# Sir Martin Frobisher Academy

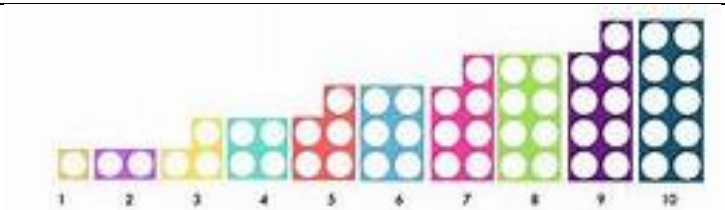
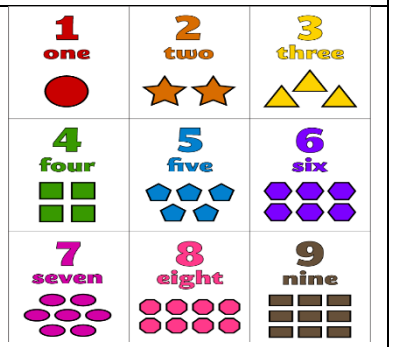
# Calculation Policy

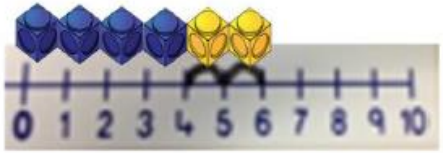
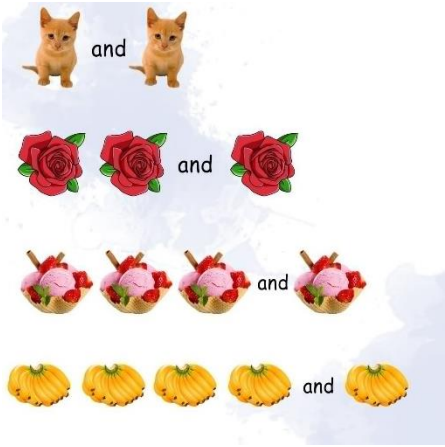
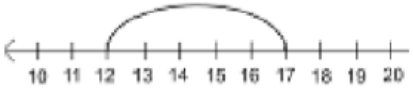
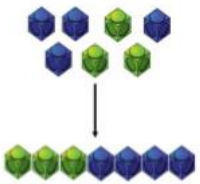
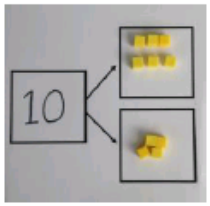
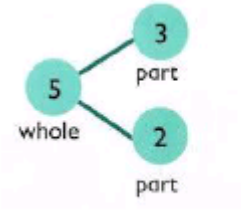
# Addition

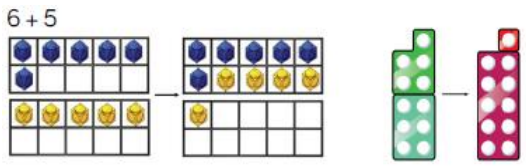
## Addition- EYFS

Early Learning Goals:

- ✓ Count reliably with numbers from 1 to 20, place them in order.
- ✓ Say which number is one more than a given number.
- ✓ Using quantities and objects, they add two single-digit numbers and count on to find the answer.

| Objective and strategy | Concrete | Pictorial |
|---|---|---|
| Count reliably with numbers from 1 to 20, place them in order. |  <br> <br>Use of various visual representations to count reliably, ordering them for size. | Use drawn representations to match the abstract number to the items.<br> <br>  <br>< Show items as different visual representations to familiarise children with the number. |

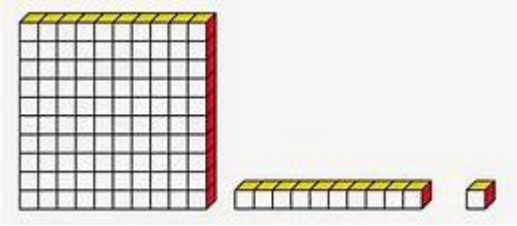
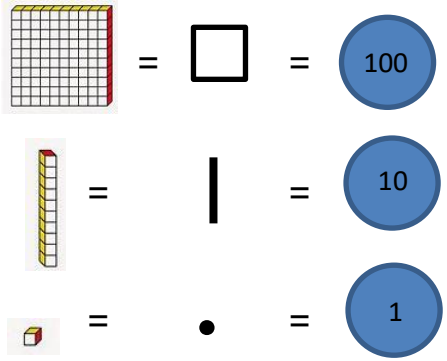
| | | |
|---|---|---|
| Say which number is one more than a given number. | Use concrete resources to add one to a given number. Teacher model the abstract version of this e.g. 7 + 1 = 8<br> <br>  <br><br>Start with the larger number and count on 1 to find the answer. |  <br><br>Use pictorial representations to support children's understanding of one more than. Gradually introduce children to the appropriate signs for + and =<br>  <br><br>Start at the larger number and count on in ones to find the answer. |
| Using quantities and objects, they add two single-digit numbers.<br><br>Combining 2 parts to make a whole | <br> <br>  <br>  <br><br>Use cubes to add two numbers together.<br>Use part part whole model<br><br>Use a variety of resources e.g. shells, teddy bears, cars. |  <br><br> <br>Use pictures to add two numbers together.<br><br>*n.b. you may need to show the "whole" pictorially at this point in a child's development too.* |

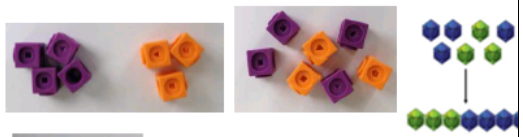
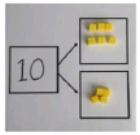
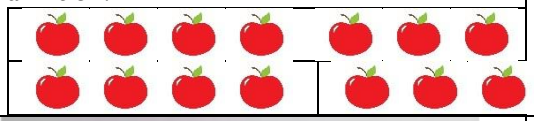
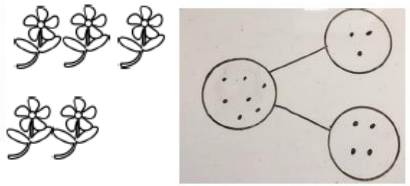
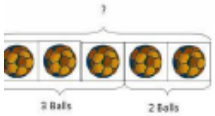
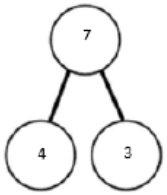
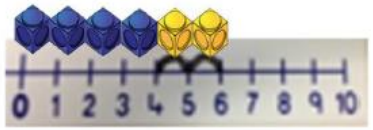
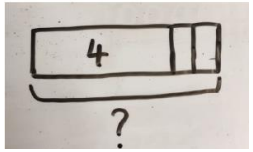
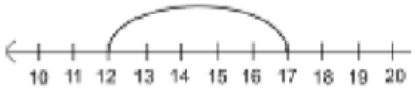
| | | |
|---|---|---|
| Regrouping to make 10 |  <br>Using a ten frames and counters/cubes or numicon. | This objective is only taught using concrete manipulatives unless pupils are ready. |

# Addition- Year 1

Year 1 statutory requirements :

- ✓ Count to and across 100, forwards beginning with 0 or 1, or from any given number.
- ✓ Given a number, identify one more.
- ✓ Read, write and interpret mathematical statements involving addition (+), and equals (=) signs.
- ✓ Represent and use number bonds and related subtraction facts within 20
- ✓ Add one-digit and two-digit numbers to 20, including zero.
- ✓ Solve one-step problems that involve addition using concrete objects and pictorial representations, and missing number problems.

| Objective and strategy | Concrete | Pictorial | Abstract |
|---|---|---|---|
| Count to and across 100<br><br>Understand the relationship between 1, 10 and 100 | <u>Introduction of dienes</u><br>  <br>Children to spend time exploring the relationship between 1, 10 and 100 using physical resources, matching the 1s to the 10s. How many 1s fit in? | Children to familiarise themselves with the pictorial representation of<br>  | Match the representation to the abstract number<br> = 100<br> = 10<br> = 1 |

| | | | |
|---|---|---|---|
| | (10- they are the same). Counting up to 100 and counting back from 100.<br><br>Exploring with combinations of blocks to make a certain number. | | |
| Combining 2 parts to make a whole<br><br>Use a variety of resources e.g. shells, teddy bears, cars. Part-whole models |  <br>  <br>Use cubes to add two numbers together.<br>Use part part whole model<br><br>Use a variety of resources e.g. shells, teddy bears, cars.<br><br>Use of the bar model to represent addition.<br>  |  <br>  <br>Use pictures to add two numbers together as a group or in a bar. | 4 + 3 = 7<br>Four is a part, 3 is a part and the whole is seven.<br>  <br><br>Use the part-part whole diagram to move into the abstract.<br> <br><br>Use of bar model with abstract number. |
| Counting on | <br>Start with the larger number and count on 1 by 1 to find the answer<br>  <br><br>Use to count on one more. |  <br><br>A bar model encouraging pupils to count on, rather than count all.<br>  <br><br>Start at the larger number and count on in ones or in one jump to find the answer. | <br><br>The abstract number line:<br>What is 2 more than 4?<br>What is the sum of 4 and 2?<br>What is the total of 4 and 2?<br>4+2=Place the larger number in your head and count on the smaller number |

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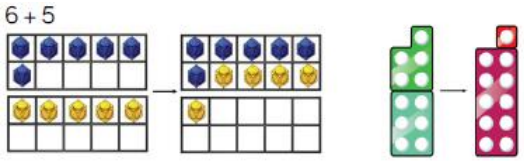
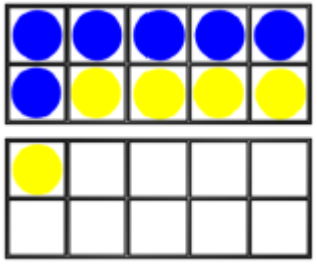
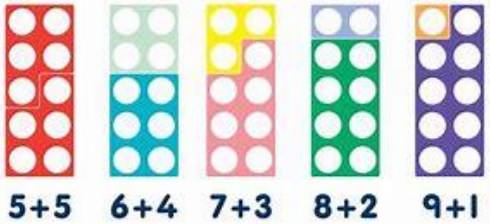
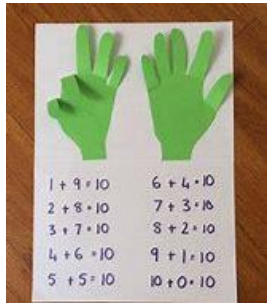
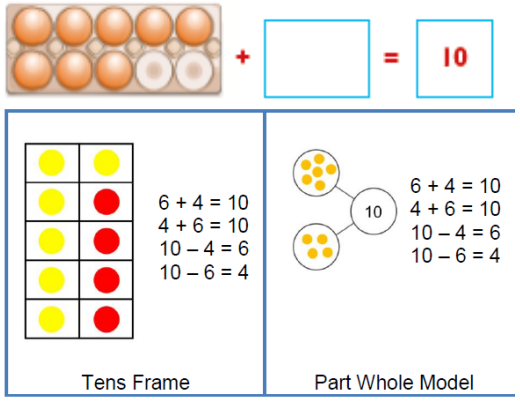
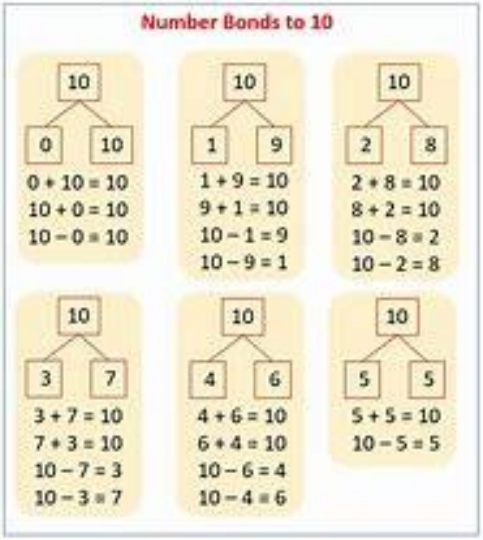
|---|---|---|---|
| Regrouping to make 10 | Using a ten frames and counters/cubes or numicon.<br>  <br> |  <br>Children to draw the tens frames and counters/cubes | $6 + \square = 11$<br>$6 + 5 = 5 + \square$<br>$6 + 5 = \square + 4$<br>$11 = 6 + \square$<br>Children to develop an understanding of equality. |
| Memorise and reason with number bonds to 10 and 20 in several forms. | Use numicon to demonstrate number bonds:<br>  <br><br>  <br>Use fingers to support learning of number bonds |  <br><br>Use pictorial representations to support learning of number bonds. | Develop children's rapid recall of number bonds by displaying with abstract numbers<br>  <br> |

# Addition- Year 2

Year 2 statutory requirements :

- ✓ Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts to 100.
- ✓ Add numbers using concrete objects, pictorial representations, and mentally, including:

a two-digit number and ones
a two-digit number and tens
two two-digit numbers
adding three one-digit numbers.

- ✓ Solve problems with addition including those involving numbers, quantities and measures.

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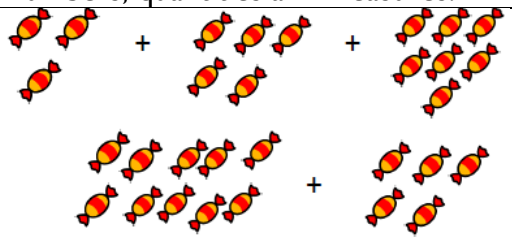
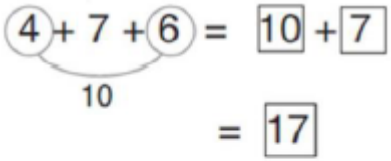
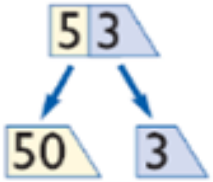
|---|---|---|---|
| Adding 3 single digits | 4 + 7 + 6= 17<br>Put 4 and 6 together to make 10. Add on 7.<br> <br>Use physical resources e.g. numicon or and the part whole model to support understanding. |  <br>Add together three groups of objects. Draw a picture to recombine the groups to make 10. |  <br>Combine the two numbers that make 10 and then add on the remainder. |
| Partition two 2-digit numbers using a variety of models and images. | | |  |

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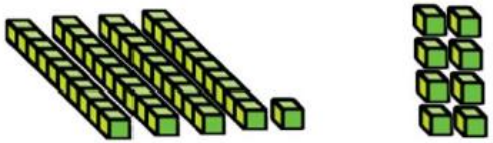
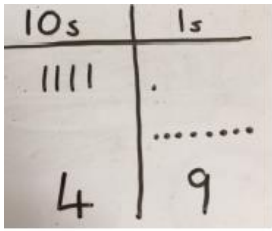
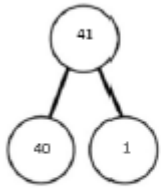
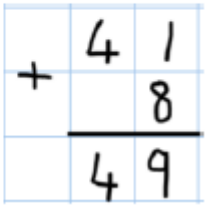
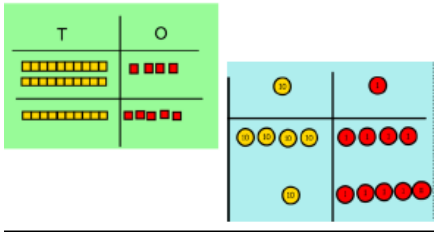
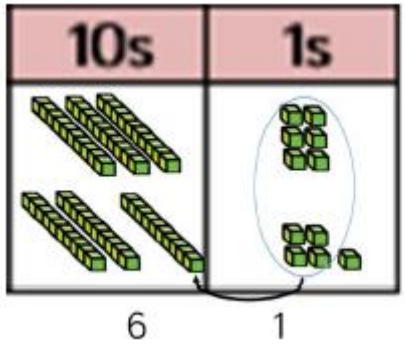
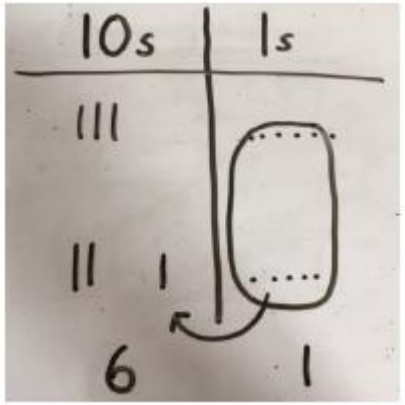
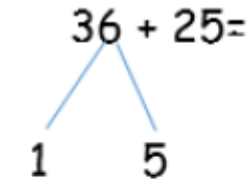
|---|---|---|---|
| Use of dienes to combine two numbers<br><br>Two digit + 1 digit | 41 + 8<br>  |  <br><br>Children to represent the dienes with lines for tens and dots for ones. | 41 + 8<br>  <br><br>1 + 8 = 9<br>40 + 9 = 49<br>  <br> |
| Use of dienes to combine two numbers<br><br>Two digit + 2 digit |  <br><br>Add together the ones and then add the tens. | Children represent the dienes in a place value chart with lines and dots as before.<br><br>Use dienes blocks before moving onto place value counters. | 21 + 42 =<br><br>21<br>+ 42<br><br>21 + 42<br>20 1 40 2<br><br>20+40=60<br>2+1=3<br>60+3=63 |
| Two digit and 2 digit with regrouping | 36 + 25 =<br>  <br> | Children to represent the dienes in a place value chart. | Partitioning:<br><br>36 + 25 = 30 + 20 = 50<br>6 + 5 = 11<br>50 + 11 = 66<br><br>or<br><br>Looking for ways to make 10: |

| | | | |
|---|---|---|---|
| | Discussion must be in depth at this point around why we change 10 1s for 1 ten. Discuss that they are the same (compare to £1 coins to a £10 coin.<br><br>Address misconceptions at this stage e.g. if children write 6 under the tens column and 11 under the 1s column and write 611. Why can't this be correct? |  |  <br>30 + 20 = 50<br>5 + 5 = 10<br>50 + 10 + 1 = 61<br><br>Formal method:<br>36<br>+25<br>61<br>1<br><br>**367 + 185 = 552**<br><br>**300 + 60 + 7**<br>**100 + 80 + 5**<br>**500 + 50 + 2**<br>**100 10**<br><br>(Year 3 example) |

## Addition Year 3-6

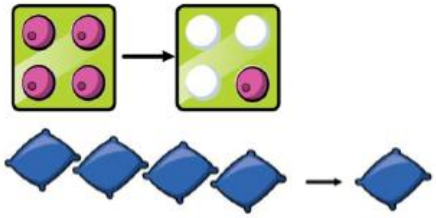
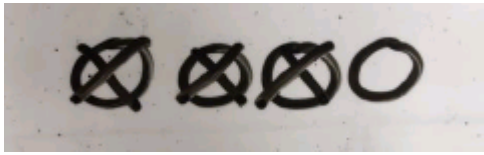
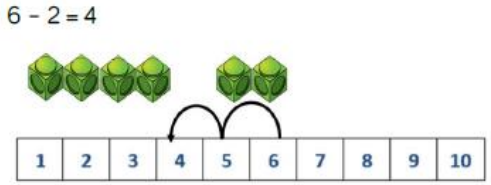
The models detailed above for Year 1-2 should be continued across Year 3-6 until a child has a clear understanding of addition. The key difference when teaching addition across Year 3-6 is the number of digits being added and the ability to reason. There is no year group expectation for children to be writing in an abstract format. If concrete and pictorial resources are required, children should be encouraged to use them (including Year 3-6). Concrete and pictorial resources support the development of children's mathematical reasoning and therefore should be used alongside abstract methods throughout a child's primary education.

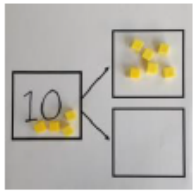
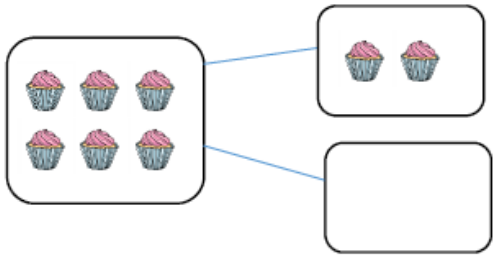
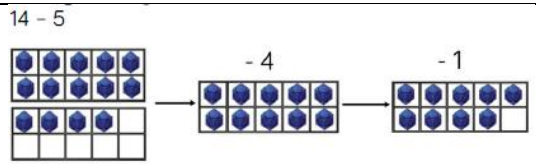
# Subtraction

## Subtraction - EYFS

Early learning goals:

- ✓ Say which number is one less than a given number.
- ✓ Using quantities and objects, they subtract two single-digit numbers and count back to find the answer.

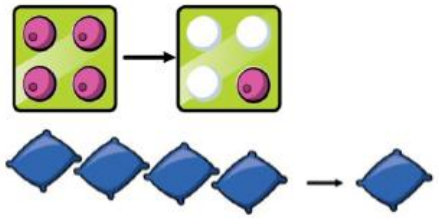
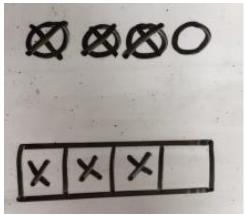
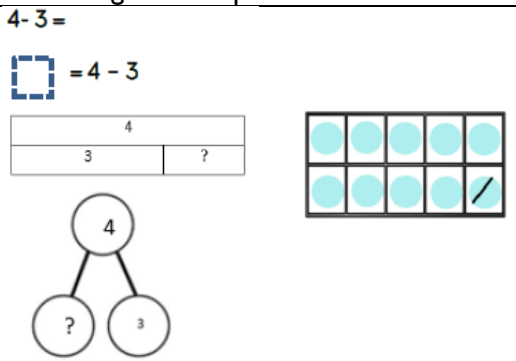
| | Concrete | Pictorial |
|---|---|---|
| Taking away ones |  <br>Physically taking away and away and removing objects from a whole (ten frames, Numicon, cubes and other items should be used) |  <br>Children draw the concrete resources they are using and cross out the correct amount. |
| Counting back | Using number lines or number tracks children, children start with 6 and count back 2.<br><br>*n.b. It is important that children see the arrow going backwards, do not write a number line the opposite way around when subtracting.*<br><br>  | Children to represent what they see pictorially e.g.<br><br> |

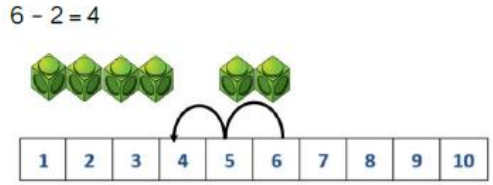
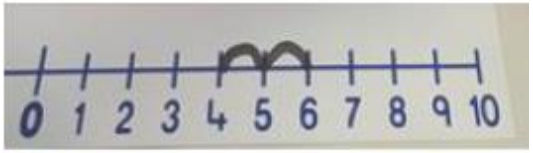
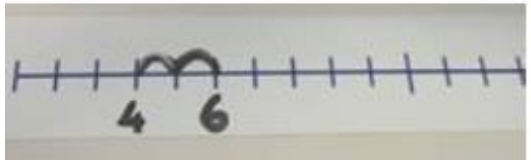
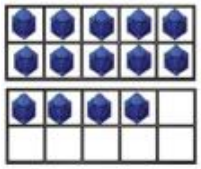
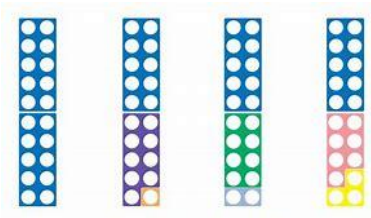
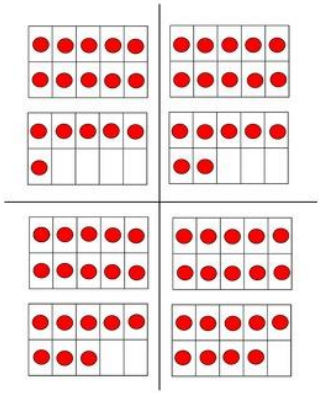
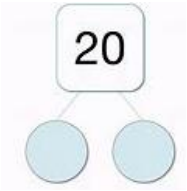
| | | |
|---|---|---|
| Part whole model |  Link to addition- use the part whole model to help explain the inverse between addition and subtraction.<br>If 10 is the whole and 6 is one of the parts. What is the other part?<br>10 - 6 = | Use a pictorial representation of objects to show the part whole model.<br>  |
| Making 10 |  <br>Using a ten frame | This objective is only taught using concrete manipulatives unless pupils are ready. |

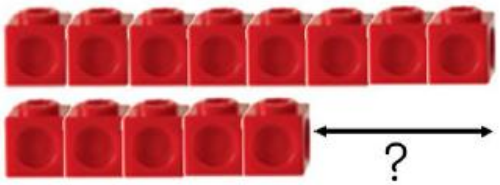
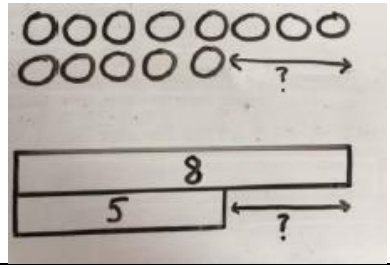
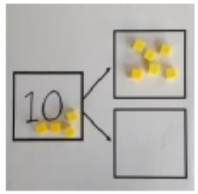
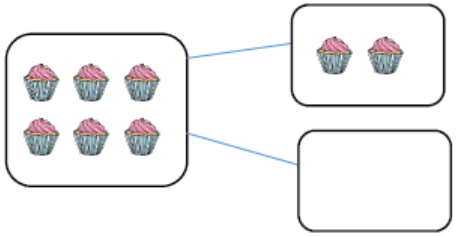
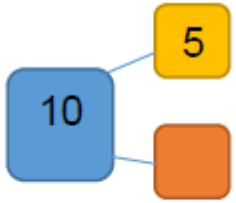
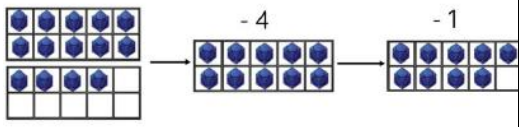
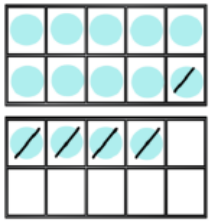
## Subtraction - Year 1

Year 1 statutory requirements:

- ✓ Say which number is one less than a given number.
- ✓ Represent and use number bonds and related subtraction facts within 20.
- ✓ Read, write and interpret mathematical statements involving subtraction (-) and equals (=) signs.
- ✓ Subtract one-digit and two-digit numbers to 20, including zero.
- ✓ Solve one-step problems that involve subtraction using concrete objects and pictorial representations, and missing number problems.

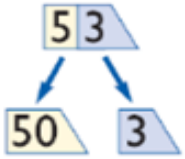
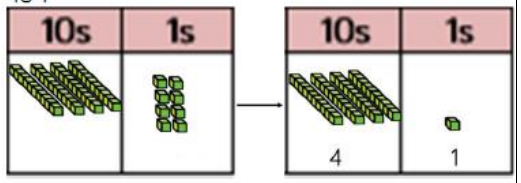
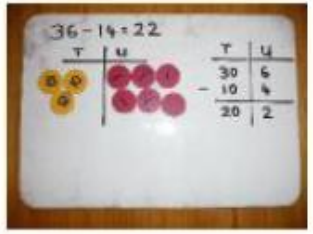
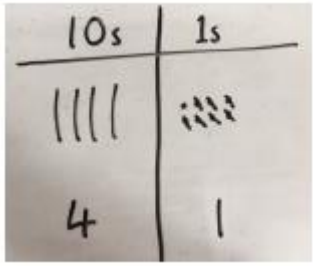
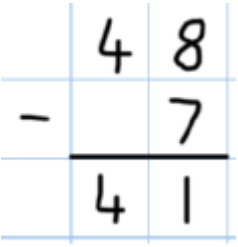
| | | | |
|---|---|---|---|
| Taking away ones |  <br>Physically taking away and away and removing objects from a whole (ten frames, Numicon, cubes and other items should be used) | Children draw the concrete resources they are using and cross out the correct amount. The bar model can also be used.<br>  |  |

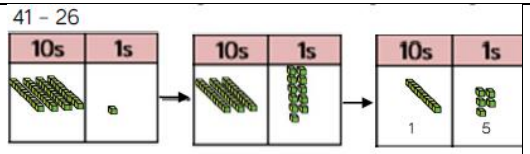
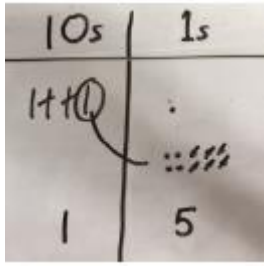
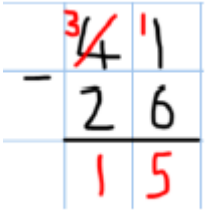
| | | | |
|---|---|---|---|
| Counting back | Using number lines or number tracks children, children start with 6 and count back 2.<br>  | Children to represent what they see pictorially e.g.<br> | Children to represent the calculation on a number line or number track and show the jumps. Encourage children to use an empty number line.<br>  <br>  |
| Represent and use number bonds and related subtraction facts within 20. | Use two tens frames to support/ find the missing number<br>  <br>  <br>Use of numicon, layered on top of each other to find the difference. |  <br>Use pictorial representations to support learning of number bonds. | Bar model to support understanding of number bonds<br> <br>Part whole model can also be used<br>  |

| | | | |
|---|---|---|---|
| Find the difference<br>Using cubes, Numicon and other objects | Calculate the difference between 8 and 5.<br>  <br> | Children to draw the cubes/concrete objects that they have used.<br>Use the bar model to illustrate what they need to calculate.<br>  <br> | Find the difference between 8 and 5.<br>8 – 5, the difference is ?<br><br>Children to explore why 9-6=8-5=7-4 have the same difference.<br><br>Hannah has 23 sandwiches.<br>Helen has 15 sandwiches.<br>Find the difference between the number of sandwiches. |
| Part whole model |  <br><br>Link to addition- use the part whole model to help explain the inverse between addition and subtraction.<br>If 10 is the whole and 6 is one of the parts. What is the other part?<br>10 - 6 = | Use a pictorial representation of objects to show the part whole model.<br>  |  <br><br>Move to using numbers within the part whole model. |
| Making 10<br>Using a ten frame | 14 – 5<br>  <br> | Children to present the ten frame pictorially and discuss what they did to make 10.<br>  | Children to show how thay can make 10 by partitioning.<br>14 - 5 = 9<br>4 1<br>14 – 4 = 10<br>10 – 1 = 9 |

# Subtraction – Year 2

- ✓ Year 2 statutory requirements:
- ✓ Recall and use subtraction facts to 20 fluently, and derive and use related facts to 100.
- ✓ Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.
- ✓ Subtract numbers using concrete objects, pictorial representations, and mentally, including:
  - a two-digit number and ones
  - a two-digit number and tens
  - two two-digit numbers
  - adding three one-digit numbers.

| | | | |
|---|---|---|---|
| Partition two 2-digit numbers using a variety of models and images. | | |  |
| Use of dienes<br><br>2 digit subtract 1 digit and 2 digit subtract 2 digit without an exchange. | 48-7<br>  <br>  <br>Show how you partition numbers to subtract.<br>Make the larger number first. | Children to represent the dienes pictorially.<br>  | Column method or children could count count back 7.<br>  <br> |

| | | | |
|---|---|---|---|
| Use of dienes With an exchange |  | Represent the dienes pictorially, remembering to show the exchange.  | Formal column method. Children must understand what has happened when they have crossed out digits.  |

## Subtraction Year 3-6

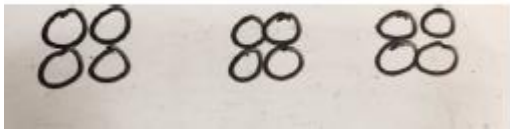
The models detailed above for Year 1-2 should be continued across Year 3-6 until a child has a clear understanding of subtraction. The key difference when teaching subtraction across Year 3-6 is the number of digits being subtracted and the ability to reason. There is no year group expectation for children to be writing in an abstract format. If concrete and pictorial resources are required, children should be encouraged to use them (including Year 3-6). Concrete and pictorial resources support the development of children's mathematical reasoning and therefore should be used alongside abstract methods throughout a child's primary education.

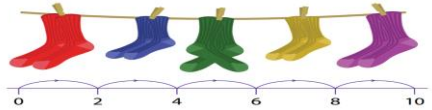
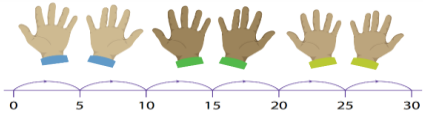
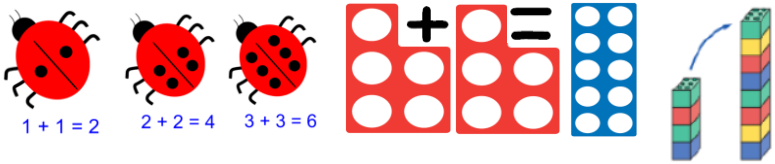
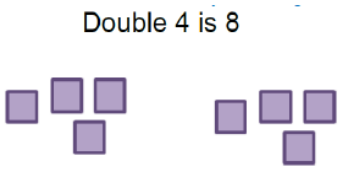
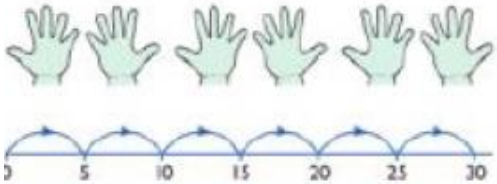
# Multiplication

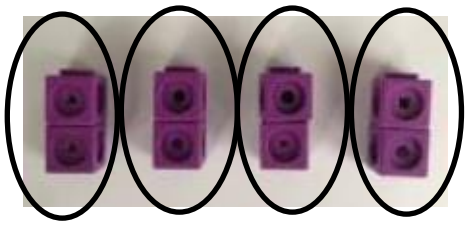
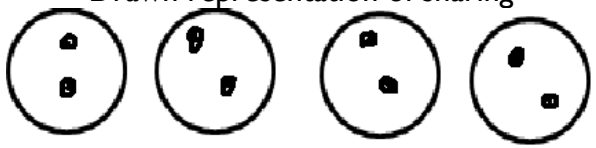
## Multiplication - EYFS

Early learning goal statutory requirement:

- ✓ They solve problems, including doubling, halving and sharing.

| | Concrete | Pictorial |
|---|---|---|
| Recognising and making equal groups.<br><br>Only in 2's, 5's and 10's. | There are 4 equal groups with 2 in each group.<br>2,4,6,8<br>There are 8 altogether |  <br><br>Children to represent the practical resources in a picture. |

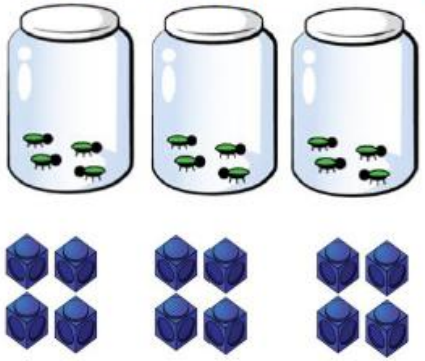
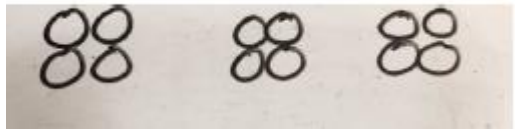
| | | |
|---|---|---|
| | <br>t  <br>Use of practical songs count in 2s, 5s and 10s<br>  | Counting in 2's, 5's and 10's. |
| Doubling | Use practical activites to show how to double a number.<br>  | Draw pictures to show how to double a number.<br>  |
| Counting in multiples.<br>Use cubes, Numicon and other objects in the classroom. Only in 2's, 5's and 10's. | Count in multiples supported by concrete objects in equal groups<br> <br> | Use a number line or pictures to continue support when counting in multiples of 2, 5 and 10.<br>  |

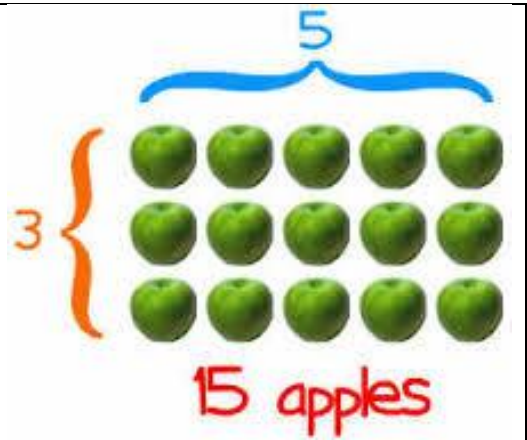
| | | |
|---|---|---|
| Sharing | Physically sharing out resources equally. Making the connection that sharing means EQUAL.  | Drawn representation of sharing  |

## Multiplication -Year 1

Year 1statutory requirement:

- ✓ Solve one-step problems involving multiplication by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.

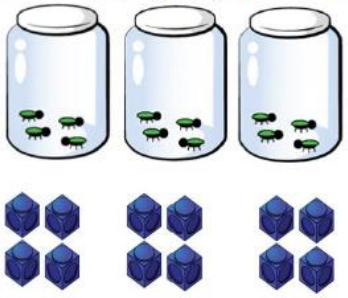
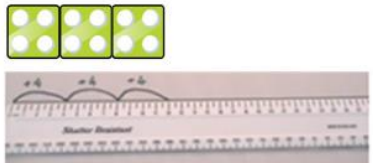
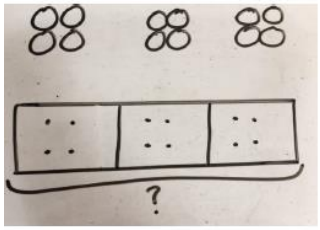
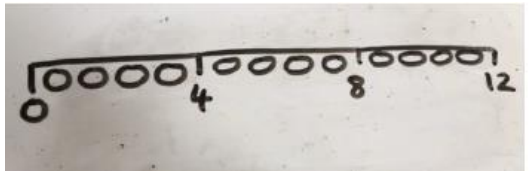
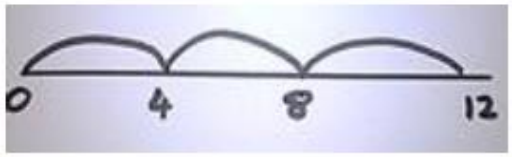
| | | | |
|---|---|---|---|
| Recognising and making equal groups. | There are 3 equal groups, with 4 in each group.  |  Children to represent the practical resources in a picture. | 4+4+4=12 |

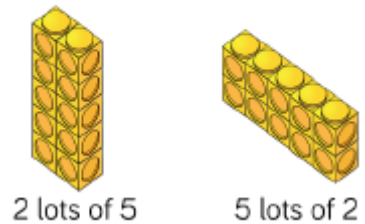
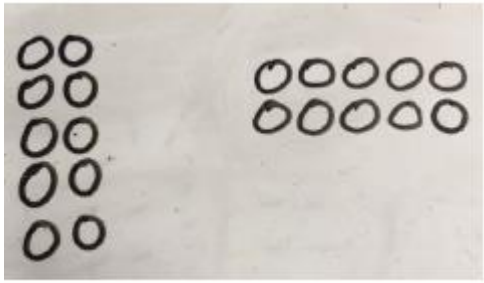
| | | | |
|---|---|---|---|
| Understand multiplication as repeated addition and see this in different representations such as arrays. |  | | |
| Doubling | Use practical activites to show how to double a number.<br> | Draw pictures to show how to double a number.<br>Double 4 is 8<br> | Learn double facts and record as a number sentence. |
| Counting in multiples.<br>Use cubes, Numicon and other objects in the classroom. | <br> <br>Count in multiples supported by concrete objects in equal groups. | Use a number line or pictures to continue support when counting in multiples. | Count multiples of a number aloud.<br><br>Write sequences with multiples of numbers.<br><br>2,4,6,8.10<br>5,10,15,20,25 |

# Multiplication – Year 2

Year 2 statutory requirement:

- ✓ Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.
- ✓ Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs.
- ✓ Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.
- ✓ Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

| | | | |
|---|---|---|---|
| Repeated grouping/ repeated addition | 3 × 4<br>4 + 4 + 4<br>There are 3 equal groups, with 4 in each group.<br>  <br>Number lines to show repeated groups<br>3 × 4<br>  |  <br>Children represent the practical resources in a picture and use a bar model.<br>Represent this pictorially alongside a numberline.<br>  <br> | 3x4=12<br>4+4+4=12<br>Abstract number line showing 3 groups of 4<br>3 × 4 = 12<br>  <br> |

| | | | |
|---|---|---|---|
| Arrays showing commutative multiplication | $2 \times 5 = 5 \times 2$<br>  <br><br> |  <br>Children to represent the arrays pictorially. | Children to be able to use an array to write a range of calculations e.g.<br>10=2x5<br>5x2=10<br>2+2+2+2+2=10<br>10=5+5 |

## Multiplication- Year 3

Year 3 statutory requirements:

- ✓ Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.
- ✓ Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.
- ✓ Solve problems, including missing number problems, involving multiplication including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.

| | | | |
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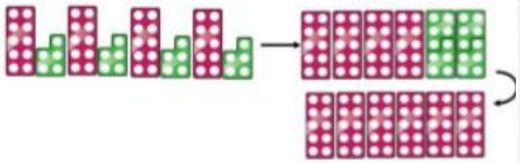
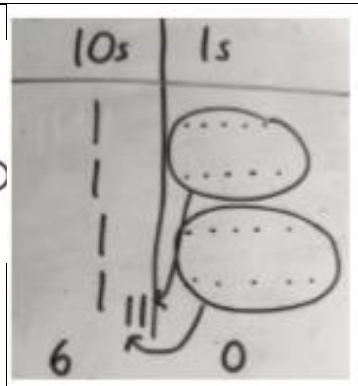
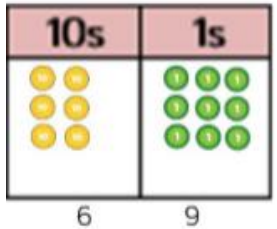
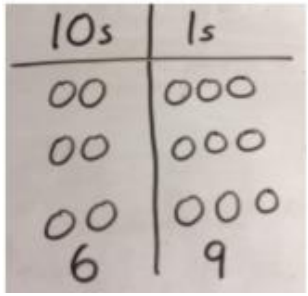
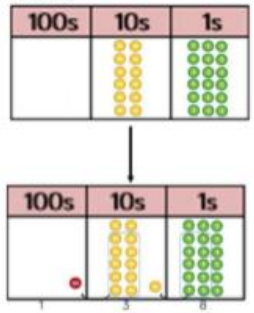
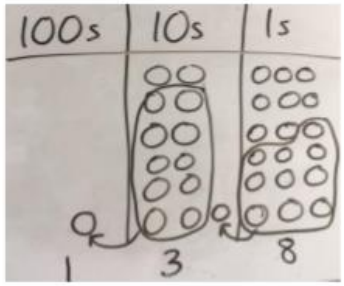
| Partition to multiply using Numicon, base 10 or Cuisenaire rods. | 4 × 15<br>  |  | Concrete resources are represented pictorially. |
| Two-digit numbers times one-digit numbers | **Formal column method** with place value counters (base 10 can also be used.) 3 × 23<br>  | Children to represent the counters pictorially.<br>  | Children to record what it is they are doing to show understanding.<br>3 × 23<br>20 3<br>3 × 20 = 60<br>3 × 3 = 9<br>60 + 9 = 69<br>23<br>× 3<br>69 |

| Multiplication- Year 4 |
|---|
| Year 4 statutory requirement:<br>✓ Recall multiplication and division facts for multiplication tables up to 12 × 12<br>✓ Use place value, known and derived facts to multiply and divide mentally, including: multiply two-digit and three-digit numbers by a one-digit number using formal written layout.<br>✓ Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects. |

| | | | |
|---|---|---|---|
| Multiply two-digit and three-digit numbers by a one-digit number using formal written layout. | **Formal column method** with place value counters.<br>6 x 23<br>  | Children to represent the counters/base 10, pictorially e.g. the image below.<br>  | Formal written method<br>6 x 23 =<br>23<br>× 6<br>138<br>1 1 |

# Multiplication Year 5/6

Year 5 statutory requirements:

- ✓ Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers.
- ✓ Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000

Year 6 statutory requirements:

- ✓ Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.
- ✓ Multiply one-digit numbers with up to two decimal places by whole numbers.

| | | |
|---|---|---|
| Up to 4 digits by a one- or two-digit number using a formal written method | n/a | <br>Answer: 3224<br>When children start to multiply 3d × 3d and 4d × 2d etc., they should be confident with the abstract:<br>To get 744 children have solved 6 × 124. To get 2480 they have solved 20 × 124.<br><br>**x** \| **600** \| **40** \| **3**<br>**50** \| 30,000 \| 2,000 \| 150<br>**4** \| 2,400 \| 160 \| 12<br><br>Grid method can be used as a formal written method. |

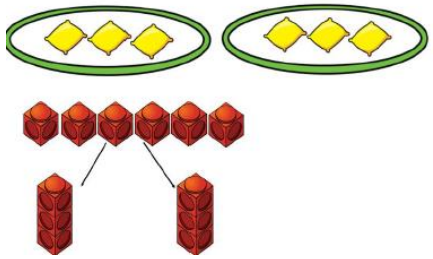
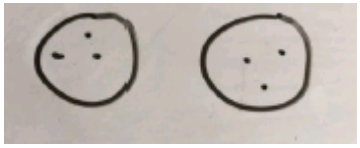
| | | | |
|---|---|---|---|
| Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 | | **Multiplying and Dividing by 10, 100 and 1000**<br><br>10 000 \| 1000 \| 100 \| 10 \| 1 ● $\frac{1}{10}$ \| $\frac{1}{100}$ \| $\frac{1}{1000}$<br>● <br><br>**Multiplying**<br>X 10 digits move LEFT **1** space<br>X 100 digits move LEFT **2** spaces<br>X 1000 digits move LEFT **3** spaces<br>←<br><br>**Dividing**<br>÷ 10 digits move RIGHT **1** space<br>÷ 100 digits move RIGHT **2** spaces<br>÷ 1000 digits move RIGHT **3** spaces<br>→ | We must discuss with children why we are moving the digits in a certain direction (because we are making the number 10 times bigger/smaller when we do this) We do not teach tricks around multiplying and dividing 10, 100, 1000. |

# Division

## Division- EYFS

Early learning goal statutory requirement:

- ✓ They solve problems, including halving and sharing.

| | Concrete | Pictorial |
|---|---|---|
| Sharing objects into groups. |  <br>Sharing using a range of objects. |  <br>Represent the sharing pictorially. |

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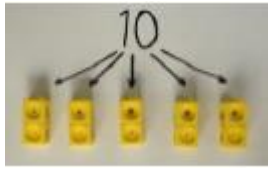
| Division as grouping | Divide quantities into equal groups. Use cubes, counters and other objects.<br> <br>  <br> | This objective is only taught using concrete manipulatives unless pupils are ready. |

## Division- Year 1

Year 1 statutory requirement:

- ✓ solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.

| | | | |
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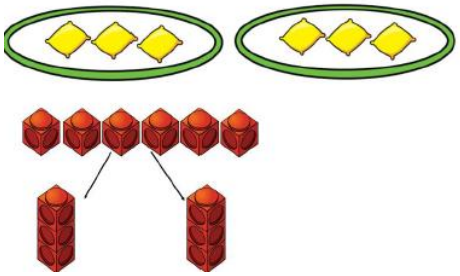
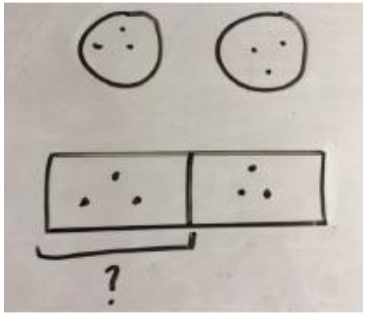
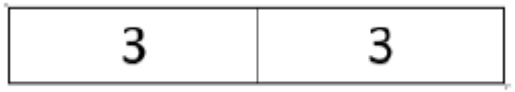
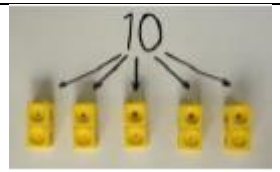
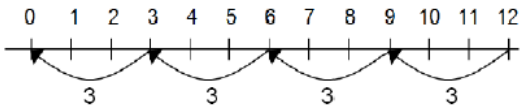
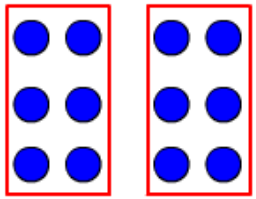
| Sharing objects into groups. |  <br>Sharing using a range of objects |  <br><br>Represent the sharing pictorially. |  <br> |

| | | | |
|---|---|---|---|
| Division as grouping |  <br>Divide quantities into equal groups. Use cubes, counters and other objects.<br> <br>12 ÷ 2<br> <br>12 ÷ 3<br> <br>12 ÷ 4 |  <br>Use a number line to show jumps in groups.<br><br>12 ÷ 2 = 6<br>12 shared into 2 groups<br>  | I have 12 groups and I put them into groups of 3. How many groups? |

## Division-Year 2

Year 2 statutory requirement:

- ✓ Recall and use division facts for 2, 5 and 10 multiplication tables.
- ✓ Calculate mathematical statements for multiplication and division within the multiplication tables and write then using the multiplication (x), division (÷) and equals (=) signs.
- ✓ Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.
- ✓ ***Find 1/3; ¼***
- ✓ ***2/4; ¾ of a length, shape, set of objects or quantity***

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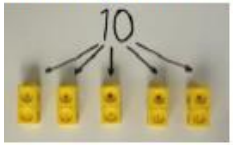
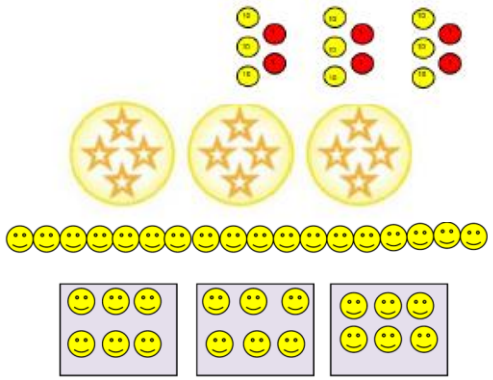
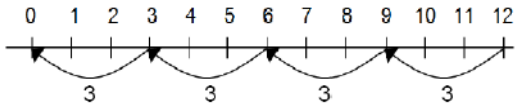
| Division as grouping | Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding.<br>  <br><br> <br><br>96 ÷ 3 = 32<br>  <br>18 smiley faces shared between 3. | Use a number line to show jumps in groups.<br>  <br><br>Think of the bar as a whole. Split it into the number of groups you are dividing by and work out how many would be in each group.<br> <br><br>20÷5=?<br>5x?=20 | 28÷7=4<br><br>Divide 28 into 7 equal groups. How many are in each group? |
| Division linked to arrays | <br>Link division to multiplication by creating an array and | Draw an array and use it to make multiplication and division nymber sentences. | Find the inverse of multiplication and division sentences by creating 4 linking number sentences.<br>2x5=10<br>5x2=10<br>10÷5=2<br>10÷2=5 |

| | | | |
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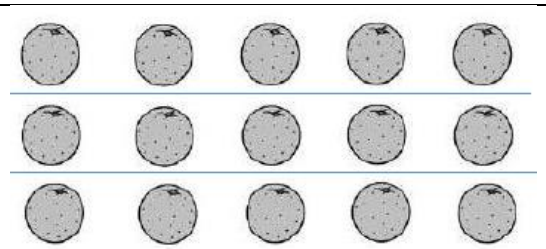
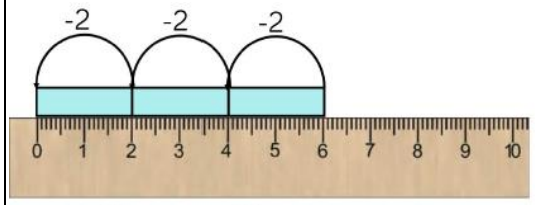
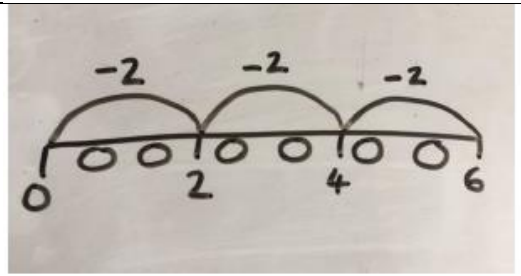
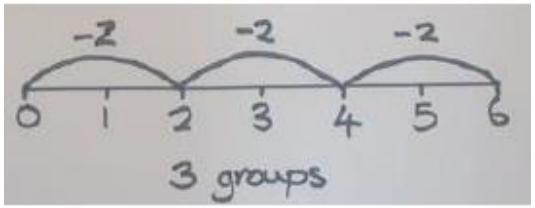
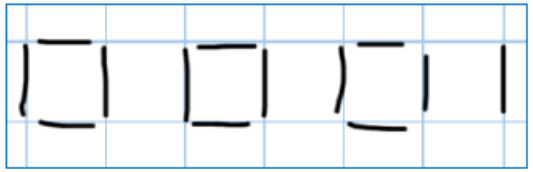
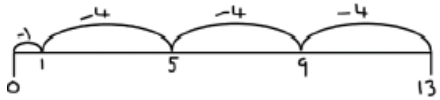
| | thinking about the number sentences that can be created.<br>E.g. 15÷3=5<br>15÷5=3<br>5x3=15<br>3x5=15 |  | |
| Repeated subtraction |  <br>3 groups of 2<br><br>6÷2=3 |  <br>Children to represent repeated subtraction pictorially | Abstract number line to represent the equal groups that have been subtracted.<br>  |
| Division with a remainder<br>2 digit ÷ 1 digit | 13÷4=<br>Use of lollipop sticks to form wholes- squares are made because we are dividing by 4.<br> <br>There are 3 whole squares, with 1 left over. | Children to represent the lollipop sticks pictorially.<br>  | 13÷4=3 remainder 1<br>Children should be encouraged to use their timestable facts and can also represent this on a numberline.<br>  |

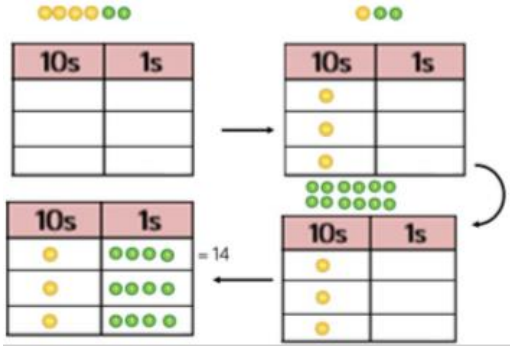
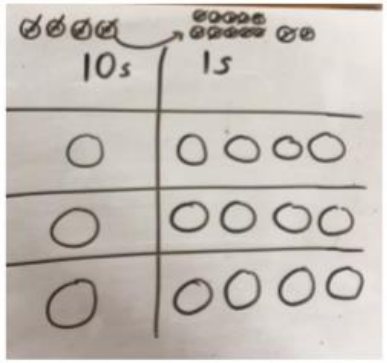
## Division- Year 3&4

Year 3 statutory requirement:

- ✓ Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables

- ✓ Write and calculate mathematical statements for division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods
- ✓ Solve problems, including missing number problems, involving division including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.

Year 4 statutory requirement: Note - there isn't a statutory objective for division. However, Y4 statutory multiplication objectives are to (1) recall multiplication and division facts for multiplication tables up to 12 × 12 and (2) multiply two-digit and three-digit numbers by a one-digit number using formal written layout so we will build on the connections between multiplication and division.

| | | | |
|---|---|---|---|
| Two-digit numbers times one-digit numbers | Sharing using place value counters.<br>42 ÷ 3 = 14<br>  <br> | Children to represent the place value counters pictorially.<br>  <br> | Children to be able to make sense of the place value counters and write calculations to show the process.<br><br>42 ÷ 3<br>42 = 30 + 12<br>30 ÷ 3 = 10<br>12 ÷ 3 = 4<br>10 + 4 = 14<br><br>3 2 / 3 \| 9 6<br><br>1 8 / 4 \| 7 $^{3}$2 |

## Division – Year 5

Year 5 statutory requirement:

- ✓ divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.

| | | | |
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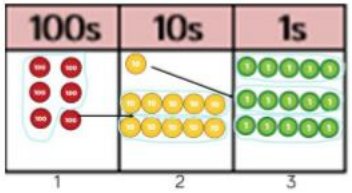
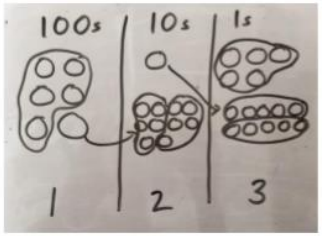
| Formal methods of short division | **Short division** using place value counters to group.<br>615 ÷ 5<br>  <br><br>1. Make 615 with place value counters.<br>2. How many groups of 5 hundreds can you make with 6 hundred counters?<br>3. Exchange 1 hundred for 10 tens.<br>4. How many groups of 5 tens can you make with 11 ten counters?<br>5. Exchange 1 ten for 10 ones.<br>6. How many groups of 5 ones can you make with 15 ones? | Represent the place value counters pictorially.<br>  <br> | Children to the calculation using the short division scaffold.<br>$\begin{array}{r} 123 \\ 5\overline{)6^{1}1^{1}5} \end{array}$ |
| Short division and interpret remainders appropriately for the context. | n/a | 218 ÷ 8<br>$\begin{array}{r} 27 \text{ r } 2 \\ 8\overline{)2^{2}1^{5}8} \end{array}$ | Extend to expressing results in different ways according to the context, including with remainders as fractions, as decimals or by rounding. For example:<br>• Whole number remainder = 27 r 2<br>• Fraction remainder = $27\frac{2}{8} = 27\frac{1}{4}$<br>• Decimal remainder = $27\frac{1}{4} = 27\frac{25}{100} = 27.25$ |

## Division-Year 6

Year 6 statutory requirement:

- ✓ divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context

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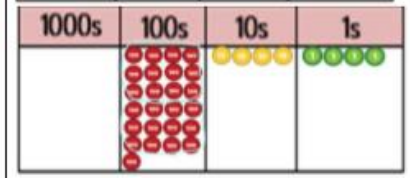
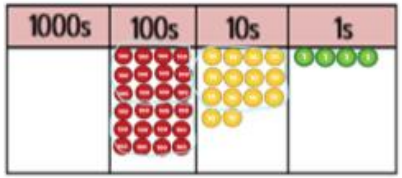
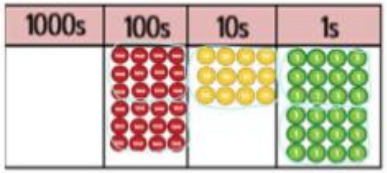
|---|---|---|
| Formal written method of long division | **Long division** using place value counters<br>2544 ÷ 12<br> <br><br>We can't group 2 thousands into groups of 12 so will exchange them.<br>  <br><br>We can group 24 hundreds into groups of 12 which leaves with 1 hundred.<br>02<br>12 \| 2544<br>24<br>1<br>  <br><br>After exchanging the hundred, we have 14 tens. We can group 12 tens into a group of 12, which leaves 2 tens.<br>021<br>12 \| 2544<br>24<br>14<br>12<br>2<br>  <br><br>After exchanging the 2 tens, we have 24 ones. We can group 24 ones into 2 group of 12, which leaves no remainder.<br>0212<br>12 \| 2544<br>24<br>14<br>12<br>24<br>24<br>0 | 0 2 4 r 1 2<br>2 4 \| 5 8 8<br>- 4 8<br>1 0 8<br>- 9 6<br>1 2 |