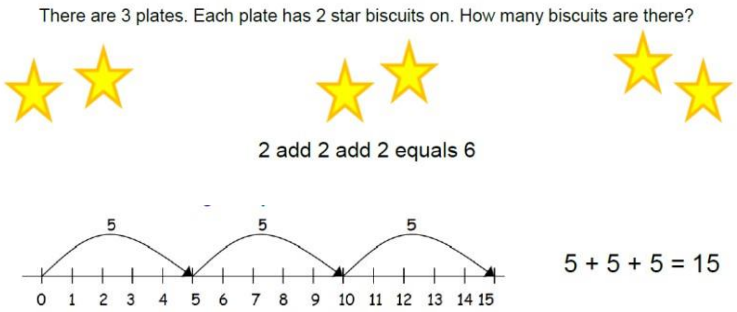

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Write addition sentences to describe objects and pictures.

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Meaning of each factor

(When first developing an understanding of multiplication)

Children will use this model from Year 1 onwards.

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When first introducing multiplication, introduce by explaining that first factor tells us how many groups and the second tells us how many in the group. The product is how many there are altogether.

3 groups of 5 flowers = 15 flowers
3 x 5 = 5 + 5 + 5 = 15

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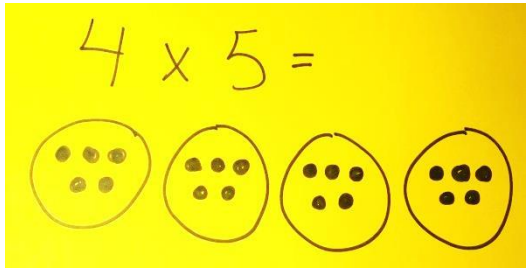
Children can draw pictures to represent the meaning of multiplication sentences:



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After seeing many concrete and pictorial representations, children can move on to saying the meaning of each number in multiplication sentence:

4 x 5 = 20

'There are four groups with 5 in each group which equals 20 altogether'.

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Note:
Once children have developed a basic understanding of multiplication including its commutative nature (see below), it is not necessary to specify the meaning of each factor. As is the practice in Shanghai and Singapore, either factor can be the multiplier or multiplicand eg. 24 x 3 can mean 24 lots of 3 or the number 24 three times. The language of 'multiplied by' needs to be introduced in Year 2 alongside commutivity.

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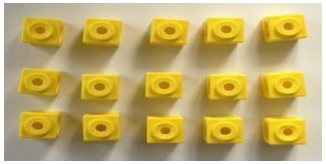
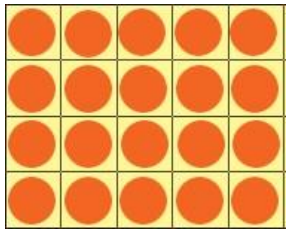
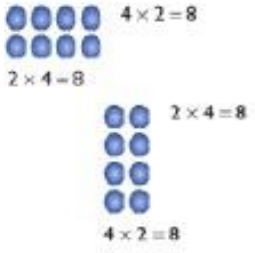
</table>

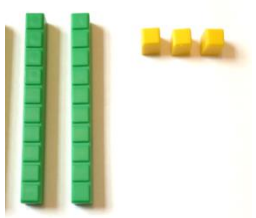
Arrays- showing commutative multiplication *Children will use this model from Year 2 onwards.*	Create arrays using objects/counters/ cubes to show multiplication sentences.  	Draw arrays in different orientations to find **commutative** multiplication sentences. 	 Link arrays to area of rectangles.	Use an array to write multiplication sentences and reinforce repeated addition.  5 + 5 + 5 = 15 3 + 3 + 3 + 3 + 3 = 15 5 x 3 = 15 3 x 5 = 15

2 digit Multiplication

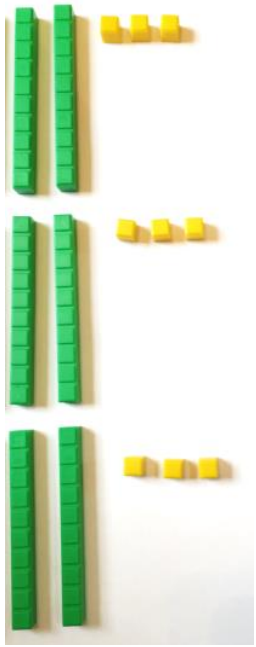
Children will use this model from Year 3 onwards.

When first introducing multiplying 2 digit numbers, Dienes are used to help the children 'see' the whole number that is being multiplied:

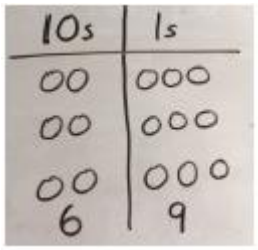
3 x 23 =



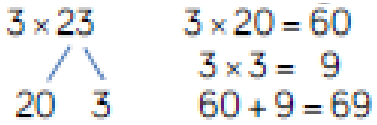
means 3 lots of 23:



Children can draw the place value counters eg. for 3 x 23:



The children can use a part- whole diagram to partition the 2 digit number and multiply each part:



Once this is secure, they record the two calculations in columns:

$$\begin{array}{r} 23 \\ \times\ 3 \\ \hline 9 \\ 60 \\ \hline 69 \end{array}$$

And finally, this can be compacted:

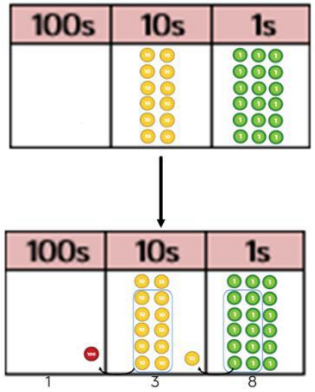
$$\begin{array}{r} 23 \\ \times\ 3 \\ \hline 69 \end{array}$$

2 and 3 digit multiplication with regrouping

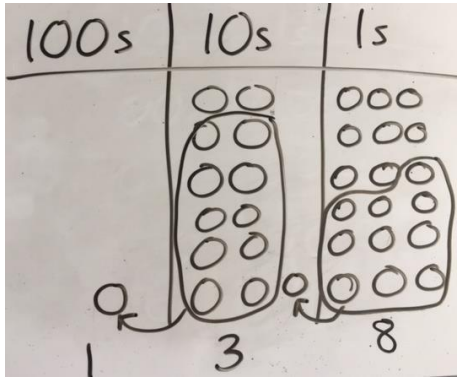
Children will use this model from Year 3 onwards.

Children will use place value counters to represent the numbers:

Like this: 6 x 23 =



Children can draw the place value counters:



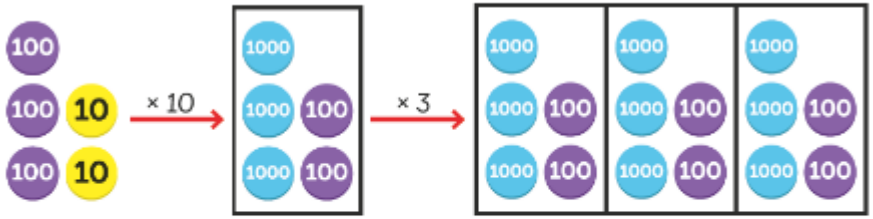
An expanded method should be used to reinforce place value:

$$\begin{array}{rrr} & 2 & 3 \\ \times & & 6 \\ \hline & 1 & 8 \\ 1 & 2 & 0 \\ \hline 1 & 3 & 8 \\ \hline \end{array}$$

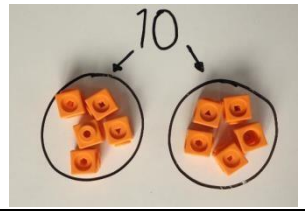
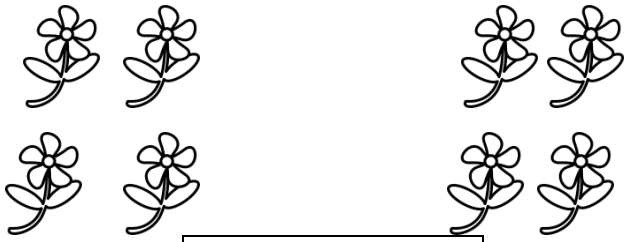
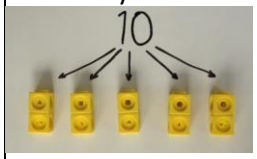
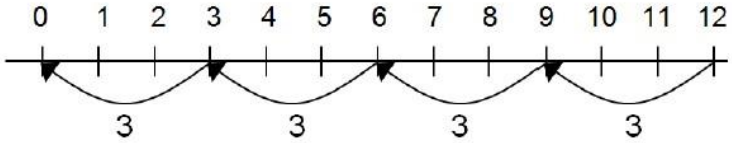
Then finally, this can be compacted to:

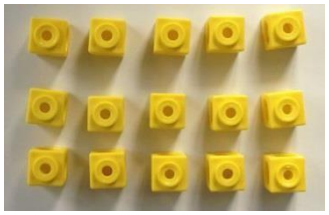
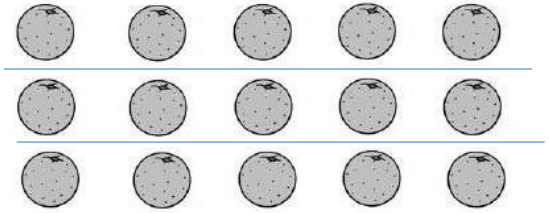
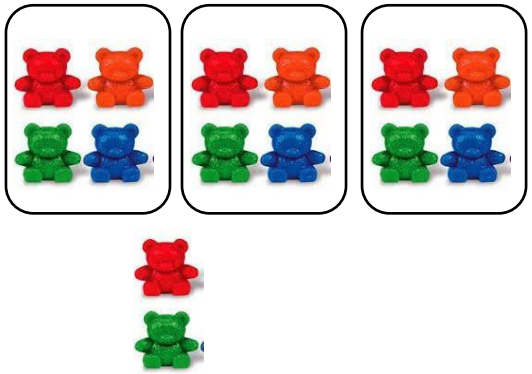
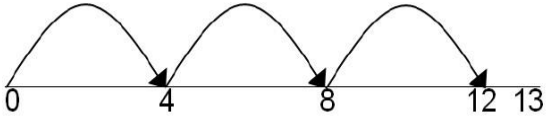
$$\begin{array}{rrr} & {\scriptstyle 1}\,2 & 3 \\ \times & & 6 \\ \hline 1 & 3 & 8 \\ \hline \end{array}$$

In each Year of KS2 children will should revisit the expanded method and represent multiplication using the concrete, pictorial abstract approach so that they understand the compact, written method.

Multiplication: 3 digit by 2 digit *Children will use this model from Year 5 onwards.*	The children should be encouraged to think about their earlier work partitioning when multiplying. They should also continue to use place value counters to represent the number and to show the place value of the different parts of the calculation: 320 × 31 = ▭  320 × 10 = 3200 3200 × 3 = 9600 320 × 30 = 9600 320 × 1 = 320 320 × 31 = 9920	When the children understand the calculation it can be compacted to look like this: 3 2 0 X 3 1 3 2 0 9 6 0 0 9 9 2 0 An example where regrouping may be required: 3 4 1 X 2 7 2 3 8 7 2 6 8 2 0 9 2 0 7 1 1

Division

Objective and Strategies	Concrete	Pictorial	Abstract
Sharing objects fairly *Children will do this with equipment in EYFS and Year 1 but will begin to use the notation starting in Year 2.*	   I have 10 cubes, can you share them equally between 2 people?	Children use pictures or shapes to share quantities equally.  8 ÷ 2 = 4	Share 9 buns between three people fairly. 9 ÷ 3 = 3
Division as grouping *Children will do this with equipment in Year 1 but will begin to use the notation starting in Year 2.*	Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding. 'I have 10 biscuits, I give 2 to each child, how many children can get biscuits?  I have 12 chairs. I put 4 chairs around each table, how many tables do I need? 	Use a number line to show jumps in groups. The number of jumps equals the number of groups. 	28 ÷ 7 = 4 Divide 28 into groups of 7. How many groups?

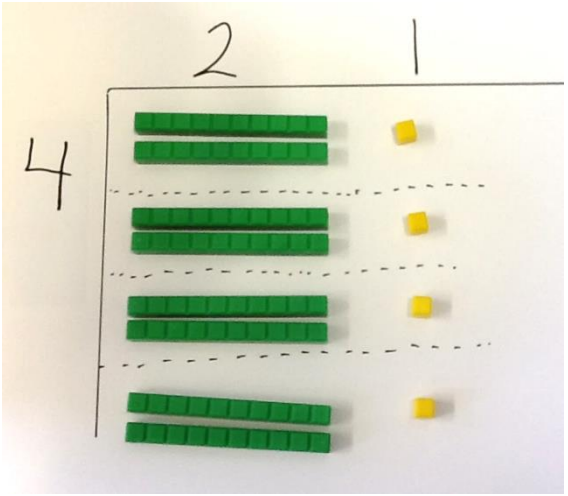
Division within arrays *Children will use this model from Year 2 onwards.*	 Link division to multiplication by creating an array and thinking about the number sentences that can be created. Eg 15 ÷ 3 = 5 5 x 3 = 15 15 ÷ 5 = 3 3 x 5 = 15	 Draw an array and use lines to split the array into groups to make multiplication and division sentences.	Find the inverse of multiplication and division sentences by creating four linking number sentences. 7 x 4 = 28 4 x 7 = 28 28 ÷ 7 = 4 28 ÷ 4 = 7
Division with a remainder *(Years 3-6)* ** children working at greater depth in Year 2 will cover this.*	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.  	Complete written divisions and show the remainder using r.  29 ÷ 8 = 3 r 5

Short division

Children will use this model from Year 3 onwards.

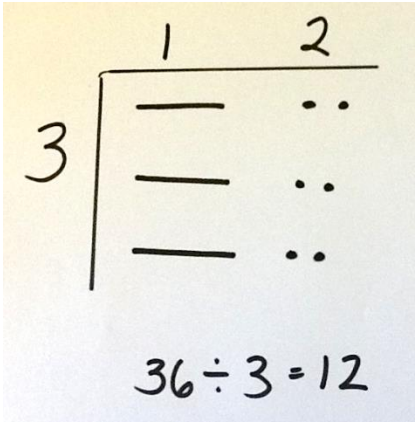
When dividing 2 digit numbers children begin by representing the number with Dienes. They then share the Dienes by the divisor and see how many are in each section.

84 ÷ 4 =



If I share 8 tens between 4, I have 2 tens in each. I can divide 4 ones by 4 and there are 1 in each group. The answer is 21.

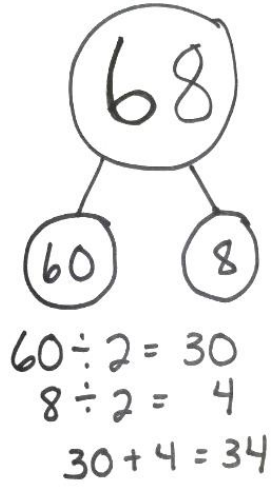
Children can use drawings to represent the Dienes (or they can draw place value counters) and see how they can be divided:



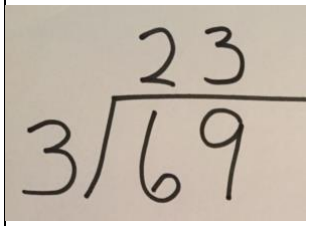
Children need to move to using their times table knowledge when dividing.

This can link to a mental method of partitioning:

68 ÷2 =



The compact method should continue to be taught alongside using Dienes or place value counters until understanding is secure.



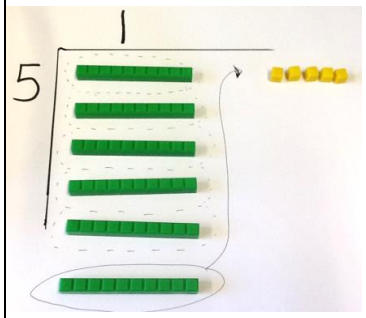
Short Division with regrouping

Children will use this model from Year 3 onwards.

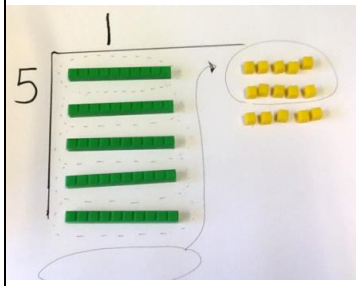
Have children explore calculations like 65 ÷ 5 by sharing the tens by the divisor and discovering that 'extra' 10s can be exchanged for ones and then shared out. If I share 6 tens by 5, how many in each group?

65 ÷ 5 =

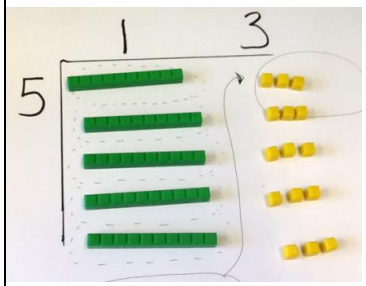
Step 1: Share the tens. There is 1 ten in each and one left over.



Step 2: Exchange the 10 for ten ones.

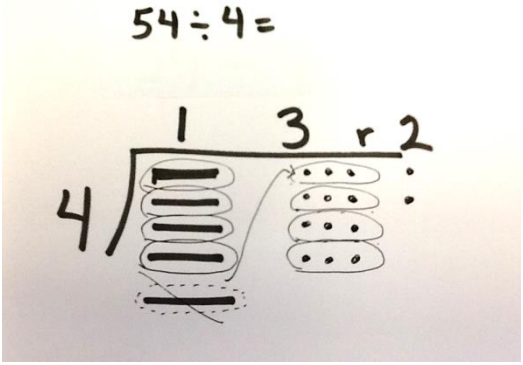


Step 3: Share the ones.



Children can make drawings of the Dienes ('burgers, chips and beans') or place value counters and share them to model short division. The algorithm should be introduced alongside the drawing.

54 ÷ 4 = 13 r 2



Begin with divisions that divide equally with no remainder.

$$\begin{array}{r} 045 \\ 8\overline{)\,3^{3}6^{4}0} \end{array}$$

Move onto divisions with a remainder.

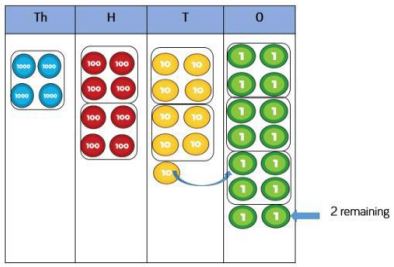
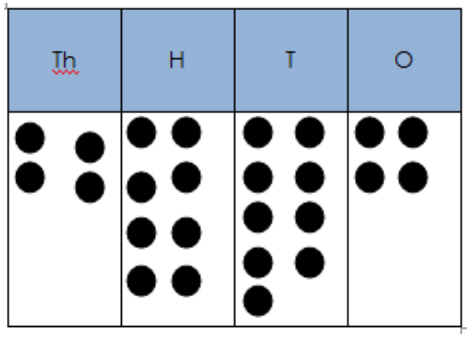
362 ÷ 7 =

$$\begin{array}{r} 51\ r5 \\ 7\overline{)\,3\ 6\ ^{1}2} \end{array}$$

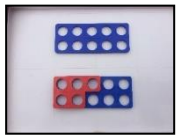
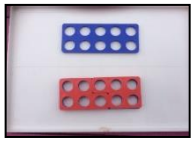
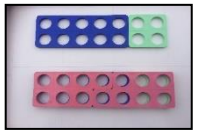
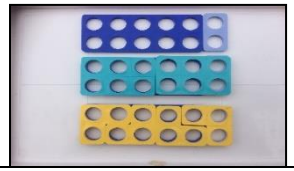
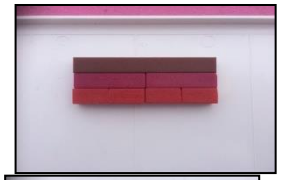
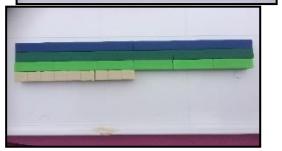
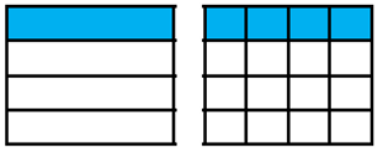
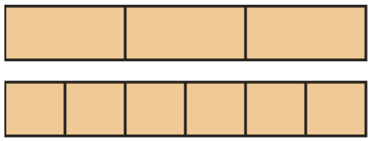
362 ÷ 7 = 51 r5

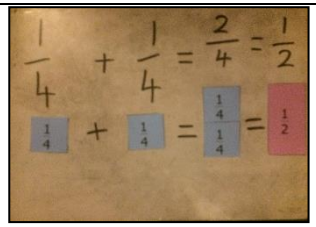
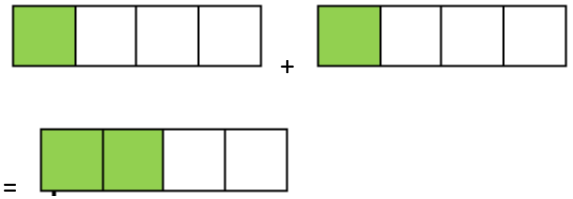
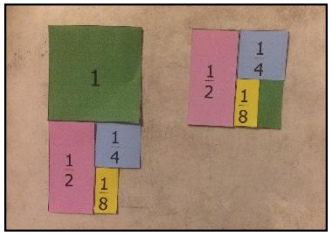
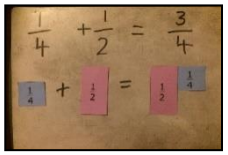
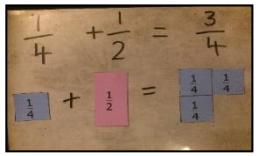
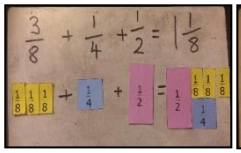
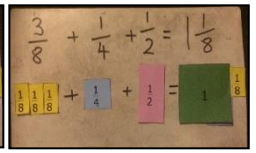
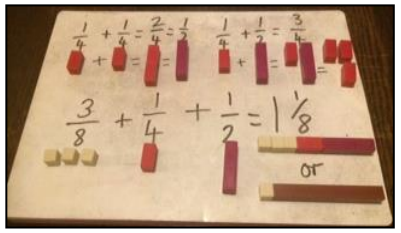
Finally move into decimal places to divide the total accurately.

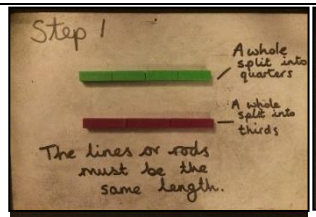
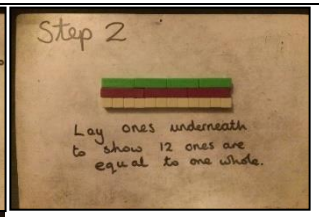
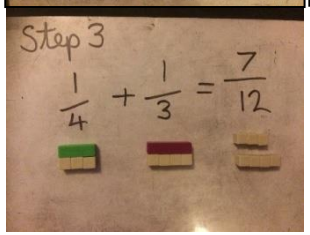
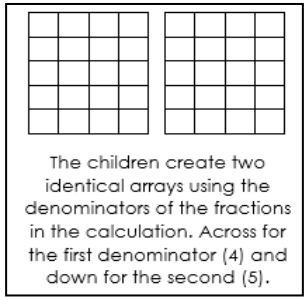
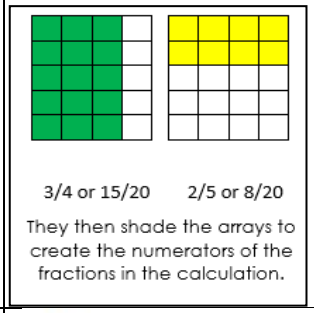
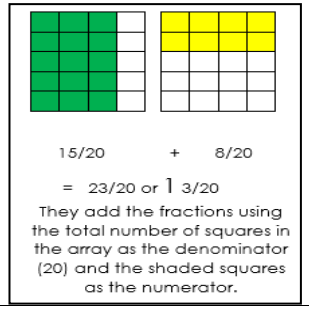
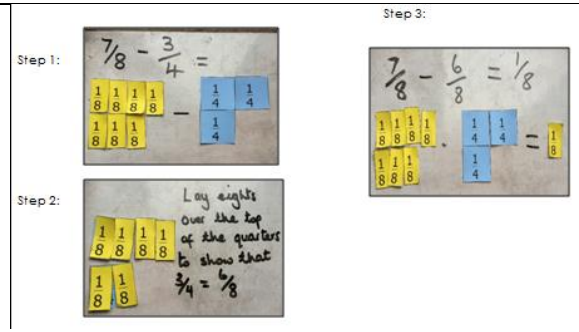
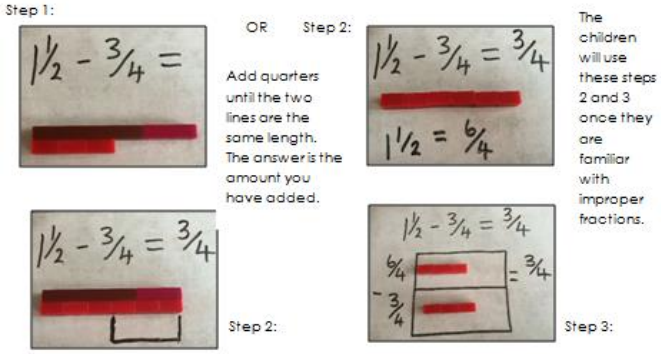
$$\begin{array}{r} 01.375 \\ 8\overline{)\,1\,^{1}1.^{3}0^{6}0^{4}0} \end{array}$$

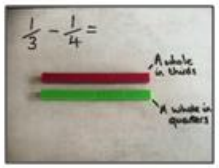
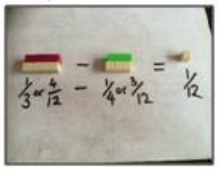
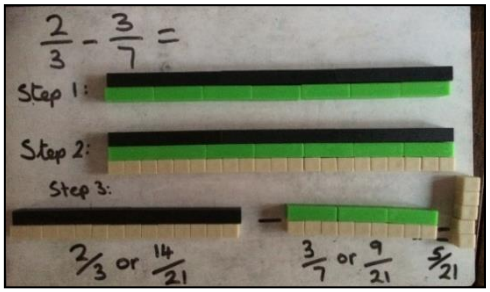
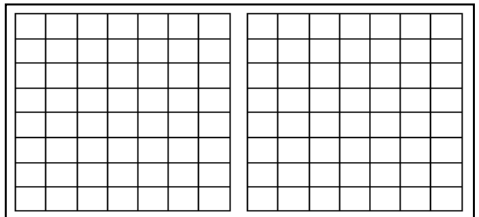
Short Division with regrouping *Children will use this model from Year 3 onwards.*	Children with a secure understanding of the link between 1000, 100, 10 and 1 can use the following model to represent their division calculation alongside a written calculation.  1223 4 | 4894 r2	Children can use dots to draw the numbers into the grids alongside a written calculation. 4894 ÷ 4 =  1223 4 | 4894 r2	As above

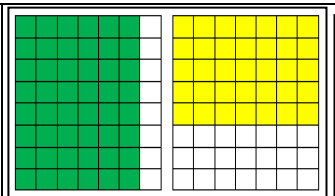
Long Division *Children will use this calculation from Year 6 onwards.*	Children should refer to their previous work in division using concrete apparatus, and should be encouraged to analyse the algorithm to ensure they understand what is going on. However, as in this example, it is unlikely to be helpful to share 132 ones in the second step of the calculation!		Children should be encouraged to think of long division as a way of keeping track of the calculations they are already doing mentally when they use the short division method. Long division should be used when the divisor is a 2 digit number where the mental calculations become too complex to keep track of. 432 ÷ 15 becomes $$\begin{array}{r} 2\,8\cdot 8 \\ 15\overline{)\,4\,3\,2\cdot 0} \\ \underline{3\,0\downarrow} \\ 1\,3\,2 \\ \underline{1\,2\,0} \\ 1\,2\,0 \\ \underline{1\,2\,0} \\ 0 \end{array}$$ Pupils are encouraged to write a list of multiples of the divisor to help them. If the divisor is a composite number, children are encouraged to use factors and short division. Long division should be used when the divisor is a two-digit prime number.

Objective and Strategies	Concrete	Pictorial	Abstract
To find half and a quarter of numbers, objects or quantities *Children will use this calculation from Year R onwards when they begin to explore halving.*	The children will begin by finding half of numbers, objects or quantities. They will be introduced to the words **numerator** and **denominator** and understand that half is written as ½. Using Numicon, the children will lay out the **whole** number (10 in the first two pictures), they will then explore which tiles they can fit exactly over the **whole** twice. They will then lay these over the top.    When children understand that a half is two equal parts of the **whole,** they will use the sharing out strategy shown in the division section to find half of sets of objects. They will also use folding to find half of shapes. <u>Finding Quarters</u> 	   Circle half of amounts.	Link to division - dividing by 2 or 4 Mental strategies: ½ of 6 = ¼ of 12 = 6 ÷ 2 = 12 ÷ 4 = ½ x 6 = (Year 5 and 6) ¼ x 12 = (year 5 and 6)
To find equivalent fractions *Children will use this calculation from Year 3 onwards.*	  Using the rods, you can see that ½ is the same as (equivalent) 2/4. You can see that one whole is the same as 2/2 or 4/4 Using the rods, you can see that ½ is the same as (equivalent) 3/6. You can see that 2/6 are the same as 1/3 and that 3/18 are equal to 1/6.	 Draw models 	Multiply the numerator and the denominator by the same digit to find equivalent fractions. ½ 2/4 3/6 4/8 Look for common factors when simplifying fractions. 8/12 both can be divided by 4: 2/3

Adding fractions with the same **denominator** *Children will use this calculation from Year 3 onwards.*		 Use bar model drawings to add fractions with the same denominator.	Calculate: Children recognise that if the denominator is the same, they can just add the numerators: e.g. ¼ + ¼ = 2/4 or ½
Adding fractions with the same **denominator families** *Children will use this calculation from Year 4 onwards.*	The children will begin by exploring how fraction families fit together using fraction cards.     	The children will then move on to carrying out similar calculations using Cuisenaire rods. They will have the opportunity to select the rods that they need for their calculations.   This will lead on to drawing bar models in their books as above.	Children calculate by finding a common denominator – they should only need to adjust 1 of the two fractions initially. ¼ + 3/8 = 2/8 + 3/8 = 5/8 2/5 + 7/15 = 6/15 + 7/15 = 13/15
Adding fractions with **different denominators** *Children will use this calculation*	The children will also use Cuisenaire to support them when they begin to add fractions with different denominators. They will follow the steps outlined in the pictures below. 1/4 + 1/3 =	The children will move on from this to create arrays when adding fractions. This method will enable children to visualise the fractions when they are adding non **unit fractions**.	Calculate by finding the lowest common multiple. 3/8 + 5/12 = 9/24 + 10/24 = 19/24 3/7 + 1/6 = 18/42 + 7/42 = 25/42

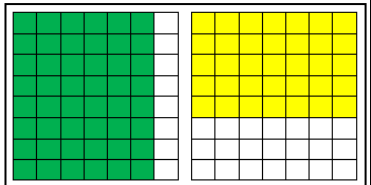
from Year 4 onwards.	  	The children will follow the steps below to solve these calculations: 3/4 + 2/5 =  The children create two identical arrays using the denominators of the fractions in the calculation. Across for the first denominator (4) and down for the second (5).  3/4 or 15/20 2/5 or 8/20 They then shade the arrays to create the numerators of the fractions in the calculation.  15/20 + 8/20 = 23/20 or 1 3/20 They add the fractions using the total number of squares in the array as the denominator (20) and the shaded squares as the numerator.	
Subtracting fractions with the same denominator or the denominator families *From Year 3 onwards.*		 This can be drawn as bar models for the pictorial step (see year 5 White Rose)	Calculate by changing one of the two fractions so that the denominators are the same: 7/8 – ¾ = 7/8 – 6/8 = 1/8 1 ½ - ¾ = 3/2 – ¾ = 6/4 – ¾ = ¾

Subtracting fractions with different denominators *Children will use this calculation from Year 4 onwards.*	The children will use Cuisenaire when they begin to subtract fractions with different denominators. 1/3 – 1/4 = Step 1:  Step 2:  Step 3:   	The children will move on from this to create arrays when subtracting fractions. This method will enable children to visualise the fractions when they are subtracting non **unit fractions**. 6/7 – 5/8 =  The children create two identical arrays using the denominators of the fractions in the calculation. Across for the first denominator (7) and down for the second (8)	Calculate by finding the lowest common multiple. 1/3 – ¼ = 4/12 – 3/12 = 1/12 2/3 – 3/7 = 14/21 – 9/21 = 5/21



6/7 or 48/56 5/8 or 35/56

They then shade the arrays to create the numerators of the fractions in the calculation.



48/56 - 35/56 = 13/56

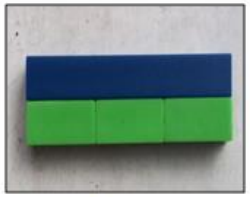
They subtract the fractions using the total number of squares as the denominator (56) and the shaded squares as the numerator.

Multiplying a fraction by a whole number

Children will use this calculation from Year 5 onwards.

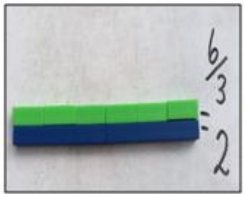
Multiplying a fraction by a whole number

1/3 x 6 =



Select rods to represent the denominator and one whole e.g. each green rod equals 1/3 and the blue is a whole.

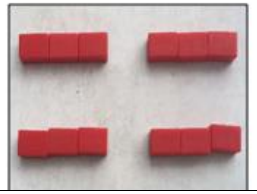
Select the amount of thirds to match the number you are multiplying by. E.g. 1/3 six times.

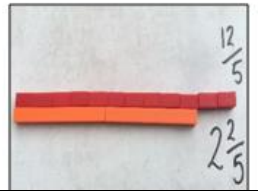


Line up whole rods underneath to find the answer to the calculation.

This can be drawn as bar models.

We can use this same method when multiplying non unit fractions: 3/5 x 4 =



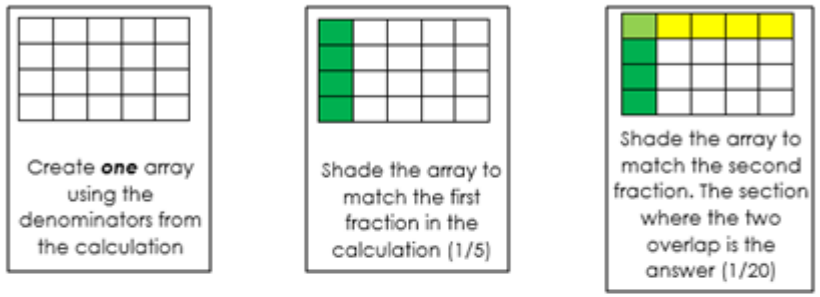
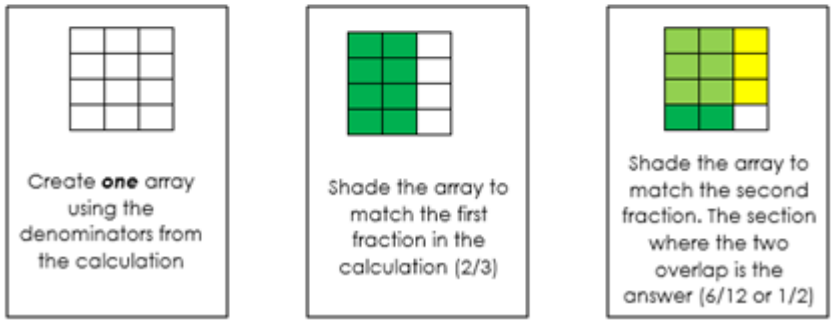
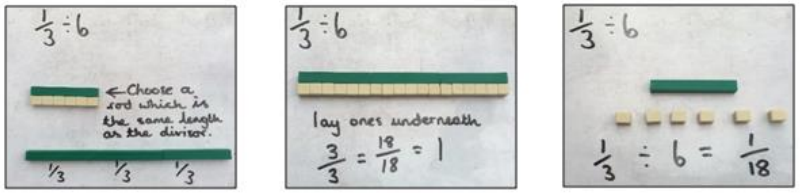
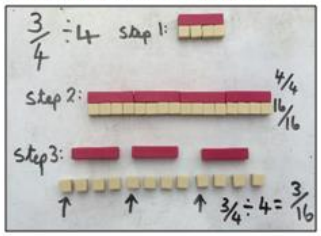


Encourage children to notice the link between the numerator and the multiplier.

Calculate:

1/3 x 6 = 6/3 = 2

3/5 x 4 = 12/5 = 2 2/5

Multiplying a fraction by another fraction *Children will use this calculation from Year 6 onwards.*	Multiplying a fraction by another fraction 1/5 x 1/4 =  We can use this same method when multiplying non unit fractions: 2/3 x 3/4 =  	Encourage children to notice the links between the calculation and the answer. Multiply the numerators and multiply the denominators and then simplify.
Dividing a fraction by a whole number (dividing a fraction by another fraction) *Children will use this calculation from Year 6 onwards.(Skill in brackets is non-statutory)*	 This method can also be used when dividing non unit fractions:  	Encourage children to notice the link between the divisor and the denominator so that they can calculate. 1/3 ÷ 6 = 1/18 Children can also turn the whole number into a fraction and then use KEEP, FLIP, CALCULATE

		1/3 ÷ 6/1 = 1/3 x 1/6 = 1/18

Acquisition of Times Tables facts (curriculum expectations)

Year R	Begin counting in 2s, 5s and 10s (GD expectation)	**Year 3**	Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
Year 1	Count in multiples of 2, 5 and 10	**Year 4**	Recall multiplication and division facts for multiplication tables up to 12 × 12 **Focus on multiplication facts for June testing – division facts after from June onwards.**
Year 2	Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables	**Year 5**	Multiples, factors, primes, square and cube numbers
		Year 6	Multiples, factors, primes, square and cube numbers Multiply by decimals using times tables facts 0.2 x 4 = 0.8