Calculation Policy

Making Learning an Adventure

The following calculation policy has been devised to meet requirements of the National Curriculum 2014 for the teaching and learning of mathematics, and is also designed to give pupils a consistent and smooth progression of learning in calculations across the school. The policy has been devised with members of staff using the NCETM Curriculum Prioritisation Materials which are used to inform our maths planning and teaching. Other materials such as WhiteRose have also been consulted. It is a working document and will be revised and amended as necessary

Age stage expectations: The calculation policy is organised according to age stage expectations as set out in the National Curriculum 2014 and the method(s) shown for each year group should be modelled to the vast majority of pupils.

However, it is vital that pupils are taught according to the pathway that they are currently working at and are showing to have 'mastered' a pathway before moving on to the next one. Of course, pupils who are showing to be secure in a skill can be challenged to the next pathway as necessary.

Choosing a calculation method: Before pupils opt for a written method, they should first consider these steps:

Can I do it in my head using a mental strategy?

Could I use some jottings to help me?

Should I use a formal written method to work it out?

Nursery

Children in nursery need a secure knowledge of number and a strong sense of number before calculation is introduced more formally later in EYFS (Reception). The children are introduced to the concept of subitising, counting, number order and number recognition through practical activities. Children are taught to count 1-1 (carefully pointing to each object as they count). They are taught that anything can be counted and that the last number that they counted is the total number they have (cardinality). Through subitising, they are taught to say the number they see without counting, notice, and find groups of numbers within a larger whole. They are taught that numbers are all around them, and encourage to 'see' numbers all around them. The nursery environment and the staff ithin nursery support these early maths skills and ideas daily through activities, play, number rhymes and songs.
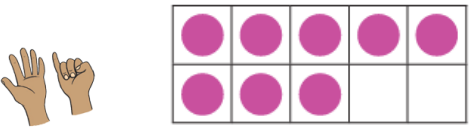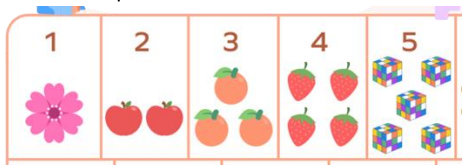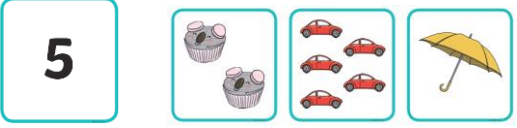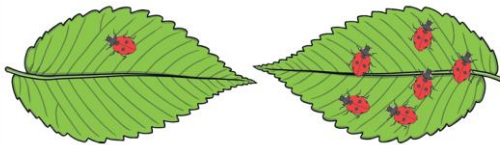
Expectations for Nursery 3-4 years;
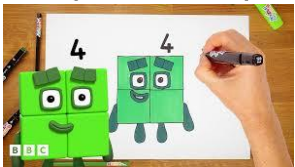
- Develop fast recognition of up to 3 objects, without having to count them individually ('subitising')
- Recite numbers past 5.
- Say one number for each item in order1,2,3,4,5
- Know that the last number reached when counting a small set of objects tells you how many there are in total (cardinal principle)
- Show 'finger numbers' up to 5.
- Link numerals to amount: for example, showing the right number of objects to match the numeral, up to 5.
- Experiment with their own marks as well as numerals.
- Solve real-world mathematical problems with numbers up to 5.
- Compare quantities using language 'more than' and 'less than'.

> **Key Vocabulary:**
> What do you notice? How do you see it? What is one more? One less? Another one. Number names.
> I can see a 2 and a 1 that makes 3.
> Count, numbers, maths. How many? How many

Objective & Strategy	Concrete	Pictorial	Abstract
Develop fast recognition of up to 3 objects without having to count them (subitising)	Use of Numicon, groups of toys, finger numbers, dropping objects and looking for groups of 1,2, and 3.	Children are shown different visual representations and recognise what number it represents	Knowing that they can see 1 and another 1 and that makes 2.
Recite numbers past 5.	Counting objects that can and cant be moved, Number rhymes and songs with resources.	Children are shown different visual representations to count.	Number songs Rote counting e.g. 1,2,3, 4,5,6

Say one for each item in order 1,2,3,4,5	Counting objects that can and cant be moved, Number rhymes and songs with resources. During play e.g. can you count how many biscuits I have made with playdough?	Counting objects on screen during games. Mathematical based stories.	Counting objects they can't see, e.g. close your eyes and count how many beads you hear drop in the tin. 1,2,3
Know that the last number when counting a small set tells you how many there are in total (cardinal principle)	Counting objects that can and cant be moved, Number rhymes and songs with resources. During play e.g. can you count how many biscuits I have made with playdough? Use of numicon, groups of toys, finger numbers	Children are shown different visual representations to count.	Counting objects they can't see, e.g. close your eyes and count how many beads you hear drop in the tin. 1,2,3
Show 'finger numbers' up to 5.	Show a given number of fingers using one hand or two. E.g. can you show me 3 using two hands.	Pictorial representations of fingers up to 5	
Link numerals to amount: for example, showing the right number of objects to match the numeral, up to 5.	Number cards and matching the corresponding amounttoys/objects/natural materials/numicon Showing finger numbers to match amount on card. During play e.g. teddy is 5 put 5 candles on his cake.	Number match games	Know that a number (on a card/screen etc) represents an amount.
Experiment with their own marks as well as numerals.	Drawing numberlocks to represent numbers. During play e.g. writing down the time on an appoitment card. Being the teacher and making a mark each time someone answers the register. Drawing a person to represent each person in their family.	Writing a 'number' to show the amount displayed e.g. 3	Writing the numerals

	Practising writing numbers using number cards		
Solve real-world mathematical problems with numbers up to 5.	Setting the table in a role play game. Building a bus, working out how many children and how many seats we need. Helping with giving out milk and snacks – counting how many children are on the table and need milk.	Each teddy needs a cake. How many cakes will we need?	Nursery Rhyme songs involving numbers up to 5 **Five Little Speckled Frogs** Five little speckled frogs, Sat on a great big log, Eating some most delicious bugs - yum, yum! One jumped into the pool, where it was nice and cool, Then, there were four speckled frogs - glub, glub! Four little speckled frogs,
Compare quantities using language less, fewer, 'more than' 'less than'.	Use language such as Who has the most? Can you give me one more? Apply this to practical games and work e.g. In the water, fill up the bottles. Who has the most? Who has least? Give out real objects to 2 children. Who has more cars? Who has fewer?	Comparing pictorial amounts Which leaf has more ladybirds? Which has fewer?	Use number lines to identify one more or one less than a given number. Counting too many and understanding to take one away. Or too little and adding one.

Addition - Reception Early learning goals:

Number

Have a deep understanding of number to 10, including the composition of each number.

Subitise (recognise quantities without counting) up to 5.

Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

Numerical Patterns

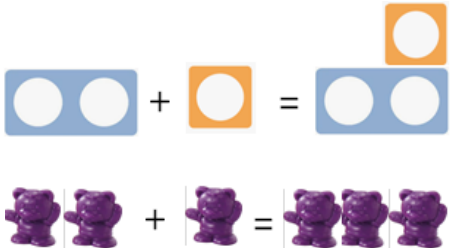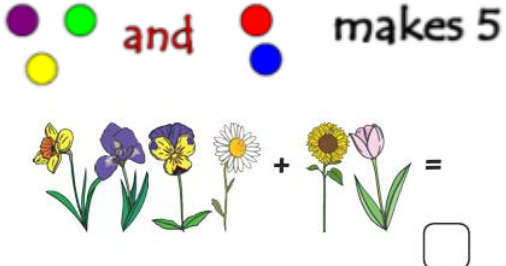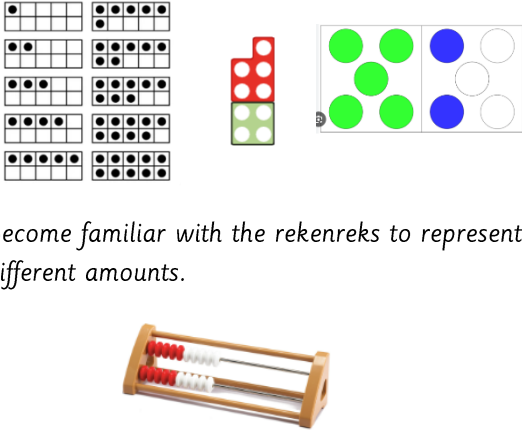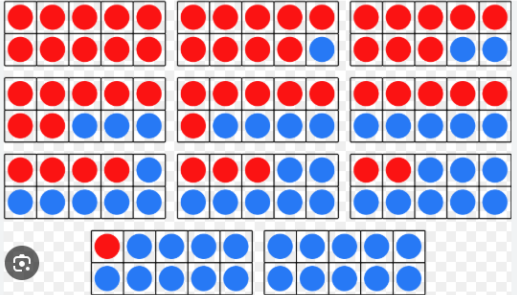Verbally count beyond 20, recognising the pattern of the counting system.

Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other Quantity`.

Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally

Objective & Strategy	Concrete	Pictorial	Abstract
Recognise numbers up to 10 and understand the meaning of each number by subitising and understanding how bigger numbers are made from smaller numbers.	Children use everyday objects and resources to represent each number up to 10. For example:	Children are shown different visual representations and recognise what number it represents	Children are shown a digit and understand what this means e.g. 2
Count on in ones and say which number is one more or less than a given number.	Children **physically** move themselves along the numbers e.g. jump or walk Children use everyday objects, count them out and physically add one more or take one away (one less)	Children use a number line or number track to 10 and count along it forwards or backwards.	1 2 3 4 5 6 7 8 9 10 One more than 2 is 3 2 + 1 = 3 One less than 4 is 3 4 – 1 = 3

Relate addition to combining two groups of objects using practical resources, role play, stories and songs.	Children physically use concrete resources and manipulatives and add 2 groups together. 	Children see or draw a visual representation to add the two groups together. 	The written equation is used 2 + 3 = 5
Using the five/ten frame and Numicon to support addition of single digits— counting all/ combining two groups. Children combine Numicon to look for known shapes.	Children use counters to show how numbers to 10 can be made e.g. 5 and a bit or 5 and 3 makes 8. Become familiar with the rekenreks to represent different amounts. 	Children see a visual represntation using two coloured counters to show how numbers to 5 and 10 can be made. 	Children are show numerals and use stem sentences. 5 is made from 4 and 1 1 and 4 makes 5 1 and 1 makes 2 Double 1 is 2.

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
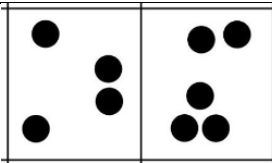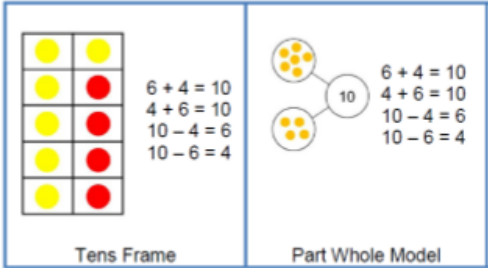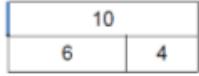
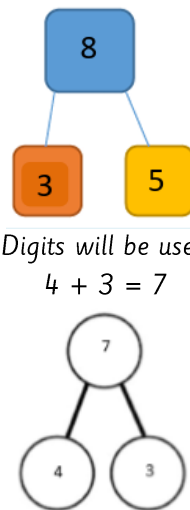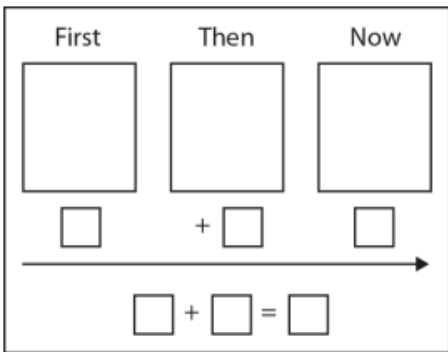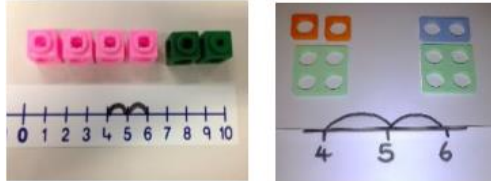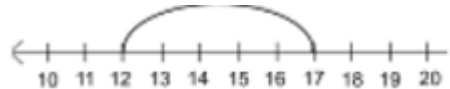Add one-digit and two-digit numbers to 20, including zero.
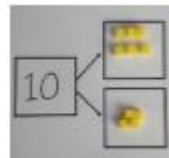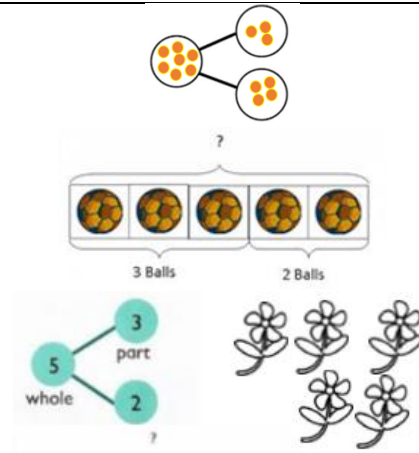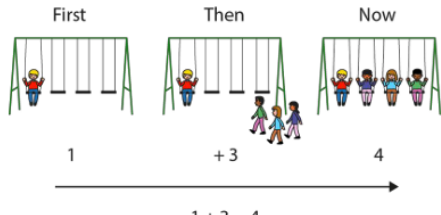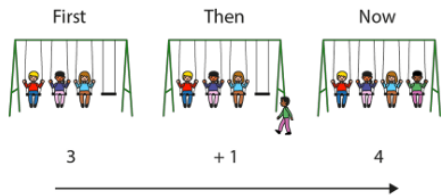
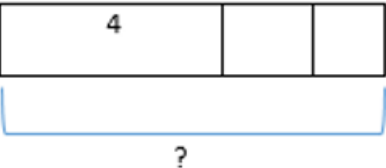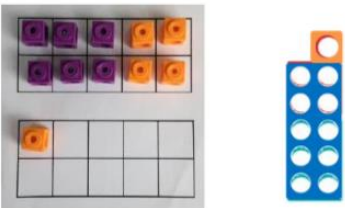Solve one-step problems that involve addition using concrete objects and pictorial representations, and missing number problems.
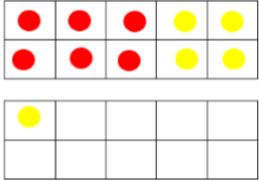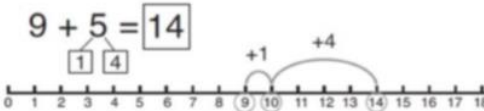
Key Vocabulary:

+, add, addend, addition, more, plus, make, sum, total altogether, double, near double, First, Then, Now, expression, represent, inverse, commutative, tens and one, more, two more… ten more, how many more to make…? How many more is… than…? How much more is…?

Addend + addend = sum

Objective & Strategy	Concrete	Pictorial	Abstract	Example Stem Sentences
Identify and represent numbers using objects and pictorial representations (multiple representations)	Children use equipment and everyday objects to make and represent a number	Children draw different representations of a number	The digits that represent each number	'The _____ represents_____'
Represent & use number bonds and related subtraction facts within 20	Children use practical equipment on a tens frame to represent the bonds	Children see and draw images in a tens frame and part whole model to find number bonds and related facts Tens Frame / Part Whole Model	$6 + 4 = 10$ $4 + 6 = 10$ $10 - 4 = 6$ $10 - 6 = 4$ $10 = 6 + 4$ $10 = 4 + 6$	'_____ is equal to ____ plus ____' '_____ plus _____ is equal to' '___ and _____ are the addends' '_____ is the sum' 'addend + addend = sum'
Combine two parts to make a part-part whole model (Aggregation)	Children will use lots of different resources such as Numicon, counters, rekenreks, eggs, shells, teddy bears and everyday objects to add together two groups	Children will use and draw pictures in a part part whole model to add together 2 numbers as a group or in a bar	Use the part-part whole diagram to move in to the abstract	'Four is a part, 3 is a part and the whole is seven' '4 plus 3 is equal to 3 plus 4'

Whole / Part Part / part + part = whole / part + part = whole		They will also use 'First.... Then...... Now'	Digits will be used 4 + 3 = 7	'4 plus 3 equals 7' '3 plus 4 equals 7'
Start at the bigger number and counting on. (Augmentation)	Start with the greater number and count on the smaller number one by one to find the sum/total.	Start at the greater number on the number line and count on the smaller number in ones, or in one jump, to find the sum/total. A bar model is used which encourages the children to count on	Place the greater number in your head and count on the smaller number to find the sum/total. The abstract number line: What is 2 more than 4? What is the sum of 4 and 4? What's the total of 4 and 2? 4 + 2	'__ plus ___ equals' 'The sum of __ and ____ equals ___' Step 1: The greater number is _____. Step 2: The smaller number is _____.

Regrouping to make 10. *This is an essential skill for column addition later.*	Use a tens frames and counters/cubes or using Numicon e.g. 6 + 5	Children draw the tens frames and counters/cubes Use pictures or a number line. Regroup or partition one of the numbers e.g.	Children to develop an understanding of equality e.g. $6 + \square = 11$ $6 + 5 = 5 + \square$ $6 + 5 = \square + 4$	*Partition the addend* *Regroup to make 10*

Addition Year 2 statutory requirements:

Recall and use addition and 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.
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.
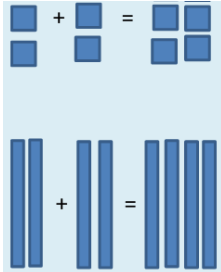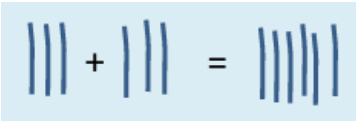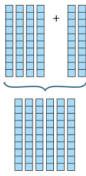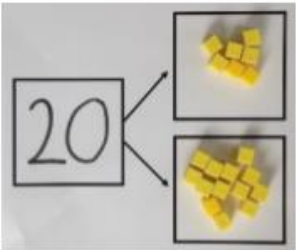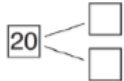
Solve problems with addition including those involving numbers, quantities and measure
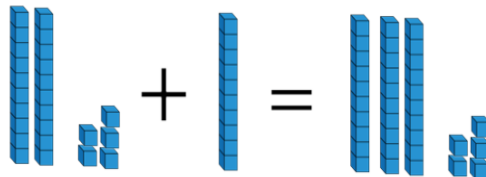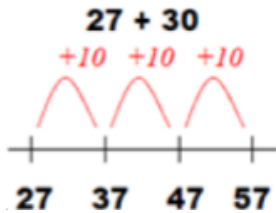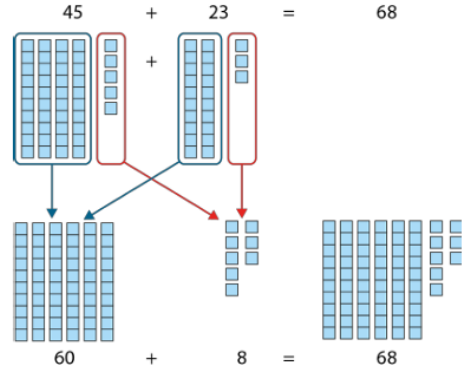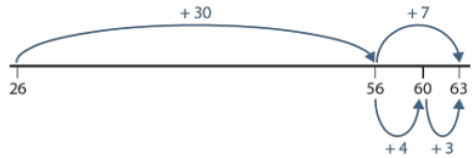
Objective & Strategy	Concrete	Pictorial	Abstract	Example Stem Sentences
Add multiples of 10	Model using concrete equipment such as dienes and bead strings	Draw visual representations for dienes. $40 + 20 =$ 4 tens + 2 tens = ____ tens $40 + 20 =$	$40 + 20 = 60$ $20 + 40 = 60$ $60 = 40 + 20$ $60 = 20 + 40$ $40 + \square = 60$	I know that __ + __ = __ Then I also know __ tens + __ tens = __ tens _ tens + __ tens = _ tens __ plus ____ equals ____ __ equals __ tens + __ tens
Use known number facts Part part whole	Children explore ways of making numbers within 20	Along side of this they use equipment $\square + \square = 20$ $20 - \square = \square$ $\square + \square = 20$ $20 - \square = \square$ Also show children calculations where = is at the start e.g. 20 = ? + ?, 20 = ? - ?	$\square + 1 = 16$ $16 - 1 = \square$ $1 + \square = 16$ $16 - \square = 1$	'__ is equal to __ plus __' '__ plus __ is equal to' '_ and _ are the addends' '__ is the sum' 'addend + addend = sum'

Using known facts	Use every day items and dienes	Children draw representations of H, T ,O	$3 + 4 = 7$ which leads to $30 + 40 = 70$ which leads to $300 + 400 = 700$	'If 3 plus 4 equals 7 then 30 plus 40 equals 70'
Add 2-digit number and ones	$17 + 5 = 22$ Use ten frame to represent the 'make ten' strategy Children explore the pattern. $17 + 5 = 22$ $27 + 5 = 32$	Use part part whole and number line to model. $17 + 5 = 22$	In Year 2, the children will calculate practically using the diene. Once they are secure with this, the teacher will show it alongside as a formal written method using addends which do not cross the tens boundary. e.g. Add the 1s. 34 is 3 tens and 4 ones. 4 ones and 5 ones are 9 ones. The total is 3 tens and 9 ones. Children use a bar model to represent a claculation e.g. $17 + 5 = 22$ They then explore the related facts $17 + 5 = 22$ $5 + 17 = 22$ $22 — 17 = 5$	'First I partition the _____ into ____ plus ____ (Partition one of the addends) 'Then ____ plus ____ is equal to ___ (Make multiple of ten) ….and ___ plus ____ is equal to ___'

			22—5 = 17	
Add 2-digit number and ten	Explore that the ones digit don't change when adding multiples of 10	Children draw number lines and add on jumps of ten	27 + 10 = 37 27 + 20 = 47 27 + □ = 57 Children who are working at a greater depth, will use base ten and alongside this use a formal written method e.g. 	*'When a multiple of ten is added to a two-digit number, the tens change and the ones stay the same'*
Add two 2-digit numbers	Model using dienes, place value counters and Numicon *Partition both the numbers.* • *Add together the ones. Have we got 10 ones?* • *If we have, regroup 10 ones for 1 ten.* • *How many ones do we have?* • *Add together the tens. How many do we have altogether?*	Use number line and bridge ten using part whole if necessary. E.g. 26 + 37 26 + 30 + 7 	Children will be shown how to partition and recombine to find the answer using digits only. 20 + 40 = 60 5 + 7 = 12 60 + 12 = 72 *The children will calculate practically using the dienes. Once they are secure with this, the teacher will show it alongside as a formal written method using addends which do not cross the tens boundary e.g.*	*First I partition the ____ into ____ and ____, and the ____ into ____ and ____ (Partitioning the two-digit addends)* *_plus __ is equal to (Addition of the tens first)* *__ plus ____ is equal to __ (Addition of the ones)* *and ____ plus ____ is equal to ____ (addition of the totals of tens and ones)* *So __ plus ____ is equal to*

			Add the 1s. Then add the 10s. 	
Add three 1-digit numbers	*Use practical equipment. Combine to make 10 first if possible, or bridge 10 then add third digit* 	 *Regroup and draw representation.* + = 15	*Combine the two numbers that make/bridge ten, then add on the third addend.* 4 + 7 + 6 = 10 + 7 10 = 17	*Step 1: look for a known fact (doubles, number bond etc)* *Step 2: calculate known fact.* *Step 3: add on the remaining number to find the sum/total*

Addition Year 3 statutory requirements:

- Find 10 or 100 more than a given number.
- Recognise the place value of each digit in a three-digit number (hundreds, tens, ones).
- Add numbers with up to three digits, using formal written methods of columnar addition

Objective & Strategy	Concrete	Pictorial	Abstract	Example Stem Sentences
Column Addition—no regrouping **Add two or three 2- or 3-digit numbers**	Practically use dienes to represent and calculate Add together the ones first, then the tens. Move to practically using place value counters 	Children move to **drawing** the counters using a tens and one frame 	Move to an abstract written column representation $$2\ 2\ 3$$ $$+\ 1\ 1\ 4$$ $$\overline{}$$ $$3\ 3\ 7$$ Add the ones first, then the tens, then the hundreds	'In column additon, we start at the right-hand side' 'We line up the ones; ___ one(s) plus ___ one(s) We line up the tens; ___ ten(s) plus ___ ten(s) ___ plus ___ equals' Step 1: add the ones Step 2: add the tens Step 3: add the hundreds
Column Addition with regrouping. **Add two or three 2- or 3-digit numbers**	Practically use dienes to represent and regroup 	Children draw a representation of the grid to further support their understanding, carrying the regrouped ten _underneath the line_. 	Start by partitioning the numbers before formal column to show the regroup $$2\ 0 \quad 5$$ $$4\ 0 \quad 8$$ $$\overline{6\ 0 + 1\ 3 = 7\ 3}$$ _Then_:	'In column additon, we start at the right-hand side' 'We line up the ones; ___ one(s) plus ___ one(s) We line up the tens; ___ ten(s) plus ___ ten(s) ___ plus ___ equals' Step 1: add the ones (regroup if necessary)

			$$\begin{array}{r} 2\ 5 \\ +\ 4\ 7 \\ \hline 7\ 2 \\ \scriptstyle 1 \end{array}$$	*Step 2: add the tens (regroup if necessary) Step 3: add the hundreds (regroup if necessary)* *'If any column sums to ten or greater, we must 'regroup''*

Addition Year 4 statutory requirements:

Find 1000 more than a given number.

Add numbers with up to 4 digits using the formal written methods of columnar addition where appropriate.
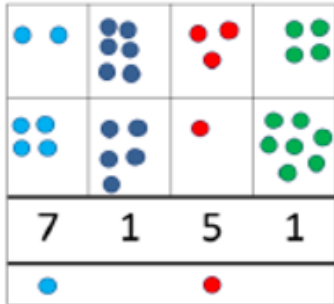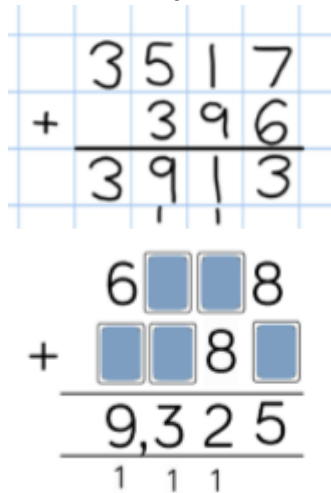
Solve addition two-step problems in contexts, deciding which operations and methods to use and why,

Consolidate learning from Year 3

Objective & Strategy	Concrete	Pictorial	Abstract	Example Stem Sentences
Add numbers with up to 4 digits	Children continue to use dienes or place value counters to add, regrouping ten ones for a ten, ten tens for a hundred and ten hundred for a thousand. E.g. 3,242 + 2,213	Draw representations using place value counters	Continue from previous work to regroup and carry hundreds as well as tens. Relate to money and measures	*'In column additon, we start at the right-hand side'* *'We line up the ones; ___ one(s) plus ___ one(s) We line up the tens; ___ ten(s) plus ___ ten(s) We line up the hundreds; ___ hundred(s) plus ___ hundred(s) ____ plus ____ equals'* *'If any column sums to ten or greater, we must 'regroup'' Step 1: add the ones (regroup if necessary) Step 2: add the tens (regroup if necessary) Step 3: add the hundreds (regroup if necessary) Step 4: add the thousands (regroup if necessary)*

<mark>Subtraction</mark>- Reception Early Learning Goal

Number

Have a deep understanding of number to 10, including the composition of each number.

Subitise (recognise quantities without counting) up to 5.

Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.
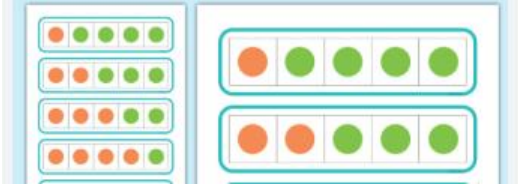
Numerical Patterns

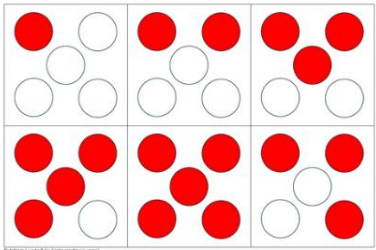Verbally count beyond 20, recognising the pattern of the counting system.

Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other Quantity`.

Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally

Objective & Strategy	Concrete	Pictorial	Abstract
Count backwards in familiar contexts such as number rhymes or stories.	Use physical objects or small parts 10 Green Bottles sitting on the wall ... 5 little ducks went swimming one day...	Children draw the items themselves as they decrease. Use 5/10 frames to represent number rhymes e.g. 5 little speckled frogs. How many are on the log? How many are in the pool?	Children see the numbers represented 10,9,8,7,6,5,4,3,2,1
Recall number bond facts up to 5, including subtraction facts.	Using nursery rhymes such as 5 little speckled frogs.	Show representations on five/ten frames. There are 3 on the log and 2 in the pool. 3 and 2 makes 5. 5 take away 2 makes 3.	Children will be shown the calculation which will be read out loud. 5 – 1 = 4

Say which number is one less than a given number using numbers to 10.	*Use equipment and remove one to find one less* *Children use large numbers and move backwards to find one less* 	*Children count back 1 along a number line* 	*10 take away 1 is ..* *1 less than 8 is* *5 – 1 =*

Subtraction 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
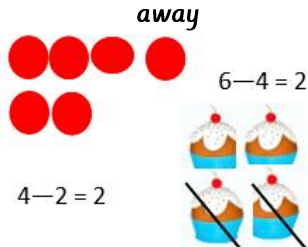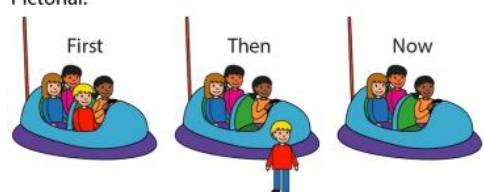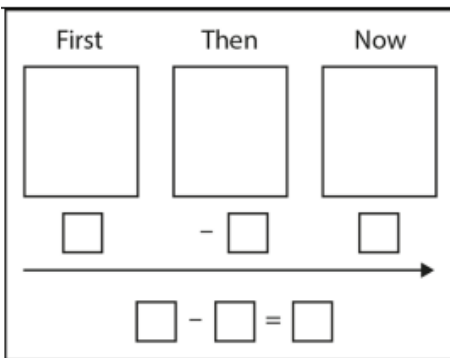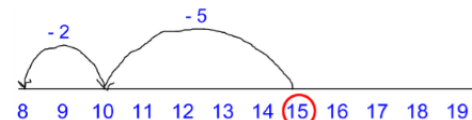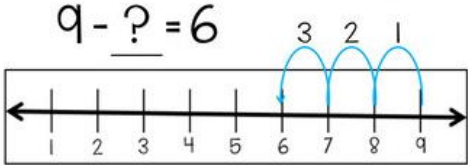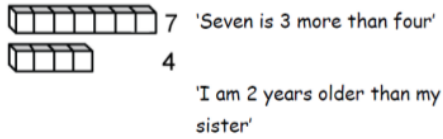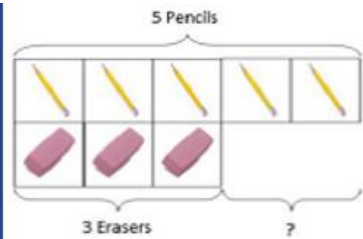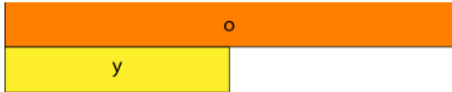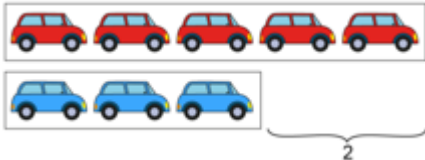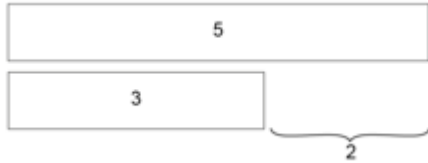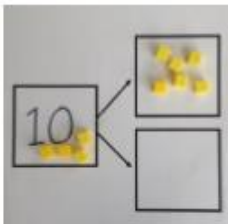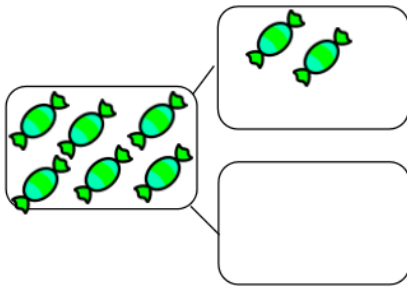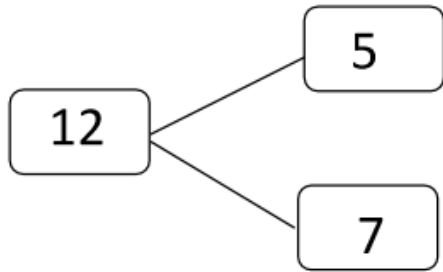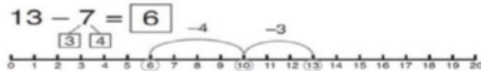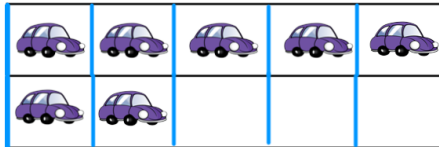
Objective & Strategy	Concrete	Pictorial	Abstract	Example Stem Sentences
Taking away ones (Reduction)	Use physical objects, counters , cubes etc to show how objects can be taken away $6-4=2$ $4-2=2$	Cross out drawn objects to show what has been taken away Use the First, Then, Now structure for a reduction structure e.g. '**First**, there were four children in the car. **Then**, one child got out. **Now**, there are three children in the car.' Chairs could be arranged to support acting out this story. Pictorial: First Then Now	$7-4=3$ $16-9=7$ First Then Now □ – □ = □ □ – □ = □	'Seven subtract four equals three' '_____ subtract/take away _____ is equal to _____ ' '_____ is the same as _____ subtract/take away _____ ' First there were_____, Now ____ got out. Now there are _____
Counting back	Move objects away from the group, counting backwards Move the beads along the bead string as you count backwards.	Count back in ones using a number line $15 – 7 = 8$ -2 -5 8 9 10 11 12 13 14 (15) 16 17 18 19 Counting back to find the missing subtrahend	Put 13 in your head, count back 4. What number are you at? $13 – 4 = ?$	'You start with the whole, take away a part and there is a part left.' Step 1: The minuend is _____. Step 2: The subtrahend is _____.

		$9 - ? = 6$ 		
Find the difference structure	Compare objects and amounts 7 'Seven is 3 more than four' 4 'I am 2 years older than my sister' Lay objects out in a bar model Then use Cuisenaire rods to represent each amount to find the difference 	Draw representations as set out in a bar model Counting on using a using a number line to find the difference 	Bar model with digits Word Problems: Hannah has 12 sweets and her sister has 5. How many more sweets does Hannah have than her sister?	'The difference between ___ and ____ is ' '__ is __ more than __' '__ is __ less than __' 'Start with the subtrahend. Count on to the minuend. The difference is _____'
Represent and use number bonds and related subtraction facts within 20 Part-Part Whole (PPW) model	Link to addition and the Part Part Whole model to model the inverse If 10 is the whole and 6 is one of the parts, what s the other part?	Use pictorial representations to show the part. 	Move to using numbers within the part whole model to subtract a part (subtrahend) from the whole 	'—is a part, __ is a part and __ is a whole' '_____ subtract/take away _____ is equal to _____ ' I know that

	$10—6 = 4$			
Make 10	$14—9$ Make 14 on the ten frame. Take 4 away to make ten, then take one more away so that you have taken 5	$13 – 7 = 6$ Jump back 3 first, then another 4. Use ten as the stopping point.	$16 – 8 =$ How many do we take off first to get to 10? How many left to take off?	'Subtract ___ to make ten and then subtact ___'
Bar model	User practical equipment in a five or tens frame e.g. $5 – 2 = 3$	Children draw their own bar models using pictoral representation	Bar models with digits $10 = 8 + 2$ $10 = 2 + 8$ $10—2 = 8$ $10—8 = 2$	'—is a part, ___ is a part and ___ is a whole' '_____ subtract/take away _____ is equal to _____ '

<mark>Subtraction</mark> 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.
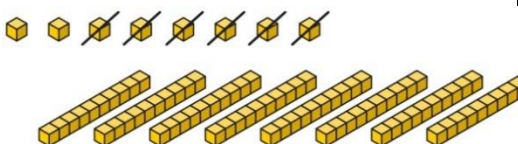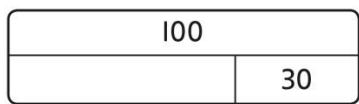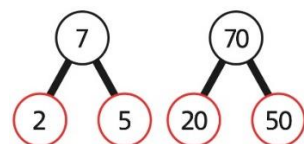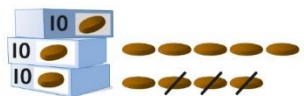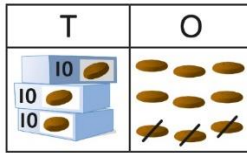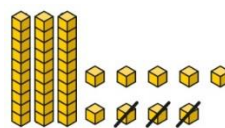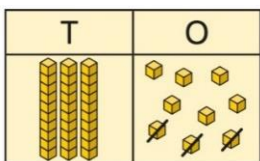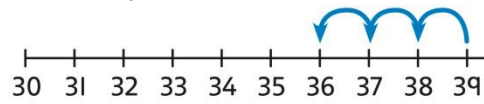Subtract numbers using concrete objects, pictorial representations, and mentally, including:
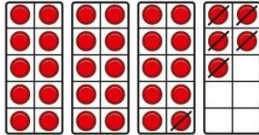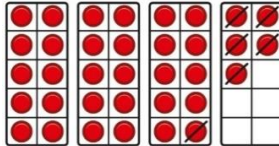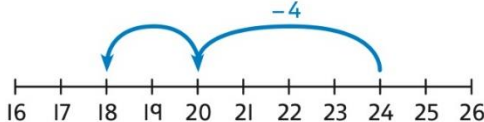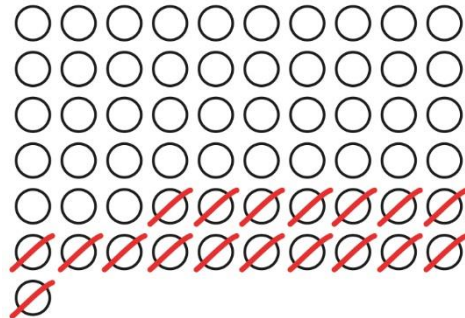a two-digit number and ones
- a two-digit number and tens
- two two-digit numbers

Objective & Strategy	Concrete	Pictorial	Abstract	Example Stem Sentences
Subtracting multiples of 10	Use known number bonds and unitising to subtract multiples of 10. 8 subtract 6 is 2. So, 8 tens subtract 6 tens is 2 tens.	Use known number bonds and unitising to subtract multiples of 10. 10 − 3 = 7 So, 10 tens subtract 3 tens is 7 tens.	Use known number bonds and unitising to subtract multiples of 10. 7 tens subtract 5 tens is 2 tens. 70 − 50 = 20	*8 subtract 6 is 2 So, 8 tens subtract 6 tens is 2 tens So 80 subtract 20 is 20*
Subtracting a single-digit number	Subtract the 1s. This may be done in or out of a place value grid.	Subtract the 1s. This may be done in or out of a place value grid.	Subtract the 1s. Understand the link between counting back and subtracting the 1s using known bonds. The children will calculate practically using the dienes. Once they are secure with this, the teacher will show it alongside as a formal written method using a subtrahend which do not cross the tens boundary e.g.	*'Minuend minus subtrahend is equal to the difference'* *Subtract the ones first*

			$$\begin{array}{cc} T & O \\ 3 & 9 \\ - \quad & 3 \\ \hline 3 & 6 \end{array}$$ $9 - 3 = 6 \quad 30\text{-}0 = 30$ $39 - 3 = 36$	
Subtracting a single-digit number bridging 10	Bridge 10 by using known bonds. $35 - 6$ I took away 5 counters, then 1 more.	Bridge 10 by using known bonds. $35 - 6$ First, I will subtract 5, then 1.	Bridge 10 by using known bonds. $24 - 6 = ?$ $24 - 4 - 2 = ?$	*'First I will subtract ____ to get to ____. Then I will subtract ____*
Subtracting a 2-digit number	Subtract by taking away. $61 - 18$ I took away 1 ten and 8 ones.	Subtract the 10s and the 1s. This can be represented on a 100 square. 	Subtract the 10s and the 1s. This can be represented on a number line. $64 - 41 = ?$ $64 - 1 = 63$ $63 - 40 = 23$ $64 - 41 = 23$ $46 - 20 = 26$ $26 - 5 = 21$ $46 - 25 = 21$	*Subtract the tens, subtract the ones*

==Subtraction== Year 3 statutory requirement:

Find 10 or 100 less than a given number.

Recognise the place value of each digit in a three-digit number (hundreds, tens, ones).

Subtract numbers with up to three digits, using formal written methods of column subtraction.

Subtract numbers mentally, including: • A three-digit number and ones • A three-digit number and tens • A three-digit number and hundreds.

Key Vocabulary:

subtract, subtraction, take (away), minus leave, how many are left/left over? Minuend, subtrahend, difference, equation, partition one less, two less... ten less... one hundred less how many fewer is... than...? how much less is...? difference between half, halve = equals, sign, is the same as

Minuend – subtrahend = difference

Objective & Strategy	Concrete	Pictorial	Abstract	Example Stem Sentences
Column subtraction without regrouping (exchanging)	Use dienes or Numicon to model E.g. 45 – 22 =	Draw representations to support understanding	$47-24=23$ then	'In column subtraction, we start at the right-hand side' Step 1: subtract the ones Step 2: subtract the tens Step 3: subtract the hundreds Step 4: subtract the thousands For Dienes: '___ one(s) minus ___ one(s) is equal to ___ ones.' '___ ten(s) minus ___ ten(s) is equal to ___ tens For a column 'The ones column represents ___ one(s) minus ____ one(s) is equal to ____ones' The tens column represents ___ ten(s) minus ___ ten(s) is equal to ____ tens
Column subtraction with regrouping (exchanging	Begin with Dienes and then move on to place value counters modelling the exchange of a ten into ten ones. Use the phrase 'take and make' for exchange.	Children may draw base ten or Place Value counters and cross off.	Begin by partitioning into place value columns	'In column subtraction, we start at the right-hand side'

| **of the tens or hundreds)**

Note: The exchanged ten or hundred is just as important as any other number, therefore, it should be written as clear and as large as any other number, and placed at the top of the column which has been adjusted. | 94 – 6
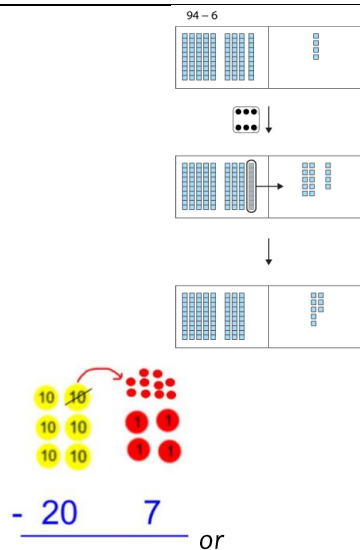
- 20   7
 ────────── *or* | 45
-29   Tens Ones
16

10 + 6 = 16 | 60   14
7̶0̶   4̶
2 0   7
4 0   7 = 47

4 0 0   1 3 0
5̶0̶0̶   3̶0̶   7
2 0 0   5 0   4
2 0 0   8 0   3 = 283

Then move onto formal method

6
7̶⁴4
2 7
──
4 7
──

4
5̶¹3̶7
- 2 5 4
──────
2 8 3
────── | |

<mark>Subtraction</mark> Year 4 statutory requirements:

- Find 1000 less than a given number.
- Subtract numbers with up to four digits, using formal written methods of columnar subtraction where appropriate.
- Solve subtraction two-step problems in contexts, deciding which operations and methods to use and why.

Objective & Strategy	Concrete	Pictorial	Abstract	Example Stem Sentence
Subtract with up to 4 digits. Introduce decimal subtraction through context of money By the end of year 4, pupils should be subtracting numbers up to 4 digits using compact column subtraction method.	Model the process of exchanging using Numicon, dienes and then move to Place value counters 234 - 179	Children may draw base ten or Place Value counters and cross off.	Expanded method Then move onto formal short compact method Move onto 4 digit numbers	'In column subtraction, we start at the right-hand side' For Dienes: '__ one(s) minus __ one(s) is equal to __ ones.' '__ ten(s) minus __ ten(s) is equal to __ tens '__ hundred(s) minus __hundred(s) is equal to __ For a column 'The ones column represents __ one(s) minus ____ one(s) is equal to ____ones' The tens column represents __ ten(s) minus __ ten(s) is equal to ____ tens Step 1: subtract the ones (exchange if necessary) Step 2: subtract the tens (exchange if necessary) Step 3: subtract the hundreds (exchange if necessary) Step 4: subtract the thousands (exchange if necessary)

Multiplication Early Learning Goal:

Number

Have a deep understanding of number to 10, including the composition of each number.

Subitise (recognise quantities without counting) up to 5.

Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.
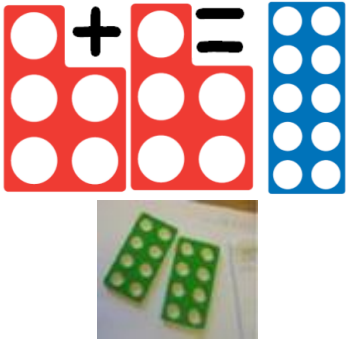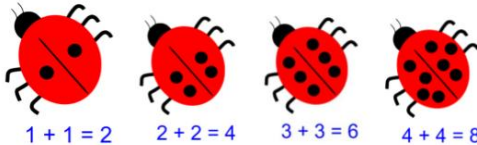
Numerical Patterns

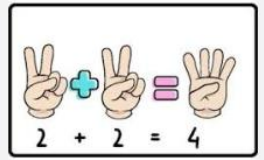Verbally count beyond 20, recognising the pattern of the counting system.
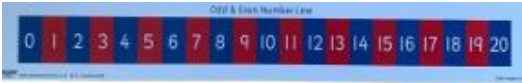
Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other Quantity`.

Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally

Objective & Strategy	Concrete	Pictorial	Abstract
Use pictorial representations and concrete resources to double numbers to 10.	Use practical activities using manipulatives such as Numicon to double a number	Draw pictures to show an item has doubled e.g. ladybirds spots, butterfly wings 1 + 1 = 2 2 + 2 = 4 3 + 3 = 6 4 + 4 = 8	In the early years children are not required to learn abstract forms of calculation methods. What is considered important at this stage is their understanding of the concepts and their practical application of these. They are encouraged to use their own method of recording their findings in whatever way they choose. They may however be taught abstract recording methods should they be ready. 2 + 2 = 4 Double 3 equals 6

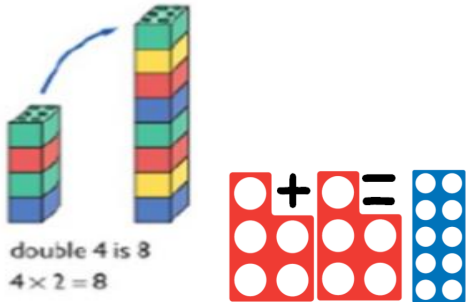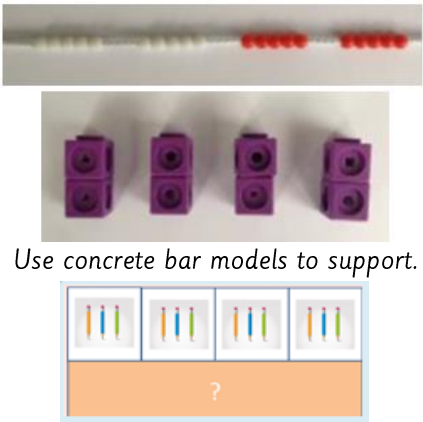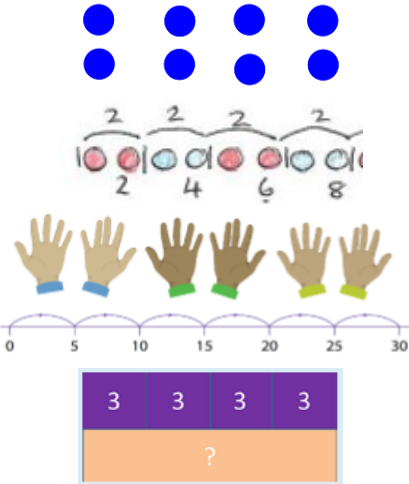|			
Subitise to find double facts.	*Using 'bunny ears' (fingers) to show a double.* 2 + 2 = 4	*Use subisting spots to show double facts.* 	
Exploring odds and evens. *The children begin to notice when a number can be put into groups of 2 and when there is 1 left over.*	*Children can sort numicon or multilink into 'even tops' and 'odd blocks'.* *Making odd and even numbers using the mutilink.* 	*The children look at how the odd and even numbers are distributed on a number line.* 	

Multiplication Year 1 Statutory requirement:
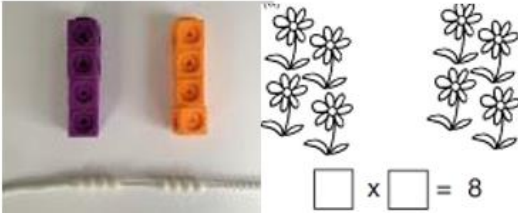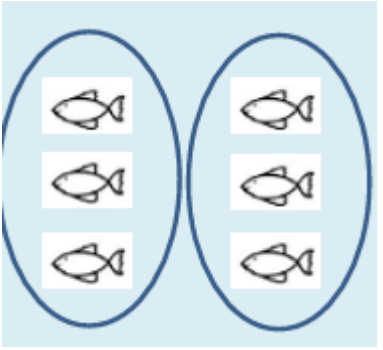
Solve one-step problems involving multiplication by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.

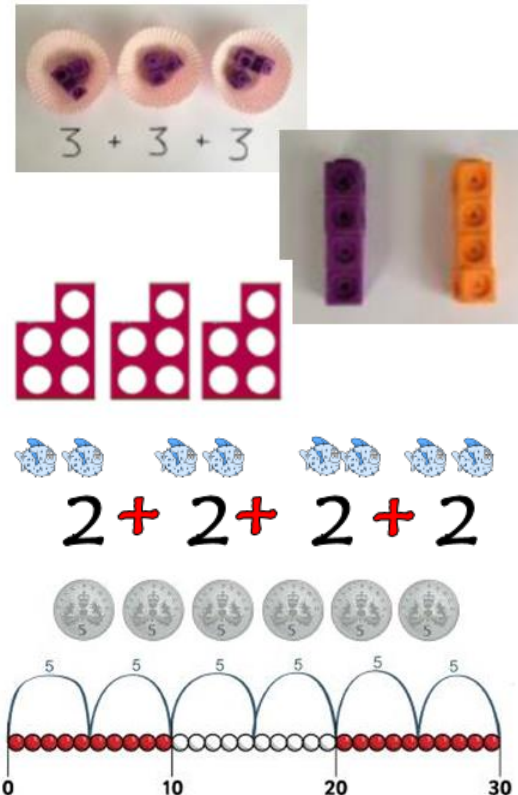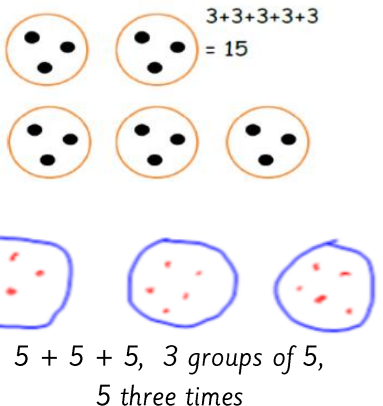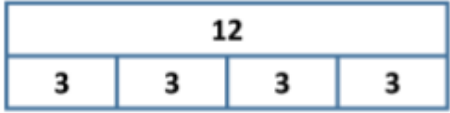| Objective & Strategy	Concrete	Pictorial	Abstract	Example Stem Sentence
Doubling	Use practical activities using manipulatives such as Numicon to double and halve a number	Draw pictures to show a number has doubled Double 4 is 8	Rolling numbers, step counting and using fingers to double numbers to 10	Double ___ is equal to ____
Counting in multiples	Count the groups as children are skip counting, children may use their fingers as they are skip counting. Use concrete bar models to support.	Children make representations to show counting in multiples.	Count in multiples of a number aloud Write sequences with multiples of numbers. 2, 4, 6, 8, 10 5, 10, 15, 20, 25, 30 $4 \times 3 = \square$	___multiples of ____ are equal to _____ 2, __, 6, 8, __, __
Making equal groups and	Use manipulatives to create equal groups.	Draw and make representations clearly showing equal groups.	Use the language to describe the number sentence using "equal groups"	There are __ groups of 3.

counting the total	$\square \times \square = 8$	Draw [fish] to show 2 equal groups of 3 2 equal groups of 3 equals 6	and "total" "2 equal groups of 4 have a total of 8" $$2 \times 3 = 6$$	*There are ___ groups, ___ in each group.* *There are ____ equal groups of ____ with a total of ____*
Repeated addition	*Use different objects to add equal groups e.g. cubes, Numicon shapes, real objects, coins*	*Use pictures and drawings alongside number lines* $5 + 5 + 5$, 3 groups of 5, 5 three times *Move on to a bar model for a more structured approach e.g. 3 + 3 + 3 + 3,*	*Write addition sentences to describe the pictures and objects*	*4 groups of 3 = __+__+__ +__*

Multiplication 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.
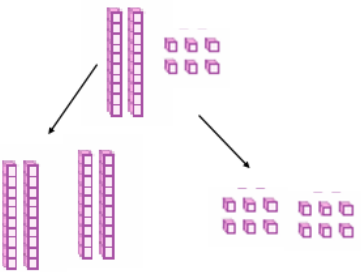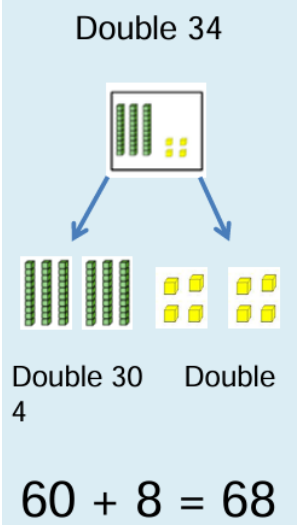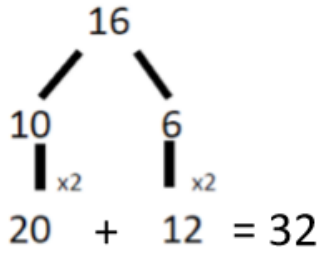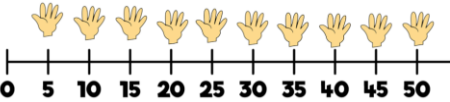
Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.
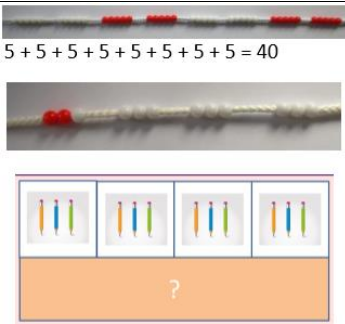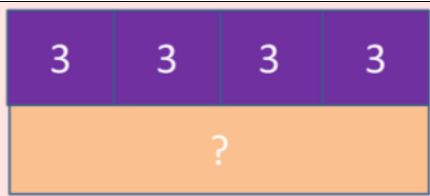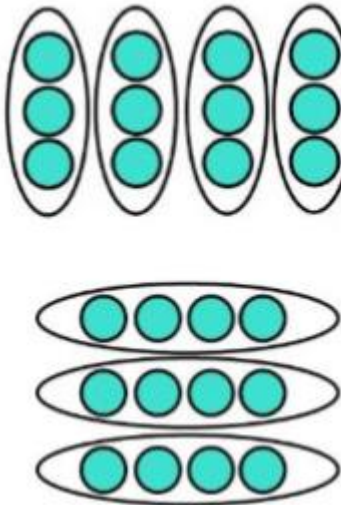
Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.
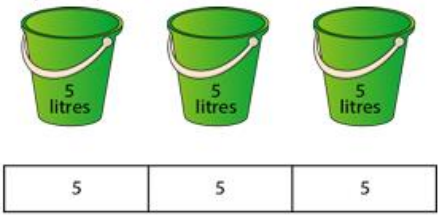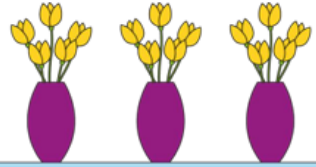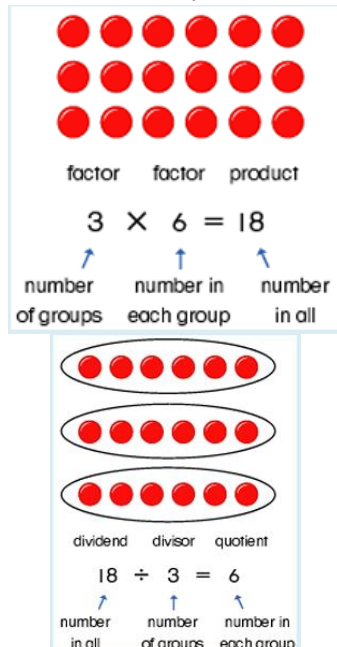
Objective & Strategy	Concrete	Pictorial	Abstract	Example Stem Sentences
Doubling numbers beyond 10	Model doubling using base ten and place value counters E.g. double 26 40 + 12 = 52	Draw pictures and representations to partition numbers before doubling Double 34 Double 30 Double 4 60 + 8 = 68	Partition each number and then double each part before recombining it back together 16 / 10 \ 6 (x2) (x2) 20 + 12 = 32	16 = ___ tens and ___ ones. Double 10 = ____ Double 6 = ____ ____ + ____ = ____ Double ___ is equal to ____
Counting in multiples of 2, 3, 4, 5, 10 from 0	Count the groups as children are skip counting, children may use their fingers as they are skip counting. Use bar models	Number lines, counting sticks and bar models should be used to show representation of counting in multiples. 0 5 10 15 20 25 30 35 40 45 50	Write sequences with multiples of numbers. 0, 2, 4, 6, 8, 10 0, 3, 6, 9, 12, 15 0, 5, 10, 15, 20, 25, 30	__multiples of ____ are equal to _____ 2, __, 6, 8, __, __

(repeated addition)	 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 = 40 		*1, 3, 5, 7, 9, 11* *1, 6, 11, 16, 21*	
Understanding arrays – showing that multiplication is commutative	Create arrays using counters, cubes and Numicon 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. *3 x 4 (3 four times) 4 x 3 (4 three times)*	Children draw their own arrays *3 x 4 (3 four times)* *4 x 3 (4 three times)*	Children to be able to use an array to write a range of calculations e.g. 5 + 5 + 5 = 15 3 + 3 + 3 + 3 + 3 = 15 5 x 3 = 15 3 x 5 = 15	*factor x factor = product* *When you change the order of the factors, the product stays the same*

Counting in equal groups to find the product.	Use manipulatives such as cubes, counters, Numicon to create equal groups	Draw and make representations clearly showing equal groups. Relate this to the bar model	'There are three groups of five.' • 'We can write this as _five_ plus _five_ plus _five_.' $5 + 5 + 5$ • 'We can also write this as three times five.' 3×5 • 'What does the "3" represent?' 'The "3" represents the number of groups.' • What does the "5" represent? 'The "5" represents the number of flowers in each group.'	*Factor x Factor = Product* *There are ___ groups of 3.* *There are ___ groups, ___ in each group, so ___ altogether. ___ groups of ___ is equal to* *We can write this as three times five* *3 x 5 = 15* *The 3 represents the number of groups* *The 5 represents the numbers of ___ in each group*
Using the Inverse *This should be taught alongside division, so pupils learn how they work alongside each other.*	Use objects to show the inverse *5 groups of 4 cookies = 20 cookies altogether* *20 cookies into groups of 4 cookies = 5 groups*	Draw representataions to show related facts factor factor product $3 \times 6 = 18$ number of groups / number in each group / number in all dividend divisor quotient $18 \div 3 = 6$ number in all / number of groups / number in each group	Write a fact family showing the link between multiplication and division. $2 \times 4 = 8$ $4 \times 2 = 8$ $8 \div 2 = 4$ $8 \div 4 = 2$ $8 = 2 \times 4$ $8 = 4 \times 2$ $2 = 8 \div 4$ $4 = 8 \div 2$ Show all 8 related fact family sentences *Very important that the children see and use the = sign at the start of a calculation*	*If I know that factor x factor = product* *Then I also know product ÷ factor = factor* *or dividend ÷ divisor = quotient* *e.g. 4 x 2 = 8 and 2 x 4 = 8* *8 ÷ 2 = 4* *8 ÷ 4 = 2* *8 divided into groups of 2 = 4* *8 divided into groups of 4 = 2*

Multiplication Year 3 statutory requirements:

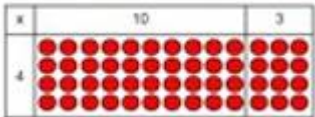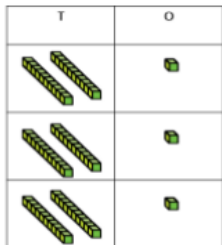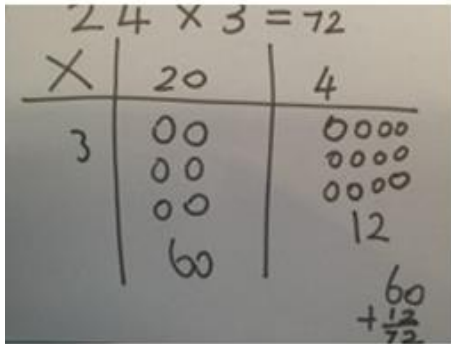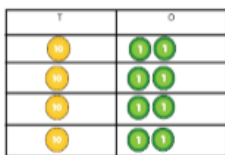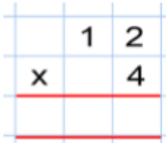Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.
Write and calculate mathematical statements for multiplication using the multiplication tables that they know,
including for two-digit numbers times one-digit numbers, using mental and progressing to formal written 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.

Objective & Strategy	Concrete	Pictorial	Abstract	Example Stem Sentence
Multiply 2 digit by 1 digit (No regrouping)	Show the links with arrays to first introduce the grid method 4 rows of 10, 4 rows of 3 Then move onto dienes and place value counters E.g. 21 x 3 60 3 = 63 E.g. 34 x 2 60 8 = 68 Ensure resources are placed in columns and multiplied beginning with the least significant digit.	Children can represent their work with place value counters in a way that they understand. They can draw the counters using colours to show different amounts or just use the circles in the different columns to show their thinking as shown below. Tens Ones 6 9 24 × 3 = 72	Start with multiplying by one-digit numbers and showing the clear addition alongside the grid. | ×	30	5
7	210	35	 $210 + 35 = 245$ Begin with multiplying TO x 0. Use place value counters alongside short compact method e.g. 12 x 4	'In column subtraction, we start at the right-hand side' __ ones times by ____ ____ tens times by ____ ____ plus ____ equals ____ So __ x __ = __

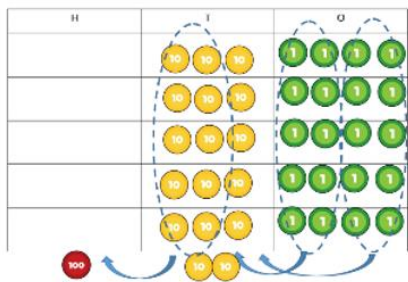| Multiply a 2 digit number by a 1 digit number (Regrouping) | Use equipmenmt such as dienes, place value counters where E.g. 24 x 4 with dienes | Children to represent the counters/dienes, pictorially | | | If any column sums to ten or greater, we must 'regroup'' |
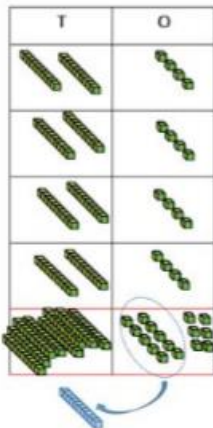
Step 1: Get 4 groups of 4 and 4 groups of twenty

Step 2: 4 ones four times 4 x 4 = 16. Can I make an regroup? Yes I can take ten ones and regroup it to make 1 ten
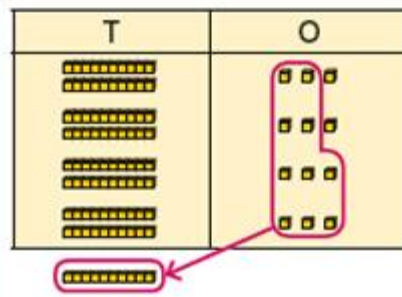
Step 3: 2 tens four times, plus my extra ten makes 90

Step 4: How many tens do I have? 9 How many ones do I have 6?

Step 5: How many tens and ones do I have altogether? 9 tens add 6 ones = 96

5 x 35


```
    T  O
    2  3
×      4
-------
    1  2    (4 x 3)
+   8  0    (4 x 20)
-------
    9  2
```

```
    T  O
    2  3
×      4
-------
    1  2
+   8  0
-------
    9  2
```

__ ones times by ____
____ tens times by ____
____ plus ____ equals ____
So __ x __ = __

Multiplication Year 4 statutory requirement:
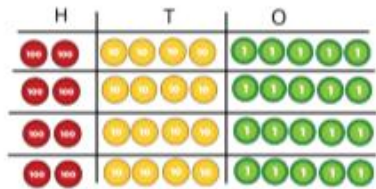
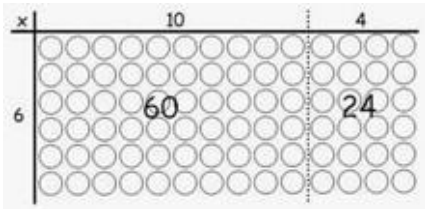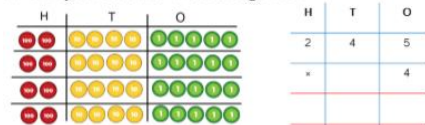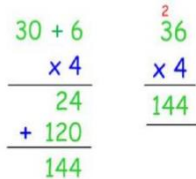Recall multiplication and division facts for multiplication tables up to 12 × 12
Use place value, known and derived facts to multiply and divide mentally, including: multiply two-digit and three-digit numbers by a one-digit number using formal written layout.
Solve problems involving multiplying and 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.

Key Vocabulary:

lots of, groups of times, multiply, multiplication, multiplied by, multiple of, product, factor, multiplicand, multiplier, once, twice, three times… ten times… times as, repeated addition array row, column

Factor x Factor = Product

Objective & Strategy	Concrete	Pictorial	Abstract	Example Stem Sentences
Grid method recap from year 3 for 2 digits x 1 digit and move to multiplying 3-digit numbers by 1 digit. (year 4 expectation)	E.g. 245 x 4 Fill each row with 245 Step 1: Get 4 rows of 245 (245 four times) Step 2: 5 x 4 = 20. Can I make a regroup? Yes I can take twenty ones and make 2 tens Step 3: 4 tens four times plus my extra 2 tens makes 18 tens (180) Step 4: How many tens do I have? 18. Can I make a regroup? Yes I can exchange 10 tens for 1 hundred which leaves me with 8 tens. Step 5: How many Hundreds do I have? 8 hundreds plus the extra hundred so 9 hundreds. Step 6: How many hundreds, tens and ones altogether? 900 + 8 + 0 = 980	Draw representations of place value counters or base 10 using a grid to organise the partitioned numbers. 14 x 6 60 + 24 = 84	Start with multiplying by one-digit numbers and showing the clear addition alongside the grid. 	×	30	5	 	7	210	35	 210 + 35 = 245	Step 1: partition the numbers into a grid. Step 2: multiply each box Step 3: Add the product of the boxes
Column Multiplication (TO x O and HTO x O) It is important at this stage that they always multiply the ones first.	Children can continue to be supported by place value counters at the stage of multiplication. This initially done where there is no regrouping and then moving on to regrouping. 321 x 2 = 642	Children to represent the counters/base 10, pictorially e.g. the image below	Two digit number 30 + 6 36 x 4 x 4 24 144 + 120 144 Leading to a 3 digit number	

Hundreds	Tens	Ones

×	300	20	7
4	1200	80	28

Moving on to

327
x   4
28
80
1200
1308

```
    3 2 7
  ×     4
  1 3 0 8
    1 2
```

Then

Division Early learning goal:

Number

Have a deep understanding of number to 10, including the composition of each number.

Subitise (recognise quantities without counting) up to 5.

Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

Numerical Patterns

Verbally count beyond 20, recognising the pattern of the counting system.

Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other Quantity`.

Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally

Objective & Strategy	Concrete	Pictorial	Abstract
Share quantities using practical resources, role play, stories and songs.	Role play example: It is the end of the party and the final two teddies are waiting for their party bags. Provide empty party bags and a small collection of items such as gifts, balloons and slices of cake. Ask the children to share the objects between the two bags. Show children a selection of objects e.g. 3 cups, 3 cakes, 1 sandwich. Children can say if there is a correct amount to share e.g. between 3 bears.	Children draw representations which show sharing e.g. in the example below they shared 12 faces into 3 equal groups	At this point the children are exploring putting things into groups and counting how many groups they have. They do not yet use the vocabulary or symbolism for division.

Sharing equally. *Once the children have been taught to share equally between 2 then then learn to share equally between more friends.*	*Practical opportunities during everyday routine. We have 10 crackers to share between 5 friends. How many will each friend get?*		
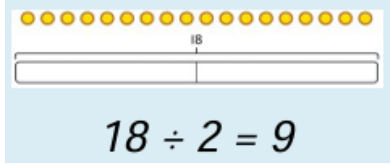
Division

Year 1 statutory requirement:
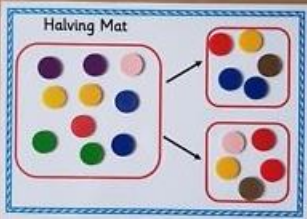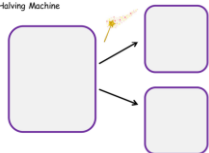
solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.

Key Vocabulary:
Division, ÷, divide, divided by, divided into, left, left over, equal groups, half, quarter
dividend ÷ divisor = quotient (remainder)

Objective & Strategy	Concrete	Pictorial	Abstract	Example Stem Sentence
Understand division as sharing equally using concrete resources.	Start with a whole and share into equal parts, one at a time. I have 10 cubes, can you share them evenly between 2 plates?	Children use pictures or shapes to share quantities. $8 \div 2 = 4$ Sharing: 4 4 4 12 shared between 3 is 4 Pictorial representation of sharing 12 gold coins between 2, 3 and 4 pirates! $12 \div 2$ $12 \div 3$ $12 \div 4$	Use a bar model to support understanding of the division. $18 \div 2 = 9$ $18 \div 2 = 9$ Introduce language of dividend, divisor and quotient.	___ shared equally between ___ ___ shared into ___ equal parts. There are ___ in each part.
Use pictorial representations and concrete	Use practical activities using manipulatives such as cubes and counters to halve a number	Children draw representations and use the halving mat to show halving	Half of 6 is 3. 3 is half of 6. If I halve 6 I get 3.	Half of ___ is equal to ___ ___ is half of ___ If I halve ___ I get ___

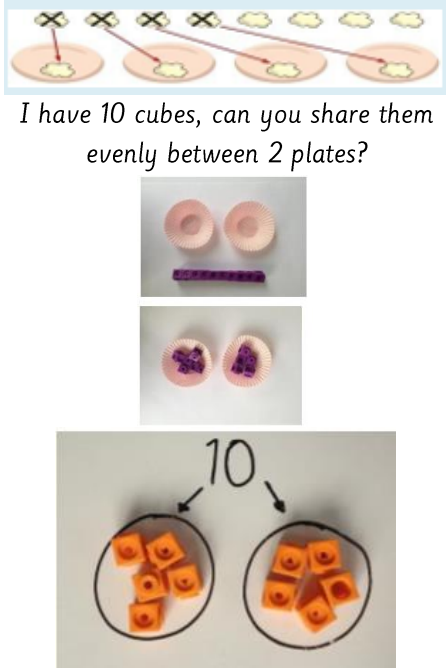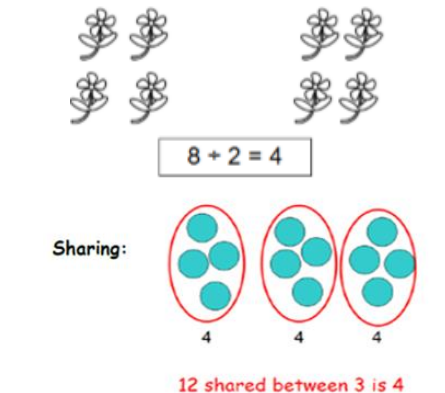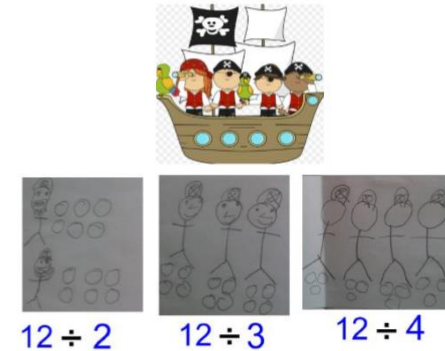| resources to halve numbers | | (Splitting the amount into 2 equal groups | I had 18 biscuits and I ate half of them. How many are left? Children to make a link to 2 times tables, and to doubling as inverse facts. | |

<mark>Division</mark> 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.
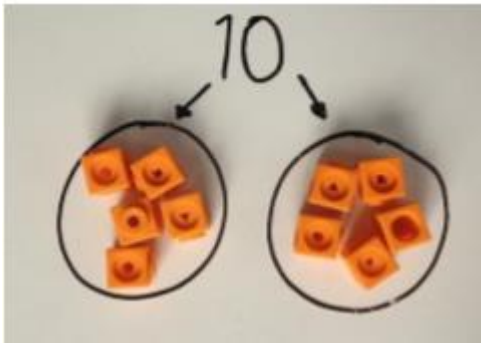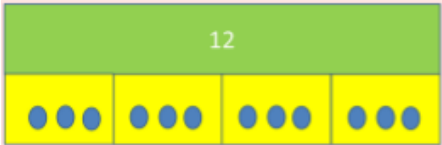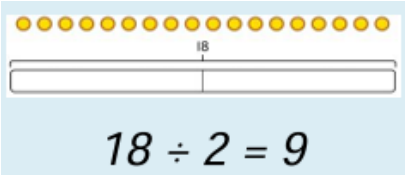
Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

Find 1/3; 1/4; 2/4; ¾ of a length, shape, set of objects or quantity

Objective & Strategy	Concrete	Pictorial	Abstract	Example Stem Sentence
Understand division as <u>sharing</u> using concrete resources. *Whilst teaching division, reinforce the connections between fractions and division and rephrase this calculation as 1/3 of 18 is the same as 18 ÷ 3 = 6*	I have 10 cubes, can you share them evenly between 2 groups?	Sketch or draw to represent sharing into equal parts Children use bar modelling to show and support understanding e.g. 12 ÷ 4 = 3	Use a bar model to support understanding of the division. 18 shared into 2 equal parts gives 9 in each part. $18 ÷ 2 = 9$	20 shared into 5 equal parts. There are 4 in each part.
Begin to understand division as <u>grouping</u> using concrete resources. *Whilst teaching division, reinforce the connections between fractions and division and*	Divide quantities into equal groups e.g. groups of 2 Use cubes, counters, objects or place value counters to aid understanding	12 into groups of 2 $12 ÷ 2 = 6$ Use number lines for grouping	Understand how to relate division by grouping. 12 divided into groups of 3. $12 ÷ 3 = 4$ There are 4 groups.	___ divided into groups of ___. There are ___ groups.
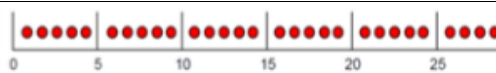
rephrase this calculation as 1/3 of 18 is the same as 18 ÷ 3 = 6		$12 ÷ 3 = 4$ **Bar Model** - Think of the bar as a whole. Split it into the number of groups you are dividing by and work out how many would be within each group 20 ? $20 ÷ 5 = ?$ $5 \times ? = 20$		
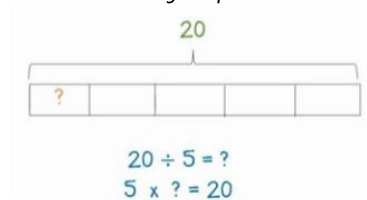
Division Year 3 statutory requirement:

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.
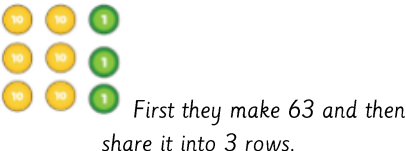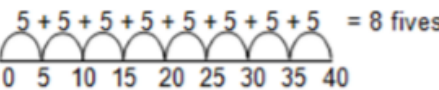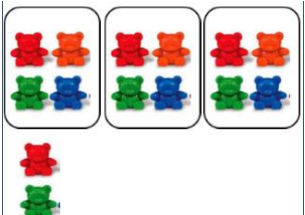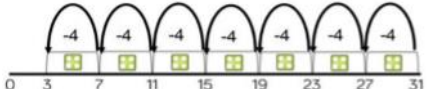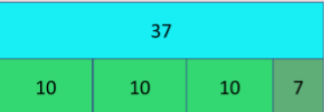
Key Vocabulary:
share, share equally, one each, two each, three each… group, in pairs, threes… tens, equal groups of ÷, divide, divided by, divided into left, left over
dividend ÷ divisor = quotient

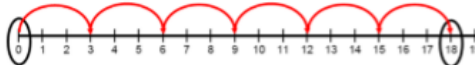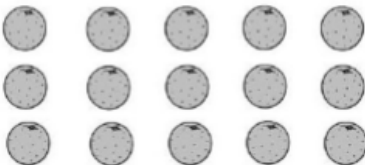| Objective & Strategy	Concrete	Pictorial	Abstract	Example Stem Sentence
Consolidate understanding of division as _grouping_ using concrete resources.	Use cubes, counters, objects or place value counters to aid understanding. 96 divided into groups of 3 = 32 $96 \div 3 = 32$	Children use numbered number lines to divide using grouping. 18 into groups of 3 = 6 gro 18 into jumps of 3 = 6 jump $18 \div 3 = 6$	How many groups of 6 in 24? $24 \div 6 = 4$	__ divided into groups of __. There are __ groups.
Division with arrays	Link division to multiplication by creating an array and thinking about the number sentences that can be created. Eg $15 \div 3 = 5$ $5 \times 3 = 15$ $15 \div 5 = 3$ $3 \times 5 = 15$	Draw an array and use lines to split the array into groups to make multiplication and division sentences E.g. $15 \div 3 = 5$	Find the inverse of multiplication and division sentences by creating eight linking number sentences. $7 \times 4 = 28$ $4 \times 7 = 28$ $28 \div 7 = 4$ $28 \div 4 = 7$ $28 = 7 \times 4$ $28 = 4 \times 7$ $4 = 28 \div 7$ $7 = 28 \div 4$	

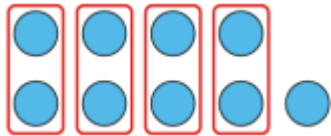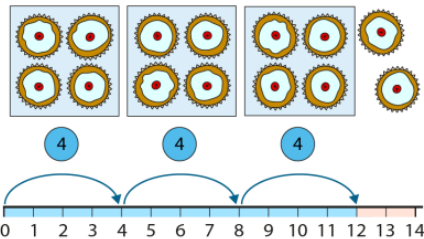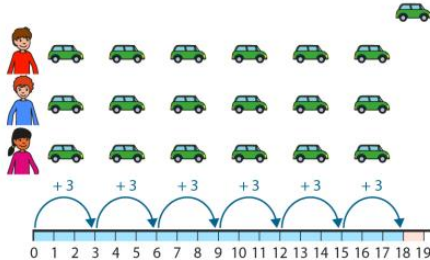|				
Divide two digit number by one digit with no remainders	Children represent a calculation using dienes and then share the tens and ones e.g. 39 ÷ 3 = 21 Step 1: Share the tens Step 2: Share the ones Then they move onto place value counters e.g. 63 ÷ 3 . *First they make 63 and then share it into 3 rows.* 	T	O
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Division with remainders (Two digit by 1 digit)	Use equipment to understand that a remainder occurs when a set of objects cannot be divided equally any further. Use equipment such as place value counters E.g. 14 ÷ 3 = *Step 1 – Build the number and show the groups on the place value chart.* *Step 2 Divide the tens* *Step 3 Divide the ones and calculate the remainder*	Children use number lines alongside equipment e.g. 31 ÷ 4 How many groups of 4 have you subtracted? How many are remaining? -4 -4 -4 -4 -4 -4 -4 0 3 7 11 15 19 23 27 31 Draw dots and group them to divide an amount and clearly show a remainder. remainder 2	Use bar models to show division with remainders. 	37
10	10	10	7 | 29 ÷ 8 = 3 REMAINDER 5 ↑ ↑ ↑ ↑ dividend divisor quotient remainder	Step 1: partition the dividend into tens and ones. ___ = ___ tens and ___ ones Step 2: divide the tens ___ ÷ ___ = ___ Step 3: divide the ones ___ ÷ ___ Write the remainder. There are ___ equal groups and ___ left over (remaining)

Division Year 4 statutory requirement:

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.

Objective & Strategy	Concrete	Pictorial	Abstract	Example Stem Sentence
Objects and quantities can be divided into equal groups with a remainder (Quotitive) .	Children use objects such as counters to divide amounts into equal groups **Nine is divided into groups of two. There are 4 groups and a remainder of one**	Children continue to draw their own diagrams to divide numbers into equal groups. This is shown alongside a number line e.g. 14 divided into groups of 4	Record the equations and interpret this $$14 = 3 \times 4 + 2$$ $$14 = 4 \times 3 + 2$$ $$14 \div 4 = 3 \text{ r } 2$$ 14 divided into groups of 4 is equal to 3 groups with a remainder of 2 So there are 3 groups with a remainder of 2	____ is divided into groups of ___ There are ____ groups and a remainder of ____ So ____ divided into groups of ___ is equal to ____ with a remainder of ____
Objects and quantities can be shared with a remainder (Partitive)	Children use objects such as real life objects and counters to share amounts 'Nineteen toy cars are shared equally between three children. How many cars does each child get?'	Children continue to draw their own diagrams to share numbers. This is shown alongside a number line • 'One three is one each. That's three.' • 'Two threes is two each. That's six…' • '…Six threes is <u>six</u> each. That's eighteen.' • 'There is <u>one</u> car left over.'	Record the equations and interpret this $$19 = 3 \times 6 + 1$$ $$19 = 6 \times 3 + 1$$ $$19 \div 3 = 6 \text{ r } 1$$ 19 divided between three is equal to six each with a remainder of 1 So, the children get six cars each and there is one car left over.	___ divided between ____ is equal to ___ each with a remainder of ____