# St John's Church of England Primary School
# Maths Calculation Policy

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

The policy has been devised to meet the requirements of the National Curriculum 2014 for the teaching and learning of mathematics whilst giving due consideration to a mastery approach to mathematics. It is designed to give children a consistent and smooth progression of learning in calculations across the school.

Children are encouraged to use concrete, practical manipulatives alongside models to support their conceptual understanding, as well as pictures and images such as number lines and the bar model to support mental imagery before moving on to more abstract approaches. This is in-line with the concrete, pictorial, abstract approach.

***Concrete*** *– children should have the opportunity to use concrete objects and manipulatives to help them understand what they are doing.*
***Pictorial*** *– alongside this, children should use pictorial representations. These representations can then be used to help reason and solve problems.*
***Abstract*** *– both concrete and pictorial representations should support children's understanding of abstract methods.*

The aim is to provide all children with the skills they need to use to achieve a deep understanding of number and the ability to apply their knowledge to everyday problems, problem solving and contextual mathematics.

It is our aim that pupils at St John's will be able to demonstrate three types of mathematical understanding throughout their time at St John's:
1) Factual: I know *that*
2) Procedural: I know *how*
3) Conceptual: I know *why*

Conceptual understanding underpins factual and procedural understanding, so it is vital that teachers distinguish between children knowing facts and children using methods to get to an answer, using the facts they know.

**<u>Providing a context for calculation</u>**

It is important that calculations are given a real-life context or presented alongside a mathematical problem to help build children's understanding of the

purpose of calculation and to help them recognise when to use certain operations and methods especially when faced with problem solving questions. This should be a focus within calculation lessons, regardless of the ability of the children.

**Choosing a calculation method**

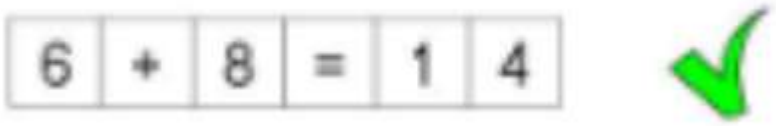
Children need to be taught and encouraged to use mental methods where appropriate when faced with a calculation. They should be taught to distinguish between questions which can be solved mentally and those which required a formal written method.

**Presentation of Work**

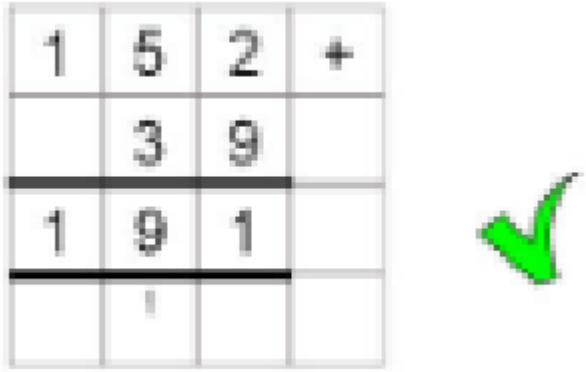
In order for children to be successful in using methods of calculation, particularly column methods, there is a need for accurate presentation of work i.e. one digit or symbol per square in the children's exercise books. A decimal point should be given its own square to ensure calculations are correctly lined up. The exception to this rule is when children are writing fractions with a two or three-digit denominator.

Examples:

*Equation method:*

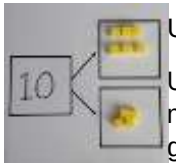
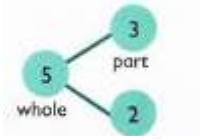
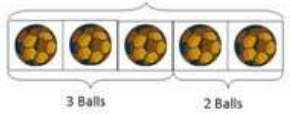
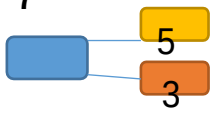
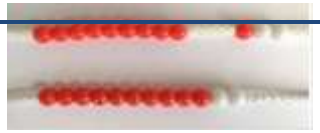
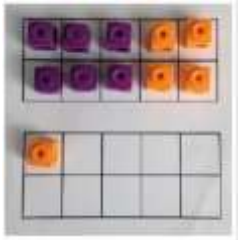
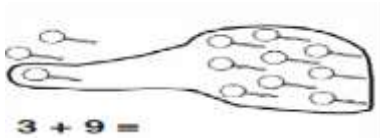
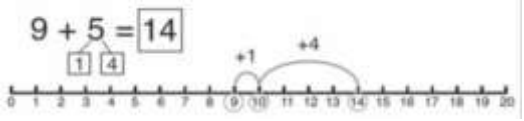
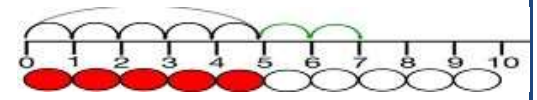
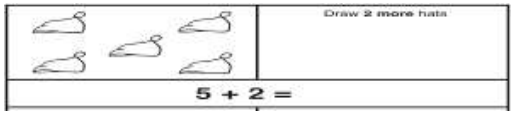



*Column method:*



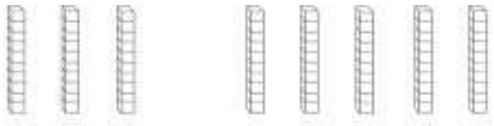
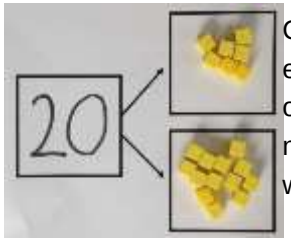
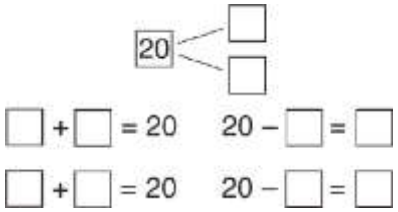
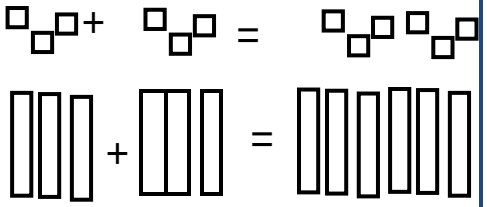
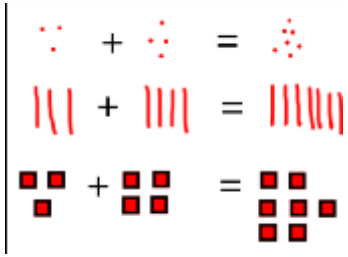
YEAR 1

# ADDITION +

| Objective & Strategy | Concrete | Pictorial | Abstract |
|---|---|---|---|
| Combining two parts to make a whole: part- whole model |     Use part-part whole model. Use cubes to add two numbers together as a group or in a bar.  |        Use 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 |  Start with the larger number on the bead string and then count on to the smaller number 1 by1 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. *This is an essential skill for column addition later.* |  6 + 5 = 11  Start with the bigger number and use the smaller number to make 10. Use tens frames. |   Use pictures or a number line. Regroup or partition the smaller number using the part-part whole model to make 10.   | 7 + 4 = 11 If I am at seven, how many more do I need to make 10? How many more do I add on now? |
| Represent & use number bonds and related subtraction facts within 20 |  2 more than 5. |     | Emphasis should be on the language *'1 more than 5 is equal to 6.'* *'2 more than 5 is 7.'* *'8 is 3 more than 5.'* |

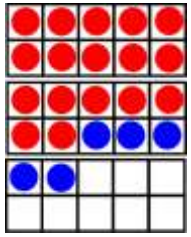
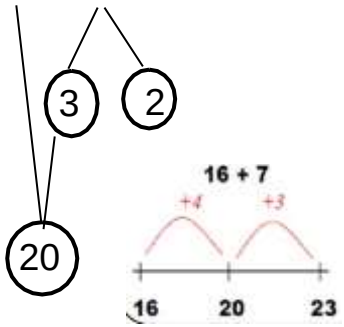
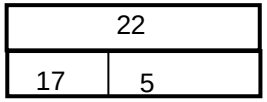
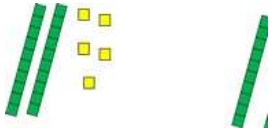
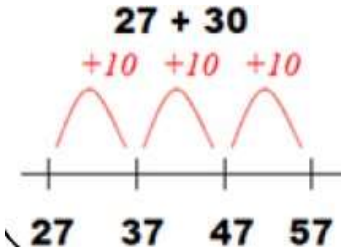
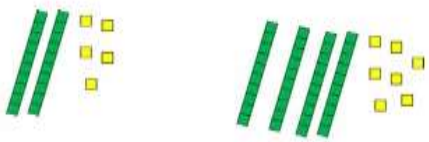
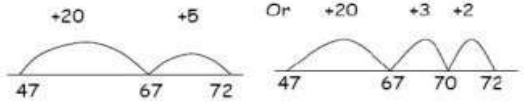
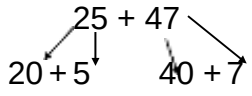
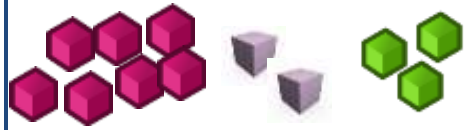
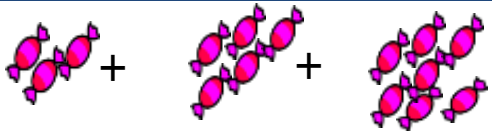
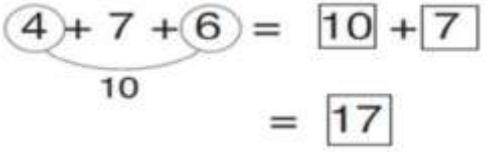
YEAR 2

# ADDITION +

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

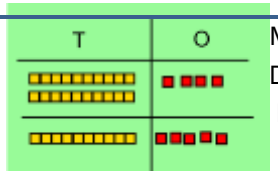
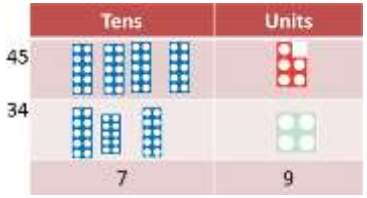
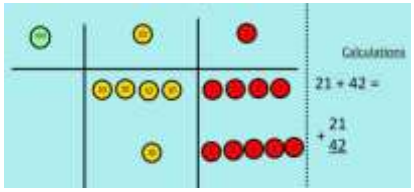
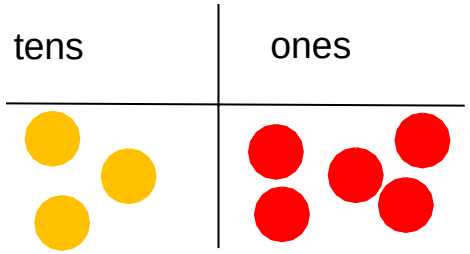
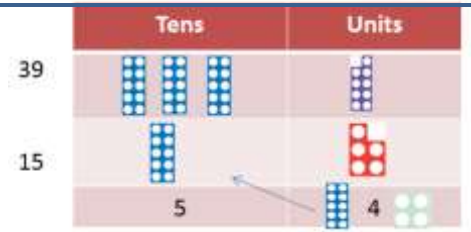
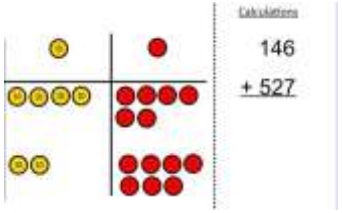
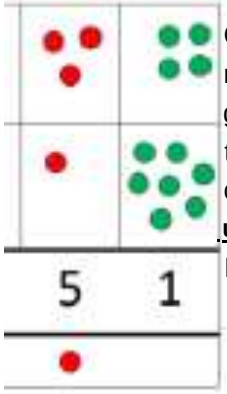
YEAR 2

# ADDITION +

| Objective & Strategy | Concrete | Pictorial | Abstract |
|---|---|---|---|
| Add a two-digit number and ones |  17 + 5 = 22<br>Use tens frame to make ten.<br>Children explore the pattern.<br>17 + 5 = 22<br>27 + 5 = 32 Numicon may also be used. | 17 + 5 = 22<br>Use part-part whole and number line to model.<br>  | 17 + 5 = 22<br>Explore related facts<br>17 + 5 = 22<br>5 + 17 = 22<br>22 — 17 = 5<br>22 — 5 = 17<br>  |
| Add a two-digit number and tens |  <br>25 + 10 = 35<br>Explore that the ones digit does not change |  | 27 + 10 = 37<br>27 + 20 = 47<br>27 + □ = 57 |
| Add two two-digit numbers |  <br>Model using Dienes, place value counters and Numicon |  <br>Use number line and bridge ten using part whole if necessary. |  <br>20 + 40 = 60<br>5+ 7 =12<br>60 + 12 = 72 |
| Add three 1-digit numbers |  <br>Combine to make 10 first if possible, or bridge 10 then add third digit |  <br>Regroup and draw representation.<br>  |  <br>Combine the two numbers that make/ bridge ten, then add on the third. |

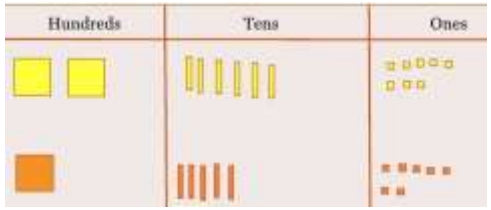
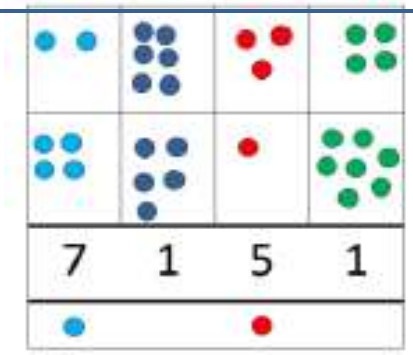
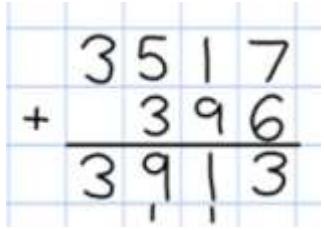
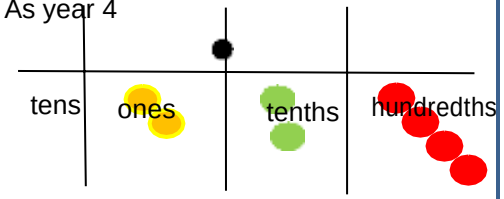
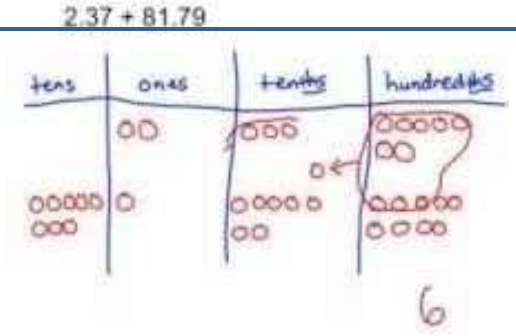
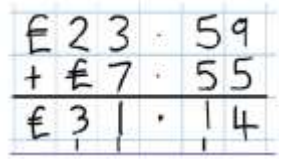
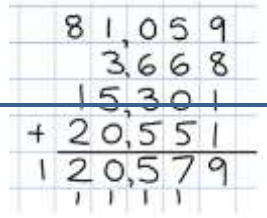
YEAR 3

# ADDITION +

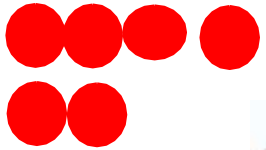
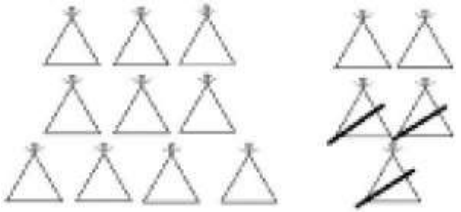
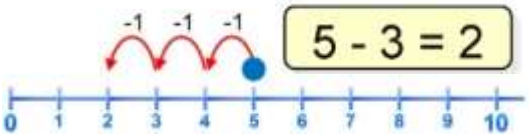
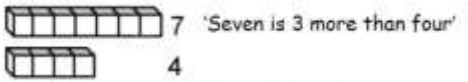
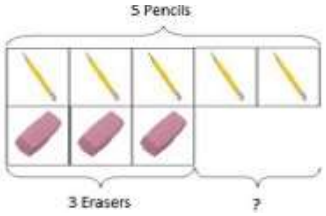
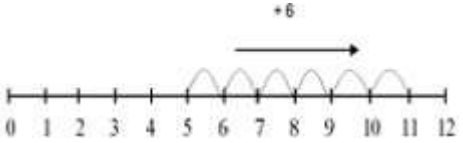
| Objective & Strategy | Concrete | Pictorial | Abstract |
|---|---|---|---|
| Column Addition—no regrouping (friendly numbers)<br><br>Add two or three 2 or 3-digit numbers. |  Model using Dienes or Numicon<br>Add together the ones first, then the tens.<br>  <br>  <br>Move to using place value counters | Children move to drawing the counters using a tens and one frame.<br>  | $$\begin{array}{r} 223 \\ +\ 114 \\ \hline 337 \end{array}$$<br>Add the ones first, then the tens, then the hundreds. |
| Column Addition with regrouping. |  <br>Exchange ten ones for a ten. Model using Numicon and PV counters.<br>  |  Children can draw a representation of the grid to further support their understanding, carrying the ten **underneath** the line. | $$\begin{array}{rcl} 20 & + & 5 \\ \underline{40} & + & \underline{8} \\ 60 & + & 13 \end{array} = 73$$<br>Start by partitioning the numbers before using the formal column method to show the exchange.<br>$$\begin{array}{r} 536 \\ +\ 85 \\ \hline 621 \\ \hline 1\ 1 \end{array}$$ |

YEAR 4 - 2

# ADDITION +

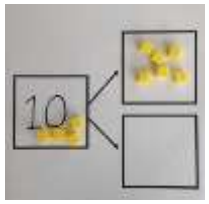
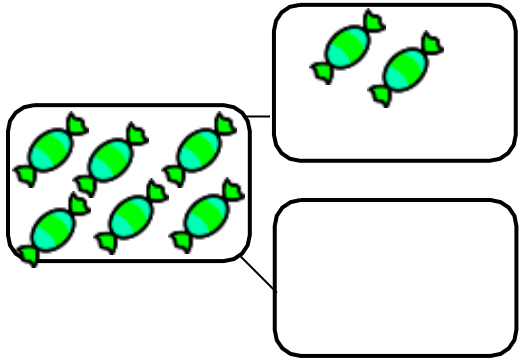
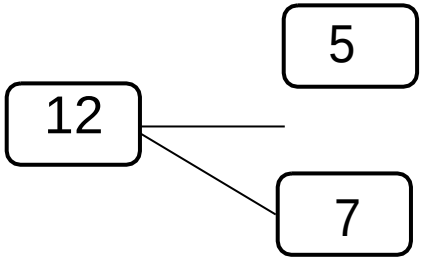
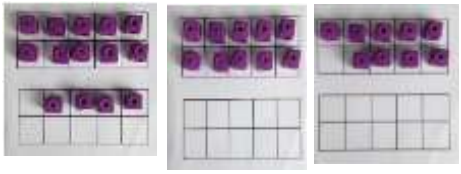
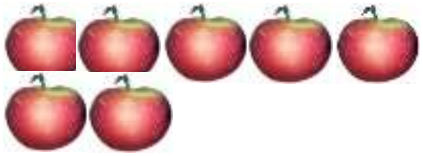
| Objective & Strategy | Concrete | Pictorial | Abstract |
|---|---|---|---|
| Y4—add numbers with up to 4 digits | Children continue to use Dienes or PV counters to add, exchanging ten ones for a ten and ten tens for a hundred and ten hundreds for a thousand etc.<br>  |  <br>Draw representations using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

# YEAR 1 SUBTRACTION

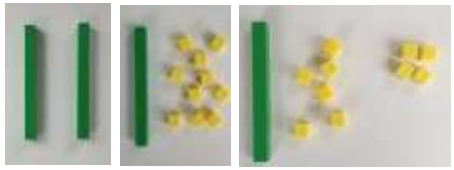
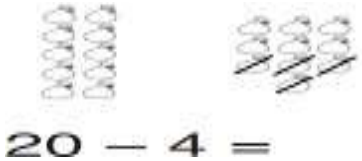
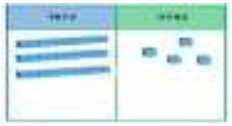
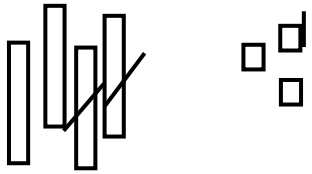
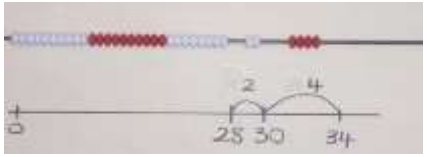
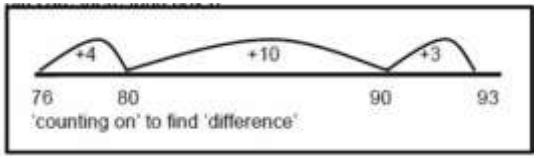
| Objective & Strategy | Concrete | Pictorial | Abstract |
|---|---|---|---|
| Taking away ones | Use real life objects e.g. counters, cubes to show how objects can be taken away.<br>  <br>6 - 4 = 2<br>  <br>4 - 2 = 2 |  <br>15 – 3 = 12<br>Cross out drawn objects to show what has been taken away. | 7 - 4 = 3<br><br>16 - 9 = 7 |
| Counting back |  <br>Move objects away from the group, counting backwards.<br>  <br>Move the beads along the bead string as you count backwards. |  <br>Count back in ones using a number line. | Put 13 in your head, count back 4. What number are you at? |
| Find the Difference | Compare objects and amounts<br>  <br>'Seven is 3 more than four'<br>'I am 2 years older than my sister'<br>  <br>Lay objects to represent bar model. | Count on using a number line to find the difference.<br>  | Hannah has 12 sweets and her sister has 5. How many more does Hannah have than her sister? |

YEAR 1

# SUBTRACTION.

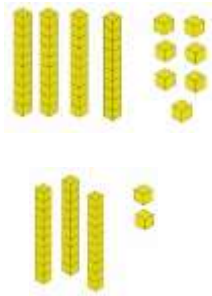
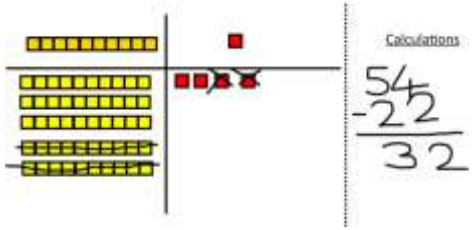
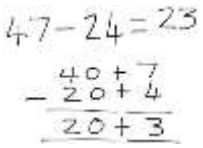
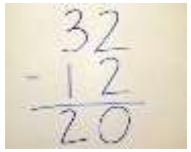
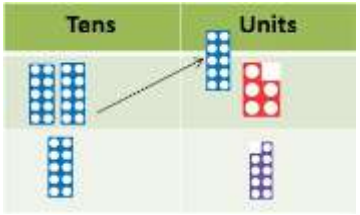
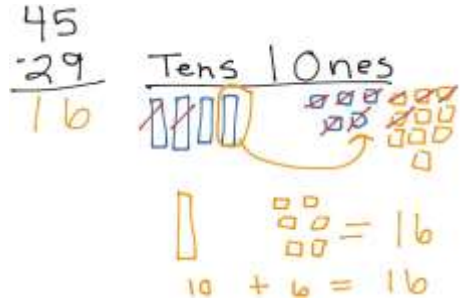
| Objective & Strategy | Concrete | Pictorial | Abstract |
|---|---|---|---|
| **Represent and use number bonds and related subtraction facts within 20**<br>Part- part whole model |  <br>Link to addition. Use PPW model to illustrate the inverse<br>If 10 is the whole and 6 is one of the parts, what is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

# YEAR 2 SUBTRACTION

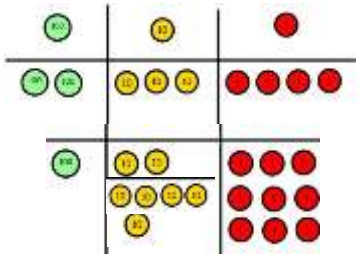
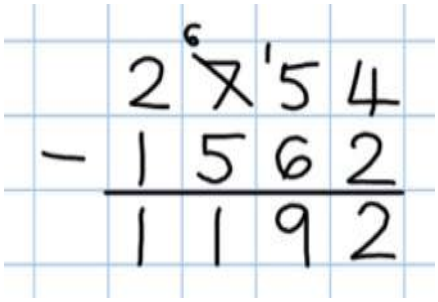
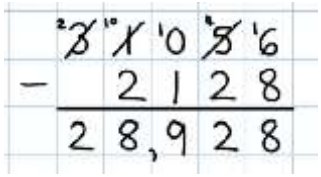
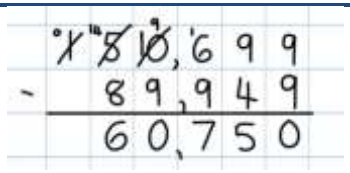
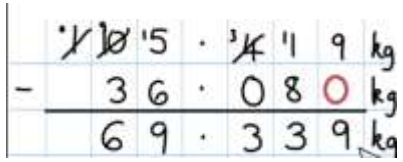
| Objective & Strategy | Concrete | Pictorial | Abstract |
|---|---|---|---|
| Regroup a ten into ten ones |  Use a PV chart to show how to change a ten into ten ones. Use the term 'take and make'. |  20 — 4 = | 20 - 4 = 16 |
| Partitioning to subtract without regrouping. *'Friendly numbers'* | 34—13 = 21   Use Dienes to show how to partition the number when subtracting without regrouping.  | Children draw representations of Dienes and cross off.  43—21 = 22 | 43 - 21 = 22 |
| Make ten strategy *Progression should be crossing one ten, crossing more than one ten, crossing the hundreds.* |  34—28 Use a bead bar or bead string to model counting to next ten and the rest. |   Use a number line to count on to next ten and then the rest. | 93 - 76 = 17 |

YEAR 3

# SUBTRACTION

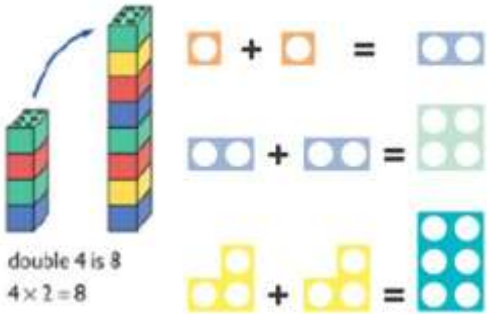
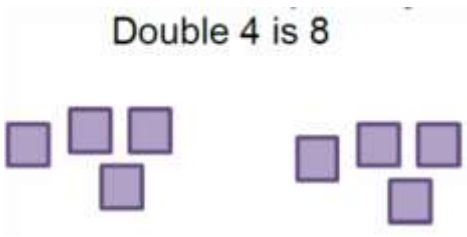
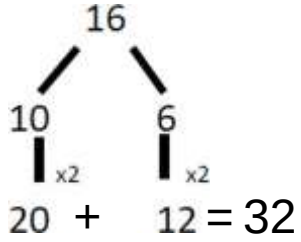
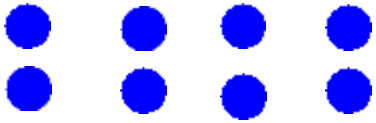
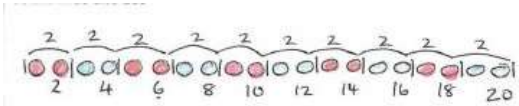
| Objective & Strategy | Concrete | Pictorial | Abstract |
|---|---|---|---|
| Column subtraction without regrouping (friendly numbers) |   Use base 10 or Numicon to model |   Draw representations to support understanding, |   Intermediate step (above bottom) may be needed to lead to clear subtraction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

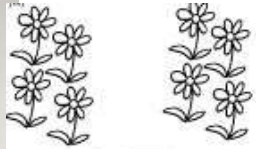
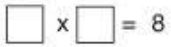
# YEAR 4 - 6 SUBTRACTION.

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

YEAR 1

MULTIPLICATION

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

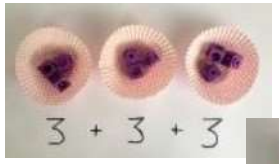
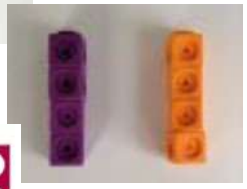
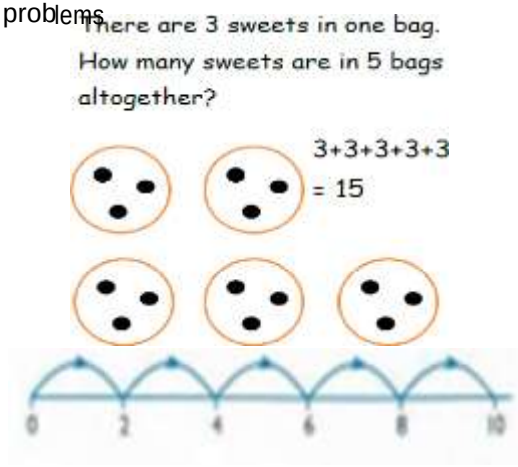
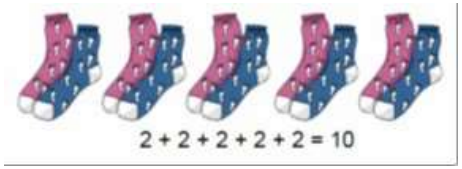
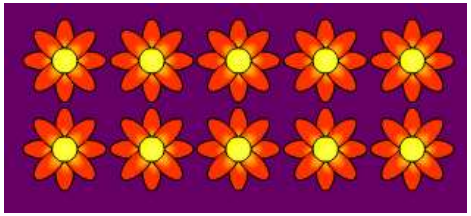
| | | | |
|---|---|---|---|
| Making equal groups and counting the total |    Use manipulatives to create equal groups. | Draw  to show 2 x 3 = 6 Draw and make representations | 2 x 4 = 8 |

MULTIPLICATION

X

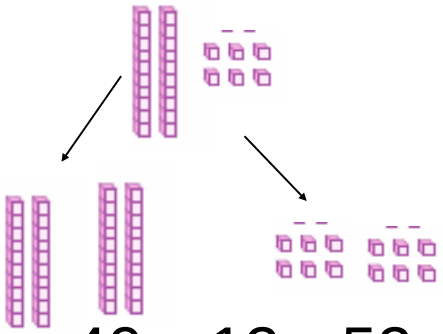
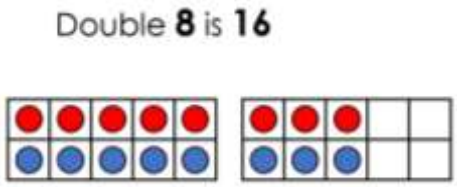
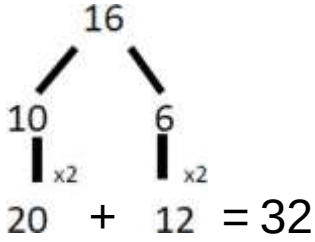
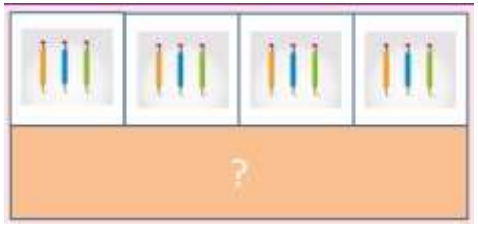
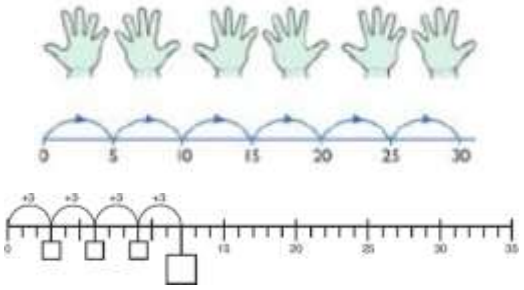
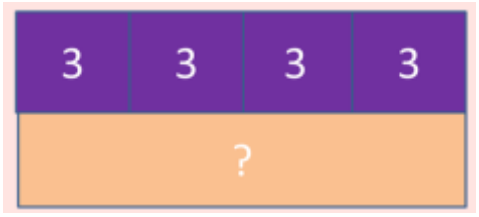
YEAR 1

# MULTIPLICATION

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

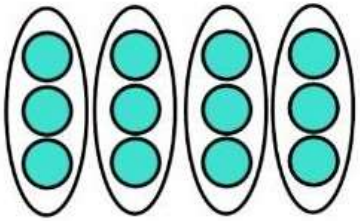
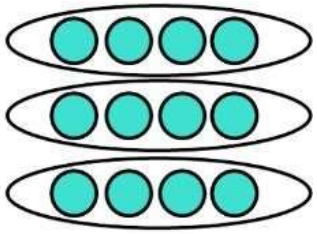
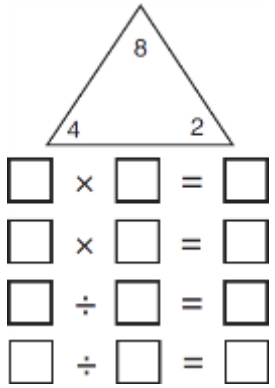
YEAR 2

# MULTIPLICATION

| Objective & Strategy | Concrete | Pictorial | Abstract |
|---|---|---|---|
| Doubling | Model doubling using Dienes and PV counters.<br>  <br>40 + 12 = 52 | Draw pictures and representations to show how to double numbers<br>  | Partition a number and then double each part before recombining it back together.<br>  |
| Counting in multiples of 2, 3, 4, 5, 10 from 0<br>(repeated addition) | Count the groups as children are skip counting (children may use their fingers as they are skip counting).<br>Use bar models.<br>  <br>5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 = 40<br>  <br>  | Number lines, counting sticks and bar models should be used to represent counting in multiples.<br>  <br>  | Count aloud in multiples of a number.<br>Write sequences with multiples of numbers.<br>0, 2, 4, 6, 8, 10<br>0, 3, 6, 9, 12, 15<br>0, 5, 10, 15, 20, 25, 30<br>$4 \times 3 = \square$ |

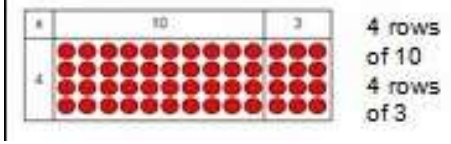
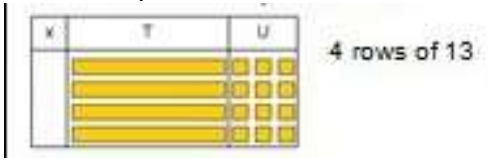
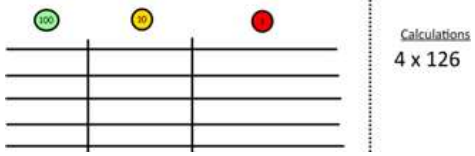
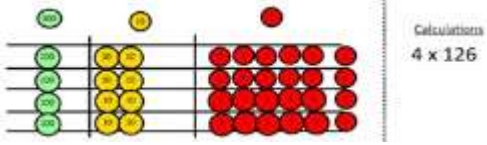
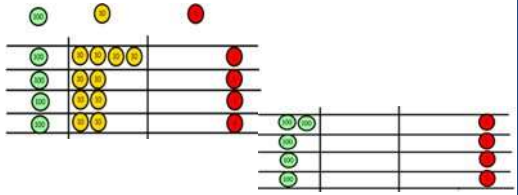
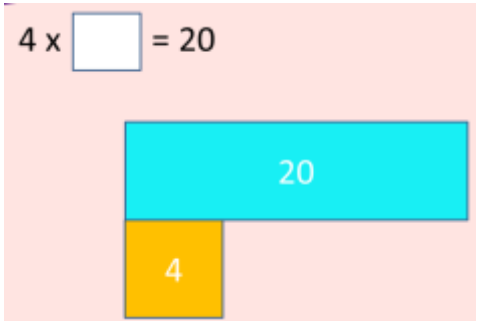
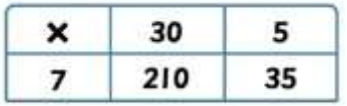
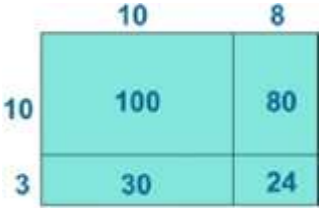
YEAR 2

MULTIPLICATION

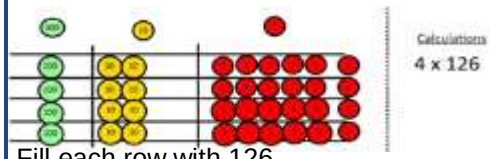
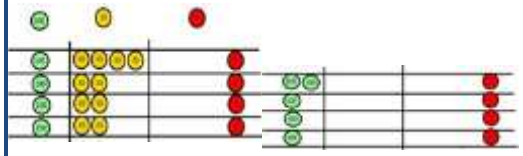
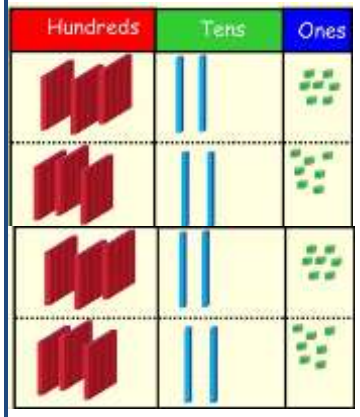
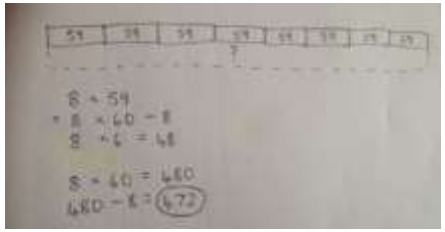
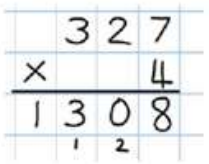
| Objective & Strategy | Concrete | Pictorial | Abstract |
|---|---|---|---|
| Multiplication is commutative | Create arrays using counters, cubes and Numicon.<br>  <br>   <br>Pupils should understand that an array can represent different equations and that, as multiplication is commutative, the order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

YEAR 3

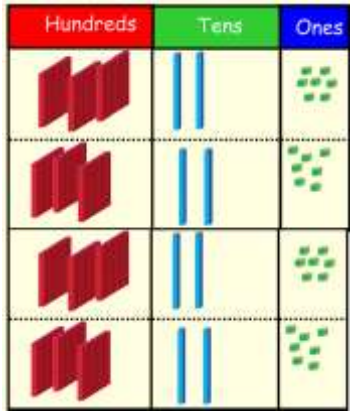
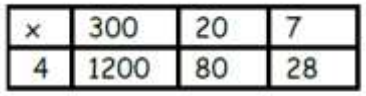
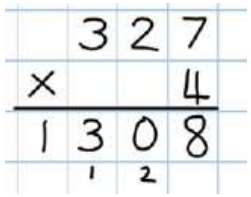
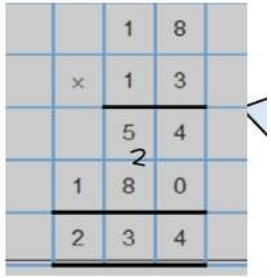
# MULTIPLICATION

| Objective & Strategy | Concrete | Pictorial | Abstract |
|---|---|---|---|
| Grid method | Show the links with arrays to first introduce the grid method.<br>  <br><br>Move onto base ten to move towards a more compact method.<br>  <br><br>Move on to PV counters to show how we are finding groups of a number. We are multiplying by 4 so we need 4 rows<br>  <br><br>Fill each row with 126<br>  <br><br>Add up each column, starting with the ones, making any exchanges needed.<br>  <br>Then you have your answer. | Children can represent their work with place value counters in a way that they understand.<br>They can draw the counters using colours to show different amounts or simply draw the circles in the different columns to show their thinking.<br>Bar models are used to explore missing numbers<br>  <br> | Start with multiplying by 1-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>Multiplication calculations should be shown alongside the formal column method when multiplying 2 digits by 1 digit.<br>*NB: This abstract method can be skipped and children can move onto multiplying in columns if they are confident in the concrete and pictorial approach to multiplying a 2-digit by a 1-digit number.* |

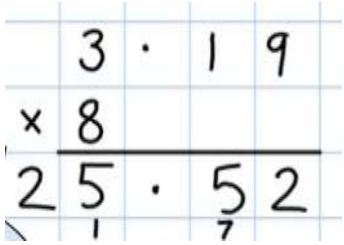
# YEAR 4 MULTIPLICATION

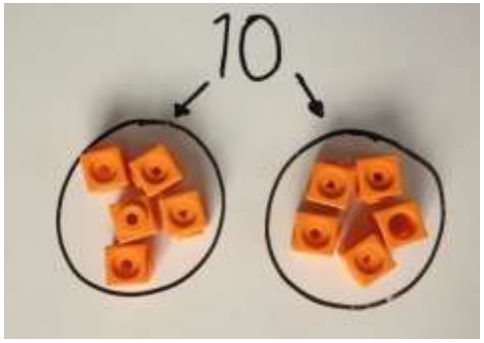
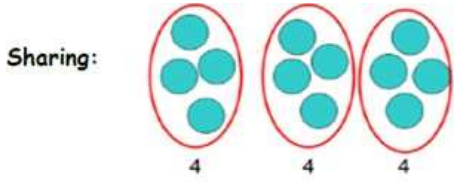
| Objective & Strategy | Concrete | Pictorial | Abstract |
|---|---|---|---|
| Grid method recap from year 3 for 2 digits x 1 digit<br><br>Move to multiplying 3-digit numbers by 1 digit. (year 4 expectation) | Use PV counters to show how we are finding groups of a number. We are multiplying by 4 so we need 4 rows<br>  <br><br>Fill each row with 126<br>  <br>Add up each column, starting with the ones making any exchanges needed | Children can represent their work with place value counters in a way that they understand.<br><br>They can draw the counters using colours to show different amounts or just use the circles in the different columns to show their thinking as shown below. | Start with multiplying by one-digit numbers and showing the clear addition alongside the grid.<br><br>\| × \| 30 \| 5 \|<br>\| --- \| --- \| --- \|<br>\| 7 \| 210 \| 35 \|<br><br>210 + 35 = 245 |
| Column multiplication | Children can continue to be supported by PV counters. At first, this should be done where there is no regrouping.<br>e.g. 321 x 2 = 642<br>  <br><br>It is important at this stage that they always multiply the ones first.<br>The corresponding long multiplication is modelled alongside. | \| × \| 300 \| 20 \| 7 \|<br>\| --- \| --- \| --- \| --- \|<br>\| 4 \| 1200 \| 80 \| 28 \|<br><br>The grid method may be used to show how this relates to a formal written method.<br>  <br>Bar modelling and number lines can support learners when solving problems with multiplication alongside the formal written methods. | 327<br>x 4<br>28<br>80<br>1200<br>1308<br><br>  <br>This may lead to a compact method. |

YEAR 5 - MULTIPLICATION

| Objective & Strategy | Concrete | Pictorial | Abstract |
|---|---|---|---|
| Column Multiplication for 3 and 4-digits x 1 digit. |  It is important at this stage that they always multiply the ones first.<br><br>Children can continue to be supported by PV counters. At first, this should be done where there is no regrouping.<br>e.g. 321 x 2 = 642 |  | 327<br>x 4<br>28<br>80<br>1200<br>1308<br><br>  This will lead to a compact method. |
| Column multiplication | Manipulatives may still be used with the corresponding long multiplication modelled alongside. |  <br><br>Continue to use bar modelling to support problem solving |  <br>18 x 3 on the first row<br><br>(8 x 3 =24, carrying the 2 for 20, then 1 x 3)<br><br>18 x 10 on the 2nd row. Show multiplying by 10 by putting zero in the ones column first. |

YEAR 5 - MULTIPLICATION

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

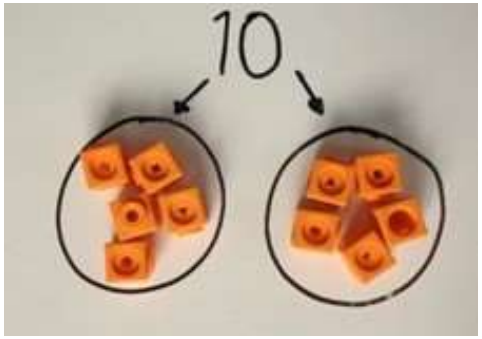
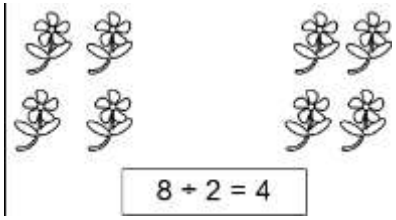
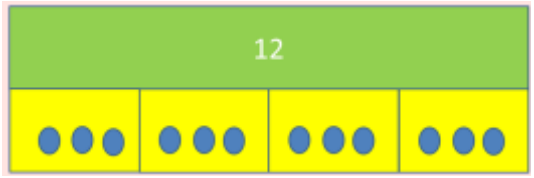
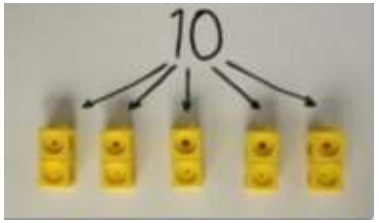
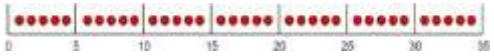
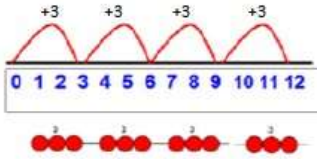
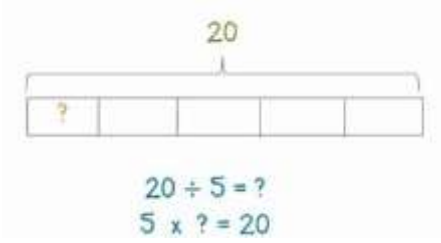
| Objective & Strategy | Concrete | Pictorial | Abstract |
|---|---|---|---|
| Division as sharing |     I have 10 cubes. Can you share them equally into 2 groups? | Children use pictures or shapes to share quantities.  8 shared between 2 is 4   | 12 shared between 3 is 4 |

YEAR 1

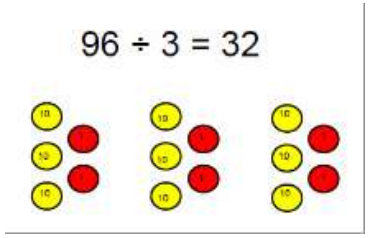
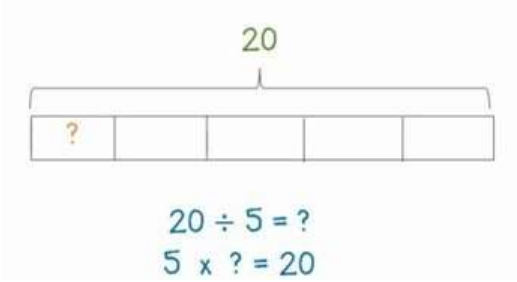
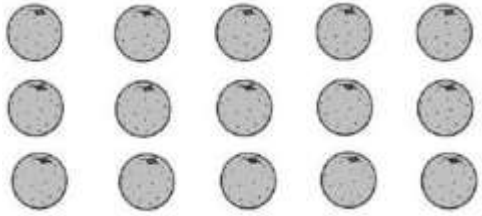
DIVISION ÷

YEAR 2

DIVISION

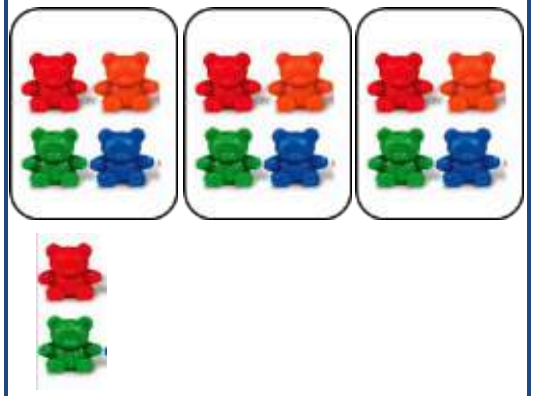
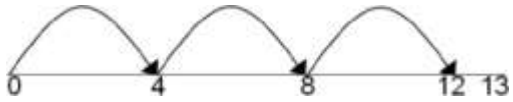
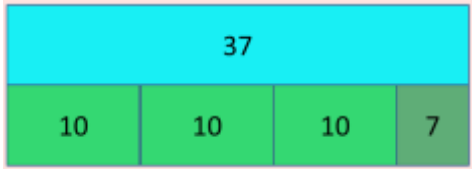
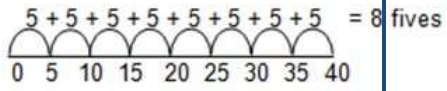
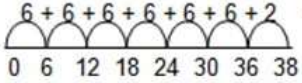
| Objective & Strategy | Concrete | Pictorial | Abstract |
|---|---|---|---|
| Division as sharing |  I have 10 cubes. Can you share them equally into 2 groups? | Children use pictures or shapes to share quantities.  Children use bar modelling to show and support understanding.  12 ÷ 4 = 3 | 12 ÷ 3 =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

YEAR 3 DIVISION

| Objective & Strategy | Concrete | Pictorial | Abstract |
|---|---|---|---|
| Division as grouping | Use cubes, counters, objects or PV counters to aid understanding.<br>  <br>24 divided into groups of 6 = 4<br>  | Continue to use bar modelling to aid solving division problems.<br>  | How many groups of 6 in 24?<br>24 ÷ 6 = 4 |
| Division with arrays |  <br>Link division to multiplication by creating an array and thinking about the number sentences (equations) that can be created.<br>e.g. 15 ÷ 3 = 5  5 x 3 = 15<br>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 (equations).<br>  | Find the inverse of multiplication and division sentences (equations) by creating eight linking equations (fact families).<br>7 x 4 = 28<br>4 x 7 = 28<br>28 ÷ 7 = 4<br>28 ÷ 4 = 7<br>28 = 7 x 4<br>28 = 4 x 7<br>4 = 28 ÷ 7<br>7 = 28 ÷ 4 |

YEAR 3

# DIVISION

| Objective & Strategy | Concrete | Pictorial | Abstract |
|---|---|---|---|
| Division with remainders. | 14 ÷ 3 =<br>Divide objects between groups and see how many are left over<br>  | Jump forward in equal jumps on a number line then see how many more you need to jump to find a remainder.<br>  <br>Draw dots and group them to divide an amount and clearly show a remainder.<br>  <br>Use bar models to show division with remainders.<br>  <br>Example without remainder:<br>40 ÷ 5<br>Ask "How many 5s in 40?"<br>  <br>Example with remainder:<br>38 ÷ 6<br>  <br>For larger numbers, when it becomes inefficient to count in single multiples, bigger jumps can be recorded using known facts. | Complete written divisions and show the remainder using r.<br>  |

| Objective & Strategy | Concrete | Pictorial | Abstract |
| --- | --- | --- | --- |

YEAR 4 -

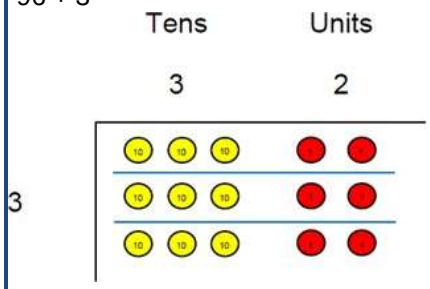
DIVISION

YEAR 4 - DIVISION

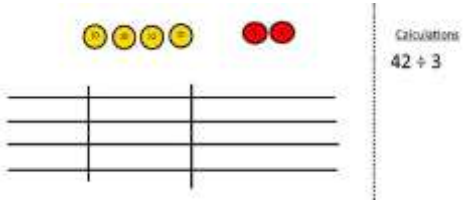
Divide at least 3-digit numbers by 1 digit.

Short Division

96 ÷ 3

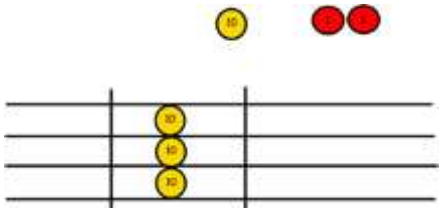



Use PV counters to divide using the bus stop method alongside

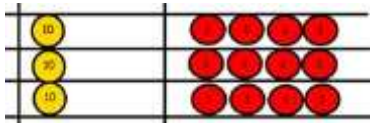



42 ÷ 3 =

Start with the biggest place value. We are sharing 40 into three groups. We can put 1 ten in each group and we have 1 ten left over.

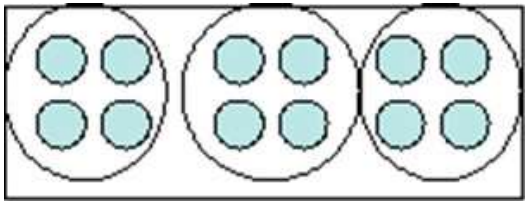


We exchange this ten for ten ones and then share the ones equally among the groups.



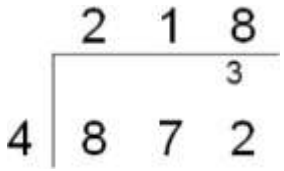
We look how many are in one group so the answer is 14.

Continue to use drawn diagrams with dots or circles to help divide numbers into equal groups.

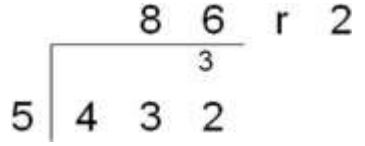


Encourage the move towards counting in multiples to divide more efficiently.

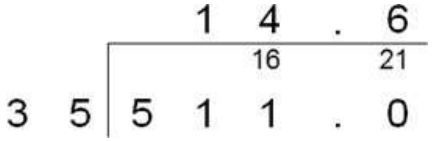
Begin with divisions that divide equally with no remainder.

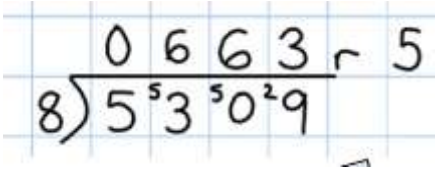



Move onto divisions with a remainder.




Finally move into decimal places to accurately divide the total.

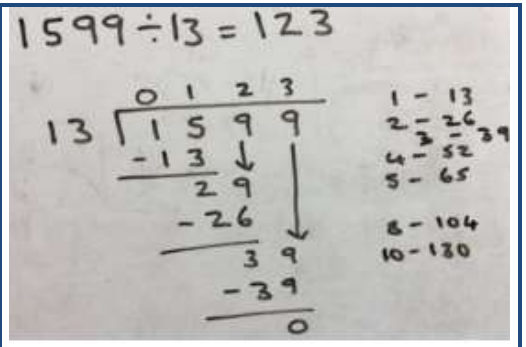
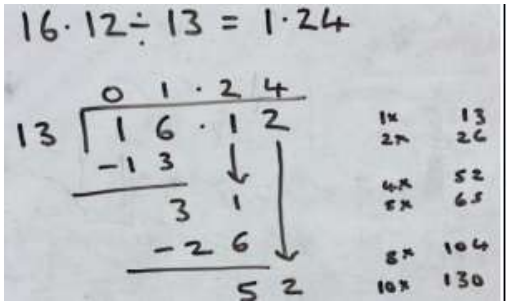
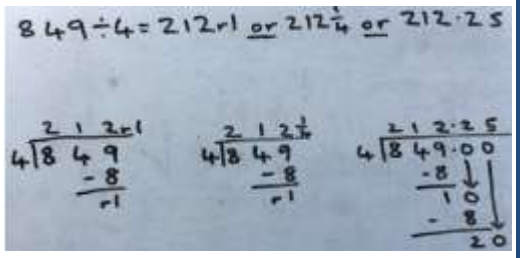
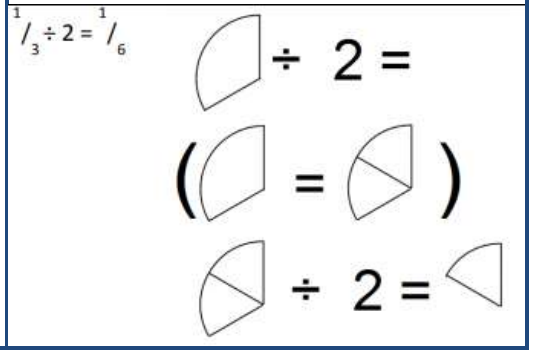



In years 5 and 6, when doing short division with remainders, division should have a real life, problem solving context where pupils consider the meaning of the reminder and how to express it. i.e. as a fraction, a decimal or as a rounded number or value, depending upon the context.

YEAR 6

# DIVISION

| | | | |
|---|---|---|---|
| Divide a 4-digit number by up to a two-digit number | | |     |
| Interpret remainders as whole numbers, fractions or decimals | | |   |
| Divide proper fractions by whole numbers | | |   |

# Vocabulary

**Year 1 Key Vocabulary:**

*Addition* – add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line

*Subtraction* – equal to, take, take away, less, minus, subtract, leaves, difference between, distance between, how many more, how many fewer/less than…?, most, least, count back, how many left?, how much less is ..?

*Multiplication* – groups of, lots of, array, altogether, count

*Division* – share, share equally, one each, two each…, group, groups, groups of, lots of, array

**Year 2 Key Vocabulary:**

*Addition* – add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, ones, partition, addition, column, tens boundary

*Subtraction* – equal to, take, take away, less, minus, subtract, leaves, difference between, distance between, how many more, how many fewer/less than…?, most, least, count back, how many left?, how much less is ..?, difference, count on, strategy, position, tens, ones

*Multiplication* – groups of, lots of, times, array, altogether, multiply, count, multiplied by, repeated addition, column, row, commutative, sets of, equal groups, times as big as, once, twice, three times...

*Division* – share, share equally, one each, two each…, group, groups, groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over

**Year 3 Key Vocabulary:**

*Addition* – add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, ones, partition, addition, column, tens boundary, hundreds boundary, increase, vertical, 'carry', expanded, compact

*Subtraction* – equal to, take, take away, less, minus, subtract, leaves, difference between, distance between, how many more, how many fewer/less than…?, most, least, count back, how many left?, how much less is ..?, difference, count on, strategy, position, tens, ones, exchange, decrease, hundreds, value, digit

*Multiplication* – groups of, lots of, array, altogether, count, times, multiply, multiplied by, repeated addition, column, row, commutative, sets of, equal groups, times, ___ times as big as, once, twice, three times…, partition, grid method, multiple, product, tens, ones, value

*Division* – share, share equally, one each, two each…, group, equal groups of, lots of, array, divide, divided by, divided into, division, \ grouping, number line, left, left over, inverse, short division , 'carry', remainder, multiple

**Year 4 Key Vocabulary:**

*Addition* – add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, ones, partition, addition, column, tens boundary, hundreds boundary, increase, vertical, 'carry', expanded, compact, thousands, hundreds, digits, inverse

*Subtraction* – equal to, take, take away, less, minus, subtract, leaves, difference between, distance between, how many more, how many fewer/less than…?, most, least, count back, how many left?, how much less is ..?, difference, count on, strategy, position, tens, ones, exchange, decrease, hundreds, value, digit. inverse

*Multiplication* – groups of, lots of, array, altogether, count, times, multiply, multiplied by, repeated addition, column, row, commutative, sets of, equal groups, times, ___ times as big as, once, twice, three times…, partition, grid method, total, multiple, product, sets of, inverse

*Division* – share, share equally, one each, two each…, group, equal groups of, lots of, array, divide, divided by, divided into, division, grouping , number line, left, left over, inverse, short division , 'carry', remainder, multiple, divisible by, factor

**Year 5 Key Vocabulary:**

*Addition* – add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, ones, partition,

addition, column, tens boundary, hundreds boundary, increase, vertical, 'carry', expanded, compact, thousands, hundreds, digits, inverse, decimal places, decimal point, tenths, hundredths, thousandths

*Subtraction* – equal to, take, take away, less, minus, subtract, leaves, difference between, distance between, how many more, how many fewer/less than…?, most, least, count back, how many left?, how much less is ..?, difference, count on, strategy, position, tens, ones, exchange, decrease, hundreds, value, digit. inverse, tenths, hundredths, decimal point, decimal

*Multiplication* – groups of, lots of, array, altogether, count, times, multiply, multiplied by, repeated addition, column, row, commutative, sets of, equal groups, times, ___ times as big as, once, twice, three times…, partition, grid method, total, multiple, product, sets of, inverse, square, factor, integer, decimal, short/long multiplication, 'carry'

*Division* – share, share equally, one each, two each…, group, equal groups of, lots of, array, divide, divided by, divided into, division, grouping , number line, left, left over, inverse, short division , 'carry', remainder, multiple, divisible by, factor, inverse, quotient, prime number, prime factors, composite
number (non – prime)

Vocabulary

**Year 6 Key Vocabulary:**

*Addition* – add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, ones, partition, addition, column, tens boundary, hundreds boundary, increase, vertical, 'carry', expanded, compact, thousands, hundreds, digits, inverse, decimal places, decimal point, tenths, hundredths, thousandths

*Subtraction* – equal to, take, take away, less, minus, subtract, leaves, difference between, distance between, how many more, how many fewer/less than…?, most, least, count back, how many left?, how much less is ..?, difference, count on, strategy, position, tens, ones, exchange, decrease, hundreds, value, digit, inverse, tenths, hundredths, decimal point, decimal

*Multiplication* – groups of, lots of, array, altogether, count, times, multiply, multiplied by, repeated addition, column, row, commutative, sets of, equal groups, times, ___ times as big as, once, twice, three times…, partition, grid method, total, multiple, product, sets of, inverse, square, factor, integer, decimal, short/long multiplication, 'carry', tenth, hundredths, decimal

*Division* – share, share equally, one each, two each…, group, equal groups of, lots of, array, divide, divided by, divided into, division, grouping , number line, left, left over, inverse, short division , 'carry', remainder, multiple, divisible by, factor, inverse, quotient, prime number, prime factors, composite number (non – prime), common factor

Vocabulary