Stanton Community Primary School

*Nurture, Enjoy, Aspire, Achieve*

# Mathematics Calculation Policy

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# Teaching for Mathematics Mastery

At Stanton Primary School, we believe that every child has the potential to succeed, having access to the same curriculum content as their peers, and acquiring a deep, long---term, secure and adaptable understanding of the subject. Think of it like a game of Jenga; if children learn by rote, and speed through concepts without learning them in depth, eventually, when they reach the top, there will be so many pieces missing that the foundation will not be stable and gaps will have developed in their understanding. At Stanton, all teachers use the White Rose Maths Hub as a process for teaching mathematics. When introducing children to new concepts, they should have the opportunity to build fluency in topics by taking the following approach:

**Concrete** – children should have the opportunity to use concrete objects and manipulatives to help them understand what they are doing.

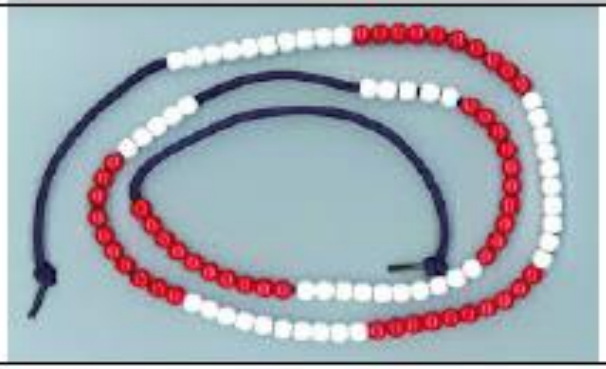
**Pictorial** – children should build on this concrete approach by using pictorial representations. These representations can then be used to reason and solve problems.

**Abstract** – with the foundations firmly laid, children should be able to move to an abstract approach using numbers and key concepts with confidence.

Reasoning and problem solving is encompassed in the above approaches to deepen and master all aspects of mathematics. This policy outlines the different calculation strategies that should be taught and used from Year R to Year 6 in line with the requirements of the 2014 Primary National Curriculum, giving examples of concrete, pictorial and abstract calculations.

# Resources for Teaching Mathematics

Teachers can use any teaching resources that they wish to use and the policy does not recommend one set of resources over another, rather that, a variety of resources are used. For each of the four rules of number, different strategies are laid out, together with examples of what concrete materials can be used and how, along with suggested pictorial representations. The principle of the concrete---pictorial---abstract (CPA) approach [Make it, Draw it, Write it] is for children to have a true understanding of a mathematical concept they need to master all three phases. At Stanton Primary School, the following concrete objects are available for all children to use:

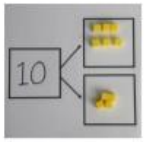
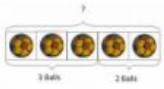
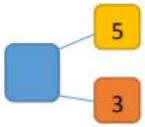
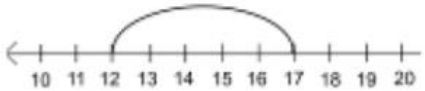
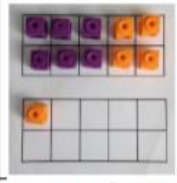
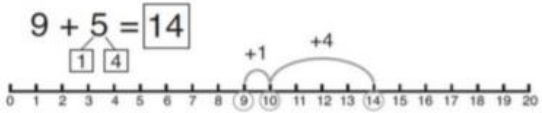
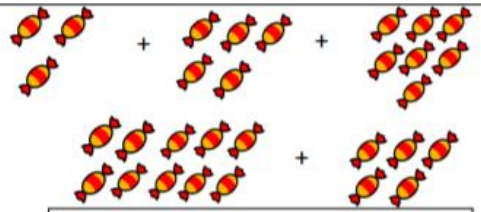
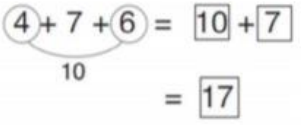
| | |
|---|---|
| Numicon |  |
| Bead Strings |  |

| | |
|---|---|
| Diennes (Base 10) |  |
| Cuisenaires (Bar Method) |  |
| Place Value Counters |  |

| | |
|---|---|
| Individual counters |      |

| | Nursery | Reception | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|---|---|
| Addition | Recites numbers in order to 10.<br>Knows that numbers identify how many objects are in a set.<br>Beginning to represent numbers using fingers, marks on paper or pictures.<br>Sometimes matches numeral and quantity correctly.<br>Compares two groups of objects, saying when they have the same number.<br>Shows an interest in number problems.<br>Separates a group of three or four objects in different ways, beginning to recognise that the total is still the same.<br>Shows an interest in numerals in the environment.<br>Shows an interest in representing numbers.<br>Realises not only objects, but anything can be counted, including steps, claps or jumps. | Children count reliably with numbers from one to 10, place them in order and say which number is one more or one less than a given number.<br>Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer.<br>They solve problems, including doubling, halving and sharing. | Combining 2 parts top make a whole; part whole model<br>Starting at the bigger number and counting on<br>Regrouping to make 10 | Adding three single digits<br>Column method – no regrouping | Column methods regrouping (up to 3 digits) | Column methods regrouping (up to 4 digits) | Column methods regrouping (up to 5 digits)<br>Decimals with the same amount of decimal places | Column methods regrouping<br>Decimals with different amount of decimal places |
| Subtraction | | | Taking ones away<br>Counting back<br>Find the difference<br>Find the whole<br>Make 10 | Counting back<br>Find the difference<br>Part whole model<br>Make 10<br>Column method – no regrouping | Column methods regrouping (up to 3 digits) | Column methods regrouping (up to 4 digits) | Column methods regrouping (up to 5 digits)<br>Decimals with the same amount of decimal places | Column methods regrouping<br>Decimals with different amount of decimal places |
| Multiplication | | | Doubling<br>Counting in multiples<br>Arrays | Doubling<br>Counting in multiples<br>Repeated addition<br>Arrays – showing commutativity | Counting in multiples<br>Repeated addition<br>Arrays – showing commutativity<br>Grid method | Column multiplication (2 and 3 digits multiplied by 1 digit) | Column multiplication (up to 4 digits multiplied by 1 or 2 digits) | Column multiplication (up to 4 digits multiplied by 2 digits) |
| Division | | | Sharing objects into groups<br>Division as grouping | Division as grouping<br>Division as arrays | | Division within arrays<br>Division with a remainder<br>Short division (up to 3 digits by 1 digit) | Short division (up to 4 digit by 1 digit number)<br>Interpret remainders in context | Short division<br>Long division<br>Interpret remainders as whole numbers, fractions or rounded. |

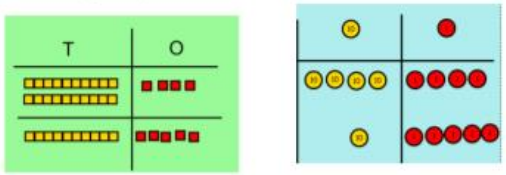
## Addition

| Objective and Strategies | Concrete | Pictorial | Abstract |
|---|---|---|---|
| Combining two parts to make a whole: part- whole model |      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.   |   Use the part-part whole diagram as shown above to move into the abstract. **4 + 3 = 7** **10= 6 + 4** |
| 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. | **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 your head and count on the smaller number to find your answer. |
| Regrouping to make 10. |  6 + 5 = 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. **3 + 9 =**   | 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 | **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. |  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. |

<table>
<tr>
<td>Column method- no regrouping</td>
<td>

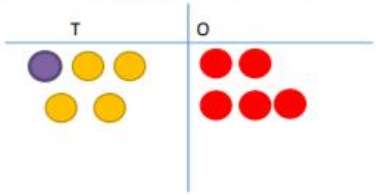
**24 + 15=**

Add together the ones first then add the tens. Use the Base 10 blocks first before moving onto place value counters.




</td>
<td>

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




</td>
<td>

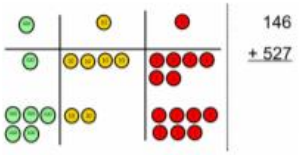
Calculations

21 + 42 =

21<br>+ 42

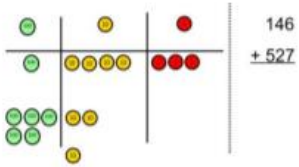
</td>
</tr>
<tr>
<td>Column method- regrouping</td>
<td>

Make both numbers on a place value grid.



146<br>+ 527

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



146<br>+ 527

Add up the rest of the columns, exchanging the 10 counters from one column for the next place value column until every column has been added.

This can also be done with Base 10 to help children clearly see that 10 ones equal 1 ten and 10 tens equal 100.

As children move on to decimals, money and decimal place value counters can be used to support learning.

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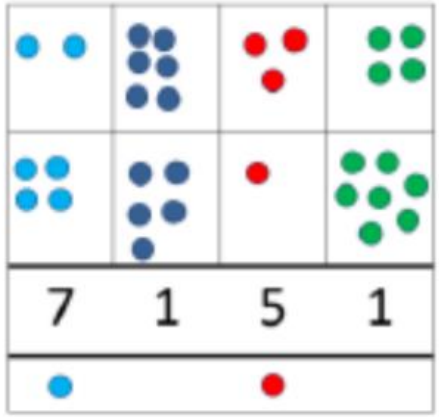
<td>

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

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<td>

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

20 + 5<br>40 + 8<br>60 + 13 = 73

536<br>+ 85<br>621<br>1 1

As the children move on, introduce decimals with the same number of decimal places and different. Money can be used here.

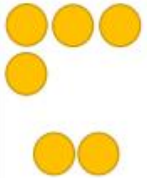
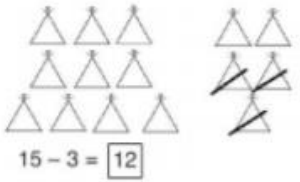
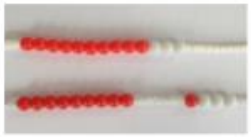
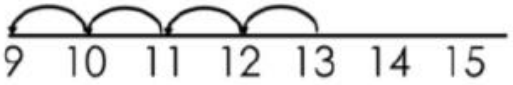
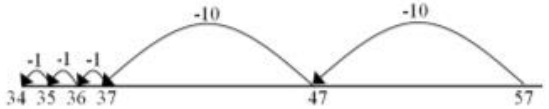
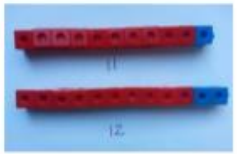
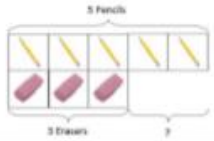
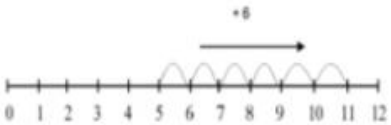
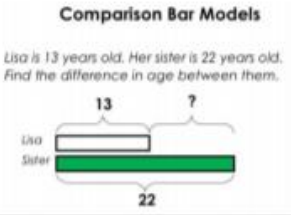
72.8<br>+ 54.6<br>127.4<br>1 1

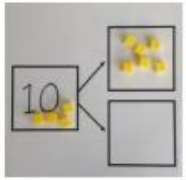
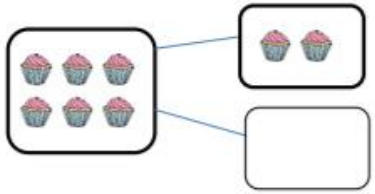
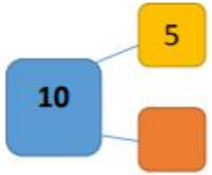
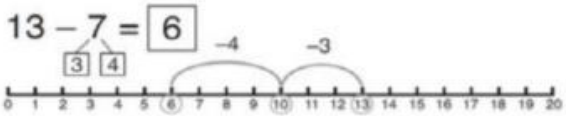
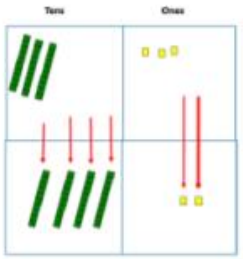
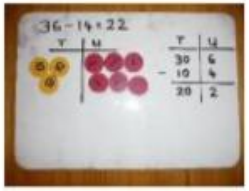
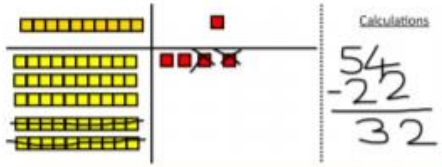
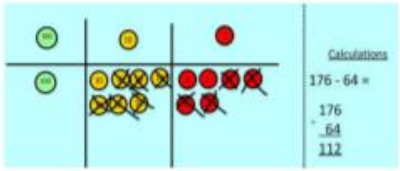
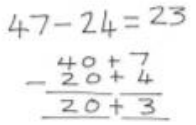
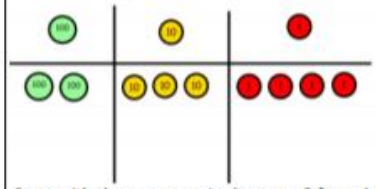
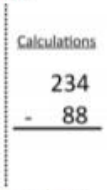
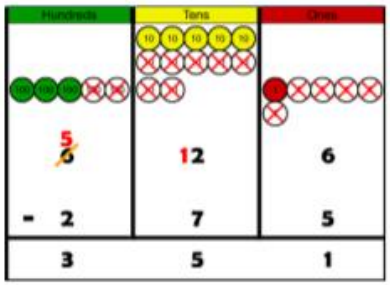
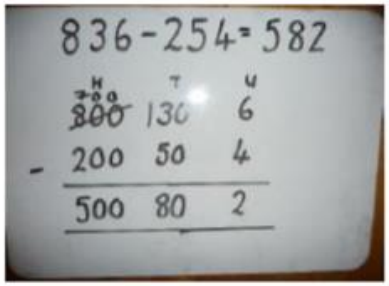
£ 2 3 . 5 9<br>+ £ 7 . 5 5<br>£ 3 1 . 1 4<br>1 1 1

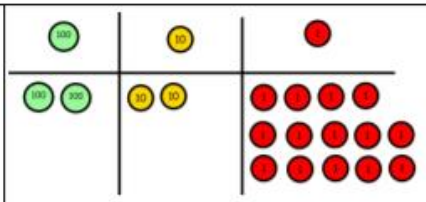
2 3 . 3 6 1<br>9 . 0 8 0<br>5 9 . 7 7 0<br>+ 1 . 3 0 0<br>9 3 . 5 1 1<br>2 1 2

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

## Subtraction

| Objective and Strategies | Concrete | Pictorial | Abstract |
|---|---|---|---|
| Taking away ones | Use physical objects, counters, cubes etc to show how objects can be taken away.<br>  **6 – 2 = 4** | Cross out drawn objects to show what has been taken away.<br>    | **18 -3= 15**<br>**8 – 2 = 6** |
| Counting back | Make the larger number in your subtraction. Move the beads along your bead string as you count backwards in ones.<br>**13 – 4**<br>  <br>Use counters and move them away from the group as you take them away counting backwards as you go.<br>  | Count back on a number line or number track<br>  <br>Start at the bigger number and count back the smaller number showing the jumps on the number line.<br>  <br>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. |
| Find the difference | Compare amounts and objects to find the difference.<br>  Use cubes to build towers or make bars to find the difference<br>  Use basic bar models with items to find the difference. |   Count on to find the difference.<br>Draw bars to find the difference between 2 numbers.<br>   | Hannah has 23 sandwiches, Helen has 15 sandwiches. Find the difference between the number of sandwiches. |

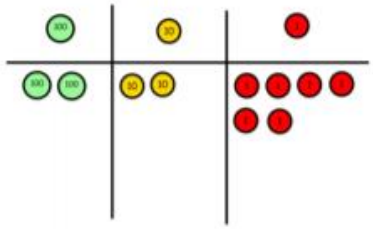
| | | | |
|---|---|---|---|
| Part Part Whole Model |  <br>Link to addition- use the part whole model to help explain the inverse between addition and subtraction.<br><br>If 10 is the whole and 6 is one of the parts. What is the other part?<br><br>**10 - 6 =** | Use a pictorial representation of objects to show the part part whole model.<br>  |  <br>Move to using numbers within the part whole model. |
| Make 10 | **14 – 9 =**<br>  <br>Make 14 on the ten frame. Take away the four first to make 10 and then takeaway one more so you have taken away 5. You are left with the answer of 9. |  <br>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=**<br><br>How many do we take off to reach the next 10?<br><br>How many do we have left to take off? |
| Column method without regrouping |  <br>Use Base 10 to make the bigger number then take the smaller number away.<br>  <br>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.<br>  <br>  |  <br>This will lead to a clear written column subtraction.<br>  |
| Column method with regrouping | Use Base 10 to start with before moving on to place value counters. Start with one exchange before moving onto subtractions with 2 exchanges.<br><br>Make the larger number with the place value counters<br>  <br>  <br>Start with the ones, can I take away 8 from 4 easily? I need to exchange one of my tens for ten ones. | Draw the counters onto a place value grid and show what you have taken away by crossing the counters out as well as clearly showing the exchanges you make.<br>  |  <br>Children can start their formal written method by partitioning the number into clear place value columns. |



Calculations

234
- 88

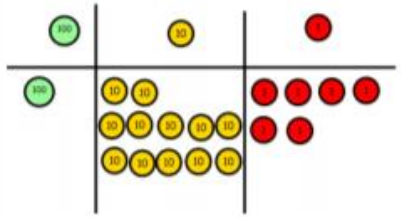
Now I can subtract my ones.



Calculations

234
- 88

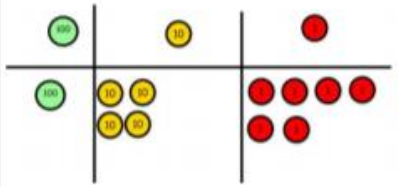
Now look at the tens, can I take away 8 tens easily? I need to exchange one hundred for ten tens.



Calculations

234
- 88

Now I can take away eight tens and complete my subtraction

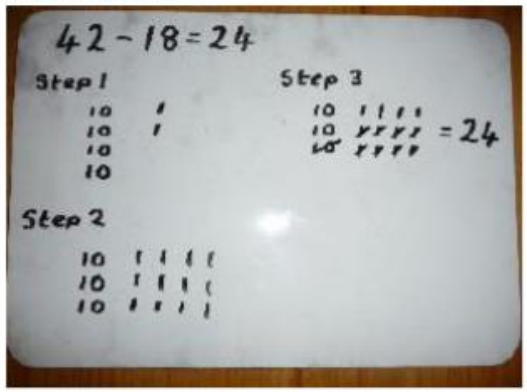


Calculations

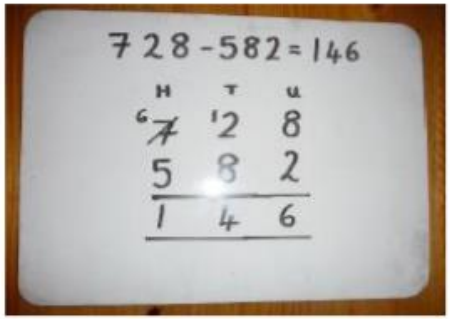
~~2~~ 1~~3~~4
- 88
146

Show children how the concrete method links to the written method alongside your working. Cross out the numbers when exchanging and show where we write our new amount.

When confident, children can find their own way to record the exchange/regrouping.




Just writing the numbers as shown here shows that the child understands the method and knows when to exchange/regroup.

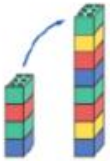
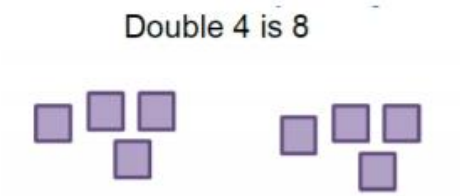
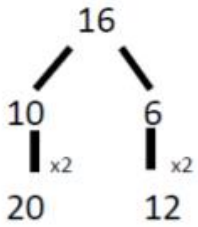
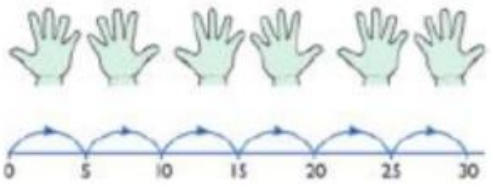
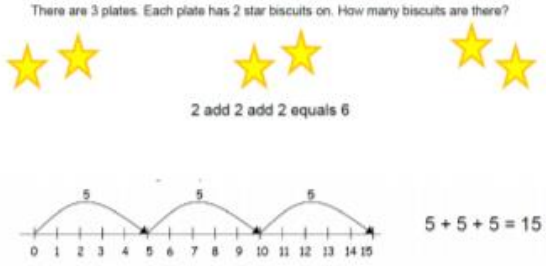
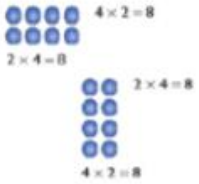


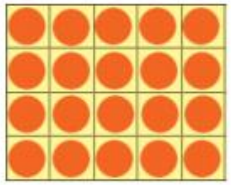
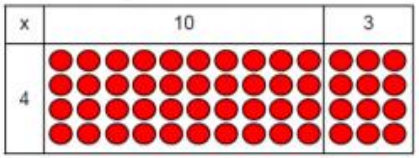
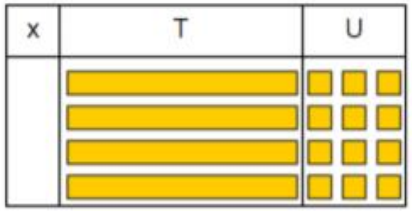
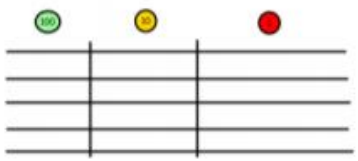
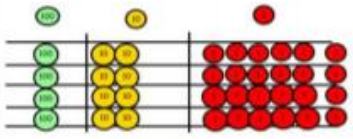
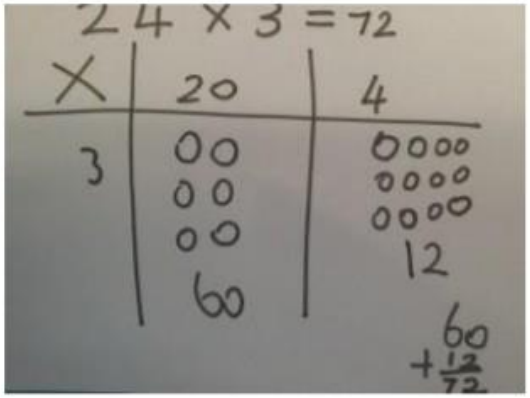
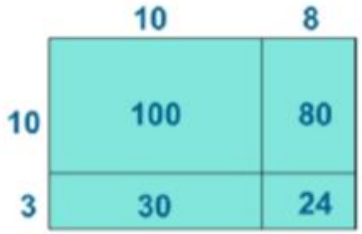
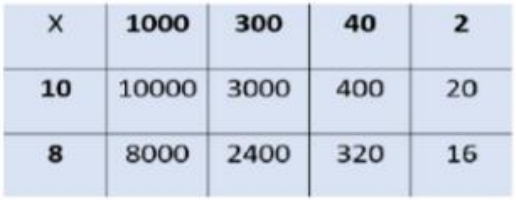

Moving forward the children use a more compact method.

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

$$\begin{array}{rr} & {\scriptstyle 5\ 12\ \ \ 1} \\ & 2\ \not{6}\ \not{3}\ .\ 0 \\ - & \ \ 2\ 6\ .\ 5 \\ \hline & 2\ 3\ 6\ .\ 5 \end{array}$$

## Multiplication

| Objective and Strategies | Concrete | Pictorial | Abstract |
|---|---|---|---|
| Doubling | Use practical activities to show how to double a number.<br>  <br> | Draw pictures to show how to double a number.<br>  <br> | Partition a number and then double each part before recombining it back together.<br>  <br> |
| Counting in multiples |  <br>  <br>Count in multiples supported by concrete objects in equal groups. |  <br><br>Use a number line or pictures to continue support in counting in multiples. | Count in multiples of a number aloud.<br>Write sequences with multiples of numbers.<br>**2, 4, 6, 8, 10**<br>**5, 10, 15, 20, 25, 30** |
| Repeated addition |  <br>Use different objects to add equal groups. |  <br> | Write addition sentences to describe objects and pictures.<br>  <br> |
| Arrays- showing commutative multiplication | Create arrays using counters/ cubes to show multiplication sentences.<br>  | Draw arrays in different rotations to find **commutative** multiplication sentences.<br>  <br> | Use an array to write multiplication sentences and reinforce repeated addition. |

<table>
<tr>
<td></td>
<td>  </td>
<td>  <br>Link arrays to area of rectangles.</td>
<td>  <br>5 + 5 + 5 = 15<br>3 + 3 + 3 + 3 + 3 = 15<br>5 x 3 = 15<br>3 x 5 = 15</td>
</tr>
<tr>
<td>Grid Method</td>
<td>Show the link with arrays to first introduce the grid method.<br>  <br>4 rows of 10<br>4 rows of 3<br>Move on to using Base 10 to move towards a more compact method.<br>  <br>4 rows of 13<br>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.<br>  <br>Calculations<br>4 x 126<br>Fill each row with 126.<br>  <br>Calculations<br>4 x 126<br>Add up each column, starting with the ones making any exchanges needed.</td>
<td>Children can represent the work they have done with place value counters in a way that they understand.<br>They can draw the counters, using colours to show different amounts or just use circles in the different columns to show their thinking as shown below.<br>  <br></td>
<td>Start with multiplying by one digit numbers and showing the clear addition alongside the grid.<br>  <br><br>210 + 35 = 245<br>Moving forward, multiply by a 2 digit number showing the different rows within the grid method.<br>  <br><br>  <br></td>
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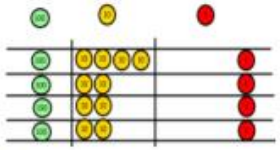
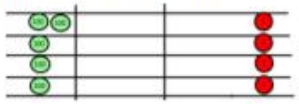
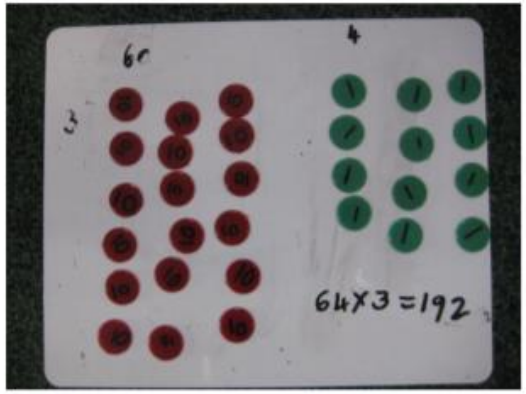
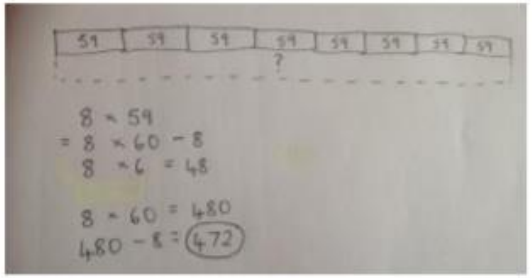
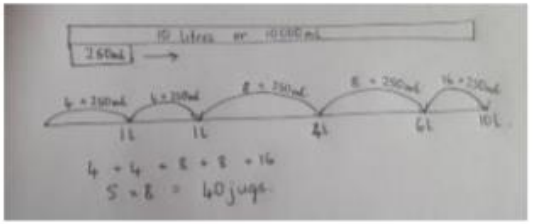
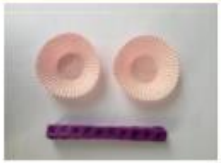
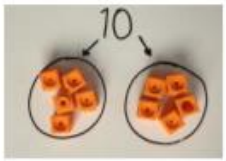
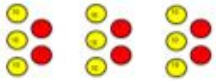
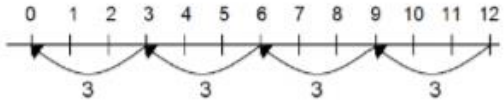
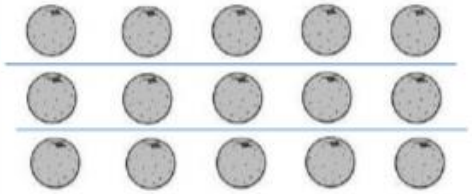
| | | | |
|---|---|---|---|
| |  <br>Then you have your answer.<br>  | | |
| Column multiplication | Children can continue to be supported by place value counters at the stage of multiplication.<br>  <br><br>It is important at this stage that they always multiply the ones first and note down their answer followed by the tens which they note below. | Bar modelling and number lines can support learners when solving problems with multiplication alongside the formal written methods.<br>  <br><br>  <br> | Start with long multiplication, reminding the children about lining up their numbers clearly in columns.<br>If it helps, children can write out what they are solving next to their answer.<br>32<br>x 24<br>8 (4 x 2)<br>120 (4 x 30)<br>40 (20 x 2)<br>600 (20 x 30)<br>768<br>74<br>x 63<br>12<br>210<br>240<br>+ 4200<br>4662<br>This moves to the more compact method.<br>2 3 1<br>1342<br>x 18<br>13420<br>10736<br>24156<br>1 |

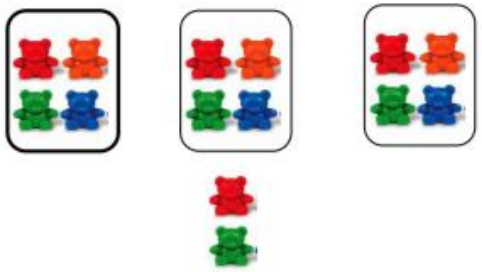
## Division

| Objective and Strategies | Concrete | Pictorial | Abstract |
|---|---|---|---|
| Sharing objects into groups |     I have 10 cubes, can you share them equally in 2 groups? | Children use pictures or shapes to share quantities.  8 ÷ 2 = 4 | **Share 9 buns between three people.** **9 ÷ 3 = 3** |
| Division as grouping | Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding.   96 ÷ 3 = 32     | Use a number line to show jumps in groups. The number of jumps equals the number of groups.   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.   20 ÷ 5 = ? 5 x ? = 20 | **28 ÷ 7 = 4** **Divide 28 into 7 groups. How many are in each group?** |
| Division within arrays |  Link division to multiplication by creating an array and thinking about the number sentences that can be created. E.g. 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** |

<table>
<tr>
<td>Division with a remainder</td>
<td>

**14 ÷ 3 =**

Divide objects between groups and see how much is left over



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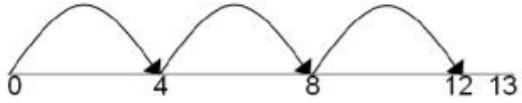
<td>

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.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<td>

Complete written divisions and show the remainder using r.

29 ÷ 8 = 3 REMAINDER 5

dividend divisor quotient remainder

</td>
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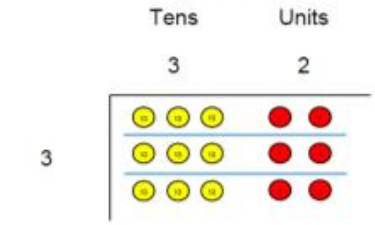
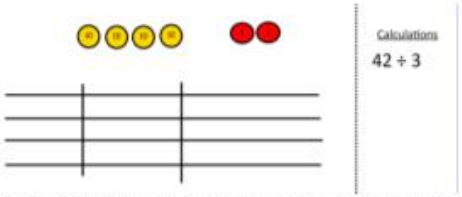
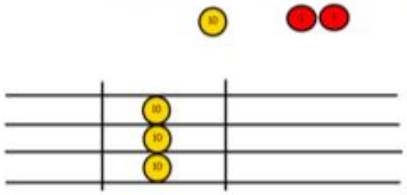
<tr>
<td>Short division</td>
<td>



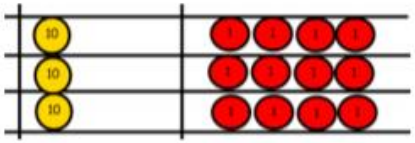

Use place value counters to divide using the bus stop method alongside




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.

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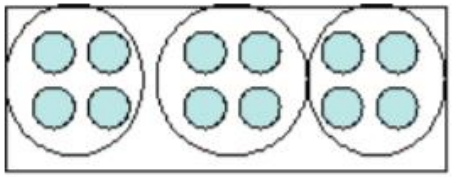
<td>

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.

</td>
<td>

Begin with divisions that divide equally with no remainder.

$$\begin{array}{r} 218 \\ 4\overline{)872} \\ 3 \end{array}$$

Move onto divisions with a remainder.

$$\begin{array}{r} 86\ r\ 2 \\ 5\overline{)432} \\ 3 \end{array}$$

Finally move into decimal places to divide the total accurately.

$$\begin{array}{r} 14.6 \\ 35\overline{)511.0} \\ 16\quad 21 \end{array}$$

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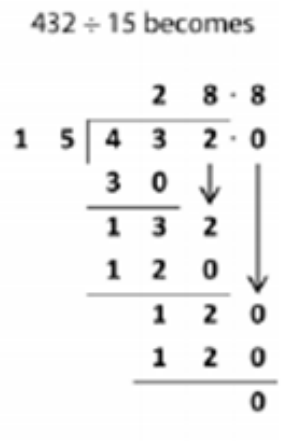
</tr>
</table>

| | | | |
|---|---|---|---|
| Long division | | | 432 ÷ 15 becomes<br>  |

The 2014 National Curriculum is explicit in articulating the importance of children using the correct mathematical language as a central part of their learning (reasoning). Indeed, in certain year groups, the non---statutory guidance highlights the requirement for children to extend their language around certain concepts. It is therefore essential that teaching using the strategies outlined in this policy is accompanied by the use of appropriate and precise mathematical vocabulary.

New vocabulary should be introduced in a suitable context (for example, with relevant real objects, apparatus, pictures or diagrams) and explained carefully. High expectations of the mathematical language used are essential, with teachers only accepting what is correct.

| Correct Terminology | Old Terminology (no longer used) |
|---|---|
| ones | units |
| is equal to (is the same as) | equals |
| zero | Oh (the letter o) |
| exchange<br>exchanging<br>regrouping | Stealing<br>borrowing |
| calculation<br>equation | Generic term of 'sum' or 'number sentence' |

## Glossary

| Concept | Definition |
|---|---|
| Acute | Describes angles between 0 and 90 degrees. |
| Adjacent | Adjoining (as used to describe lines and angles). |
| Alternate | Every other one in a sequence. |
| Angle | The number of degrees rotated around a point. |
| Area | The amount of space within a perimeter (expressed in square units). |
| Ascending order | The arrangement of numbers from smallest to largest. |
| Average | A number representing a set of numbers (obtained by dividing the total of the numbers by the numbers itself). |
| Axis of symmetry | A line dividing a shape into two symmetrical parts. |

| Concept | Definition |
|---|---|
| Baker's dozen | The colloquial name given to the number 13. |
| Base | The line or face on which a shape is standing. |
| Base angles | Those angles adjacent to the base of a shape. |
| Bisect | To divide into two equal parts. |
| Breadth | Breadth is another name for width. It is the distance across from side to side. |

| Concept | Definition |
|---|---|
| Capacity | The amount of space in an object (the amount of liquid or air it contains). |
| Cardinal number | A number that shows quantity but not order. |
| Carroll Diagram | A number that shows quantity but not order. |
| Circumference | The distance around a circle (its perimeter). |
| Composite number | A number with more than two factors. |
| Congruent | Congruent shapes are the same shape and size (equal). |
| Consecutive | Consecutive numbers follow in order without interruption (e.g. 2,3,4,5). |
| Coordinates | Numbers used to locate a point on a grid. |

| Concept | Definition |
|---|---|
| Denominator | The number below the line in a fraction. |
| Descending order | The arrangement of numbers from the largest to smallest. |
| Diagonal | A straight line connecting two non- adjacent vertices (corners) of a polygon. |
| Difference | By how much a number is bigger or smaller than another. |
| Digit | Any number from 0 to 9 (inclusive). |
| Digital root | The digital root of 58 is 4 because 5 + 8 = 13 and 1 + 3 = 4 |
| Dimensions | The measurements of a shape (i.e. length, width, height). |
| Dodecagon | A twelve sided polygon. |

| Concept | Definition |
|---|---|
| Edge | The intersection of two faces of a three-dimensional object. |
| Equation | A statement of equality between two expressions (e.g. 3 x 4 = 6 + 6). |
| Equilateral triangle | A triangle with congruent (equal) sides and angles. |
| Even number | A positive or negative number exactly divisible by 2. |
| Exterior | Outside. |

| Concept | Definition |
|---|---|
| Face | A plane surface of a three-dimensional object. |
| Face value | The numeral itself despite its position in a number (e.g. the face value of 8 in 38,250 is 8). |
| Factor | A number which will divide exactly into another number. |

| Concept | Definition |
|---|---|
| Greater than | An inequality between numbers. The symbol used to represent greater than is an arrow pointing towards the smallest number. |
| Gross | The name given to the number 144. |

| Concept | Definition |
|---|---|
| Hendecagon | A two dimensional shape with eleven sides and eleven angles also called an undecagon. |
| Heptagon | A two dimensional shape with seven sides and seven angles also called a septagon. |
| Hexagon | A polygon with six sides. |
| Horizontal | Describes a line or plane parallel to the earth's surface. |

| Concept | Definition |
|---|---|
| Improper fraction | A fraction whose numerator is equal to or greater than it denominator. |
| Integer | A negative or positive whole number. |
| Interior | Inside. |
| Intersection | The point or line where two lines or two faces meet. |
| Irregular shapes | Shapes which do not have all congruent sides and all congruent angles. |
| Isosceles triangle | A triangle which has two equal sides of equal length. |

| Concept | Definition |
|---|---|
| Kite | A quadrilateral that has two adjacent pairs of sides that are equal in length, and at least one pair of opposite angles are equal. |

| Concept | Definition |
|---|---|
| Less than | An inequality between numbers. The symbol used to represent less than is an arrow pointing towards the smallest number. |
| Lozenge | Another name for a rhombus. |

| Concept | Definition |
|---|---|
| Mean | The average of a set of numbers. The sum of the values in a set of data divided by the total number of items in that set. |
| Median | The middle value of a set of ordered data. |
| Mode | The value that occurs the most often in a set of data |
| Multiple | The product of a given number with another factor. |

| Concept | Definition |
|---|---|
| Numerator | The number above the line in a fraction. |

| Concept | Definition |
|---|---|
| Oblique | Oblique means sloping or slanting. |
| Oblong | A shape with two pairs of straight, unequal sides and four right angles. Also known as a rectangle. |
| Obtuse angle | An angle between 90 and 180 degrees. |
| Octagon | A polygon with eight sides and eight angles. |
| Odd number | A number that when divided by two leaves a remainder of one. |
| Ordinal number | Describes a position in a number sequence. |

| Concept | Definition |
|---|---|
| Parallel lines | Lines with no common points and always the same distance apart. |
| Parallelogram | A four-sided polygon with opposite sides equal and parallel and the opposite angles are equal in size. |
| Perimeter | The length of the distance around the boundary of a shape. |
| Perpendicular line | A line at right angles to another line or plane. |
| Polyhedron | A three dimensional shape with plane faces. |
| Place value | Indicates the position of a numeral (e.g. the place value of the 3 in 738 is 30) |
| Prime number | A number with only two factors, 1 and itself (e.g. 2,3,5,7,11, 13, 17, 19, 23…) |
| Product | The result when two or more numbers are multiplied. |

| Concept | Definition |
|---|---|
| Quadrant | A quarter of the area of a circle which also contains a right angle. |
| Quotient | The result when one number is divided by another number. |
| Quindecagon | A polygon with fifteen sides and fifteen angles. |

| Concept | Definition |
|---|---|
| Rectangle | A quadrilateral with opposite sides equal and parallel and containing four right angles |
| Reflex angle | An angle greater than 180 degrees. |
| Rhombus | A parallelogram with congruent sides. Opposite sides are parallel and opposite sides are equal in size. |
| Roman numerals | Seven letters are used in combination to write numbers:<br>I = 1 V = 5 X = 10 L = 50 C = 100 D = 500 M = 1000 |
| Rotational symmetry | A shape is said to have rotational symmetry if it looks the same in different positions when rotated about its centre. |
| Rounding | An approximation used to express a number in a more convenient way. |

| Concept | Definition |
|---|---|
| Scalene triangle | A triangle that has three sides of different length and no equal angles. |
| Score | The name given to the number 20. |
| Squared | A number squared is a number multiplied by itself. |
| Square number | A number whose units can be arranged into a square (e.g. 1,4,9,16,25,36,49,64…) |
| Sum | The result when two or more numbers are added together. |
| Symmetrical | A shape is symmetrical if it is identical on either side of a line dividing it into two parts. |

| Concept | Definition |
|---|---|
| Tally | A record of items using vertical and oblique lines to represent each item. |
| Tetragon | A four sided shape. |
| Tessellation | Shapes fitted together with a number of exact copies and with no overlaps or gaps. |
| Translation | This takes place when a shape is moved from one place to another just by sliding it (without rotating, reflecting or enlarging). |
| Trapezium | A quadrilateral with two parallel sides. |
| Triangular number | A number whose units can be arranged into a triangle (e.g. 1, 3, 6, 10, 15, 21…) |
| Trigon | A three sided shape. |

| Concept | Definition |
|---|---|
| Vertex | The point at which two or more line segments or two or more edges of a polyhedron meet. |
| Vertical line | A line which is at right angles to a horizontal line. |