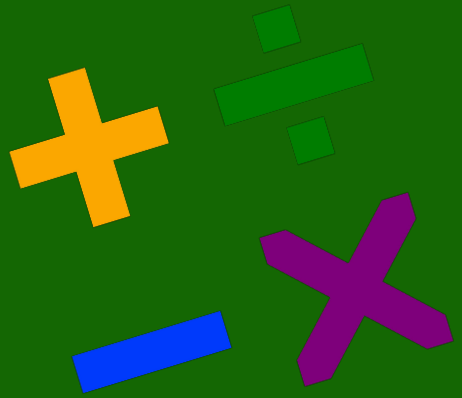
Anton Infant School Calculation Policy 2024



Early Years Websites Used:

https://www.ncetm.org.uk/in-the-classroom/early-years/

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1170108/EYFS_framework_from_September_2023.pdf

https://primarysite-prod-sorted.s3.amazonaws.com/wellfield-infant-nursery-school-redesign/UploadedDocument/c3ca5b02e22f47fbad59e5b76575c740/calculation_in_the_eyfs_parent_workshop_spring_2015.pdf

https://primarysite-prod-sorted.s3.amazonaws.com/wellfield-infant-nursery-school-redesign/UploadedDocument/3289f637-92fe-400f-b954-6a048846fd3e/srtoolkitposter4to5.pdf

https://www.wellfieldinfants.com/mathematics-in-the-early-years-foundation-stage/

KS1 Websites Used:

https://maths.hias.hants.gov.uk/course/view.php?id=164

https://www.ncetm.org.uk/classroom-resources/progression-maps-for-key-stages-1-and-2/

http://www.mathematicshed.com/uploads/1/2/5/7/12572836/chall

https://www.wellfieldinfants.com/mathematics-in-key-stage-one/

https://www.priory.dudley.sch.uk/attachments/download.asp?file=139&type=pdf

Year R

What does a maths lesson in Year R look like?

Daily maths input.

One weekly objective with adult led tasks throughout the week.

Indoor and outdoor continuous provision to enhance current learning.

Recording - photographic or large paper/floor work.

Mathematical evidence in learning journals.

Early Years Statutory Framework Mathematics

https://assets.publishing.service.gov.uk/media/657aed70095987000d95e0e6/EYFS_statutory_framework_for_group_and_school_based_providers.pdf

Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically.

Children should be able to **count confidently,** develop a deep **understanding of the numbers to 10**, the **relationships between them** and the **patterns within those numbers**.

By providing frequent and varied opportunities to build and apply this understanding - such as using **manipulatives**, including **small pebbles** and **tens frames** for organising counting - children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built.

In addition, it is important that the curriculum includes rich opportunities for children to develop their **spatial reasoning** skills across all areas of mathematics including **shape, space and measures**.

It is important that children develop positive attitudes and interests in mathematics, look for **patterns and relationships**, spot connections, ‘have a go’, talk to adults and peers about what they notice and not be afraid to make mistakes.

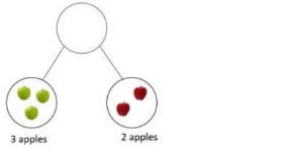
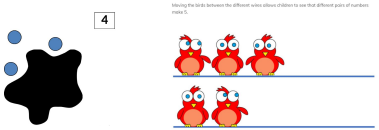
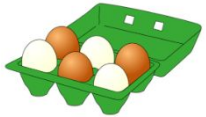
ELGs Mathematics

https://assets.publishing.service.gov.uk/media/657aed70095987000d95e0e6/EYFS_statutory_framework_for_group_and_school_based_providers.pdf

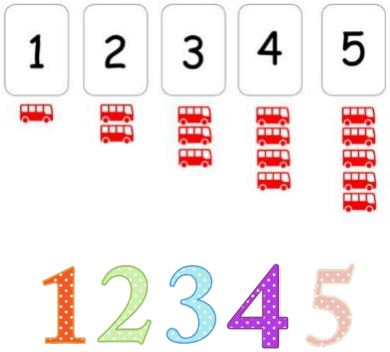
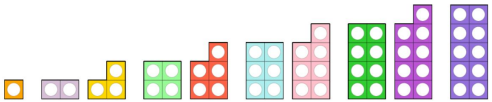
Mathematics ELG: Number
Children at the expected level of development will:
• Have a deep understanding of number to 10, including the composition of each number.
• Subitise (recognise quantities without counting) up to 5.
• Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

ELG: Numerical Patterns Children at the expected level of development will:
• 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.

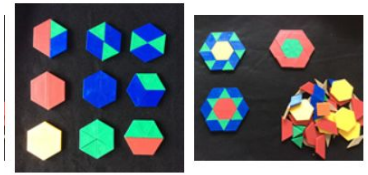
Year R - Number

Stage 1	Stage 2	End of year Expectations **Bold = not previously taught**
Have a deep understanding of numbers to 5, 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 for all numbers up to 5 Know subtraction facts for all bonds up to 5  	Have a deep understanding of numbers 6,7,8,9,10, including the composition of each number. Automatically recall number bonds for 6, 7, 8 Know subtraction facts for some bonds 6, 7, 8 Know some double facts up to 10  	Have a deep understanding of numbers 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 for all numbers up to 5 Know subtraction facts for all bonds up to 5 Automatically recall number bonds for some numbers up to 10 **(9 and 10)** Know subtraction facts for some bonds up to 10 **(9 and 10)** Know some double facts up to 10

Year R - Numerical Patterns

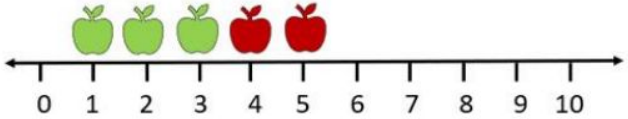
Stage 1	Stage 2	End of year Expectations **Bold = not previously taught**
Verbally count to 10 Order number cards to 10 Spot missing numbers when counting Compare numbers up to 5 - Greater than, less than, same as  	Verbally count to 20 Order number cards to 20 Spot missing numbers when counting Compare numbers up to 10 - Greater than, less than, same as Count back from 10 Recognise odd and even within 10 	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 - evens and odds **Explore and represent double facts** **Explore and represent how quantities can be distributed equally.**

Year R - Shape, space and measure

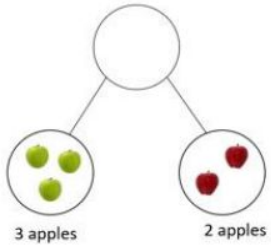
Stage 1	Stage 2	End of year Expectations **Bold = not previously taught**
Develop an awareness of time passing, in preparation for telling the time. -Using daily timetable -This morning, lunchtime, this afternoon Begin to use the language of time (next, before) to sequence personal events -Daily timetable Develop their use and understanding of positional language. - Models and structures - On top of, next to, at the bottom Explore 3-D shape through constructions and patterns - cube, cuboid, cylinder - roll, stack 	Measure length, distance, height in practical activities using cubes/bricks Develop an awareness of time passing, in preparation for telling the time. - Using daily timetable - 12:00 lunchtime - refer to clock - 3:00 hometime - refer to clock Explore 2-D shape through constructions and patterns - square, rectangle, circle, triangle - straight, curved 	Measure length, distance, height in practical activities using cubes/bricks **Measure weight/mass in practical activities using cubes/bricks** **Measure capacity in practical activities using cups/beakers** Develop an awareness of time passing, in preparation for telling the time. Begin to use the language of time (next, before) to sequence personal events Develop their use and understanding of positional language. Explore 2-D and 3-D shape through constructions and patterns

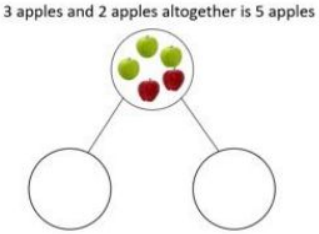
Mathematical models and images to support conceptual understanding underpinning key facts in Reception

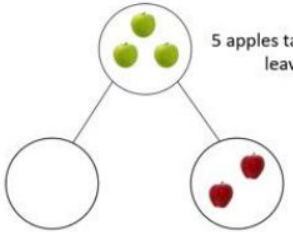
Early representations of structure

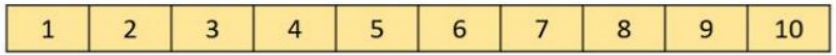


'part-part-whole' language

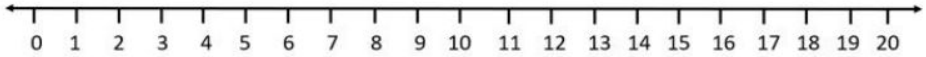


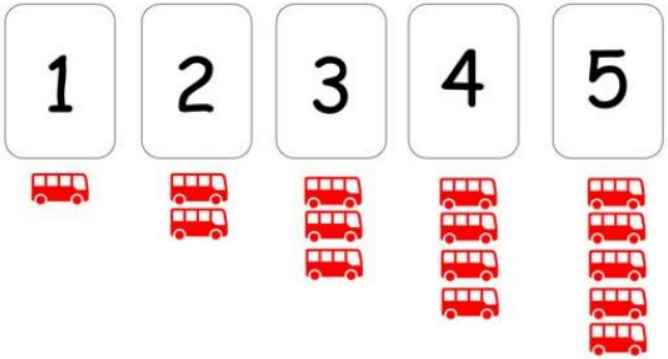






number tracks and number lines



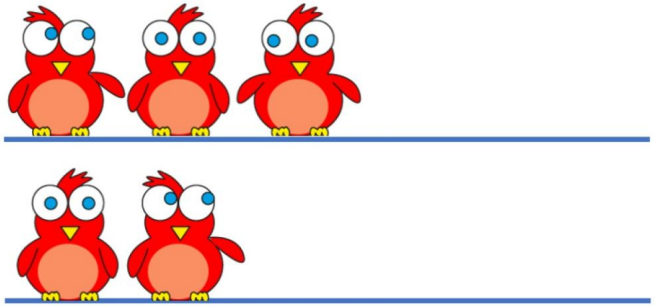


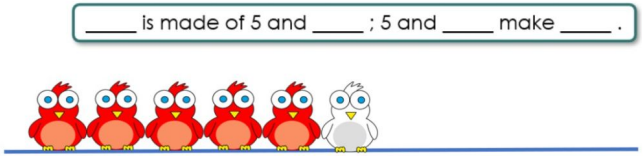
https://maths.hias.hants.gov.uk/pluginfile.php/7190/mod_resource/content/1/Year%20R%20number%20facts%20July%202021.pdf

NCETM Guidance for Year R

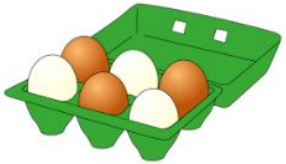
https://www.ncetm.org.uk/in-the-classroom/early-years/

Moving the birds between the different wires allows children to see that different pairs of numbers make 5.

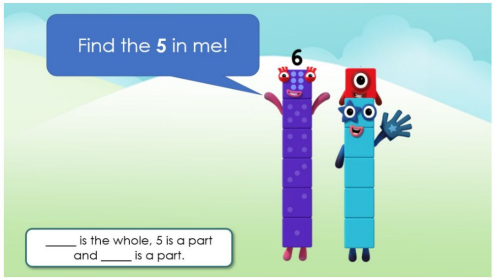


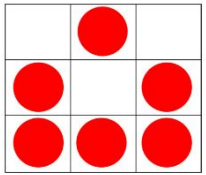


The dice pattern emphasises '3 and 3':



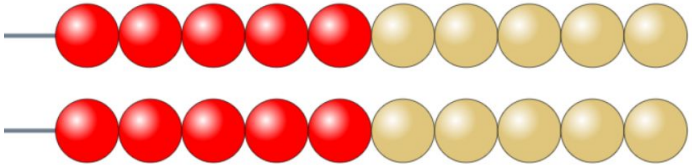
A 9-grid allows single counters to be moved out of the familiar dice pattern to see that we still have 6. Different ways of subitising the numbers within 6 to compose 6 are explored.

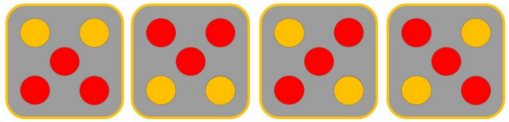


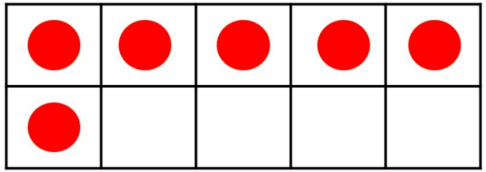


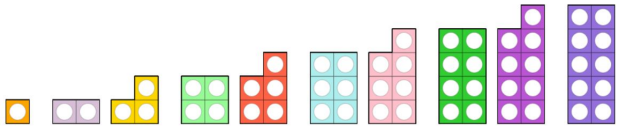
Example of useful resources in Year R (https://mathsbot.com/manipulativeMenu)

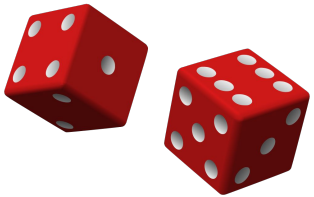
https://mathsbot.com/tools/subitising
https://mathsbot.com/tools/counting

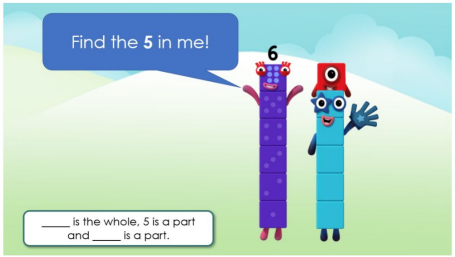


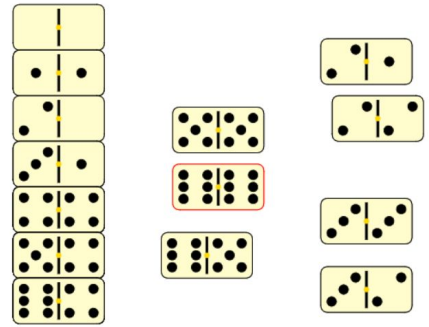








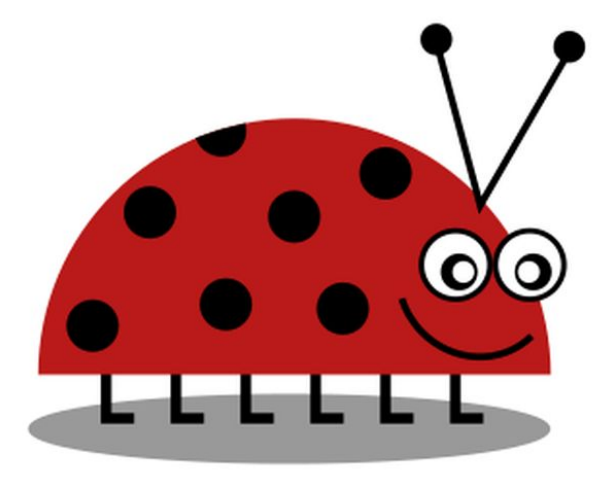




HIAS progression documents adapted

https://maths.hias.hants.gov.uk/pluginfile.php/10385/mod_resource/content/0/Multiplication%20and%20Division%20Progression%20in%20Calculation.pdf

Year 1



What does a maths lesson in Year 1 look like?

Daily input for whole class or groups.

Continuous prevision set up to provide additional opportunities to consolidate previous learning.

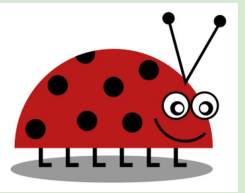
Lots of floor work - using big paper and resources to explore concepts practically and record with freedom.

Some recording in books, often with support of an adult so that accurate recording is modelled.

Large squares in books to support accurate representation of the concrete.

Group problem solving and reasoning tasks with support of an adult to guide the conversations and scaffold higher level thinking.

Carefully chosen resources to support mathematical thinking in all lessons, available for all children to access.



Place Value Year 1 - Progression

Stage 1 - 1.1 , 1.2, 1.4	Stage 2 - 1.7, 1.9, 1.12, 1.14	End of year Expectations
Count to at least 50 forwards, beginning with 1 Count backwards from 20. Count in 10s to 50. Find one more and one less up to 20 Solve problems in a context, finding one more and one less. Use objects and pictures to represent a number. Place a number on a number line. Order numbers. Compare numbers. Read and represent 'teen' numbers. Estimate position of numbers on a number line. **Money** Count in 1s. Count in 10s. Count in 1ps and 10ps. **Length** Compare lengths and heights. Use cubes to compare lengths.	Count to 100 forwards **Count backwards** from 30 then 50 then 100 Count in tens. Find one more and one less. (30, 50 then 100) Find ten more. **Money** recognise and know the value of different coins. identify one more. count in tens. count in coins. order amounts. compare amounts. represent 'teens' numbers using coins. **Mass and Capacity** Measure and begin to record mass, capacity and volume	Position numbers on a number line. Position 'nearly numbers' on a number line. Find one more and one less of a given number. Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number Count, read and write numbers to 100 in numerals. Identify and represent numbers using objects and pictorial representations,including the number line, and use the language of: equal to, more than, less than (fewer), most, least.

Year 1 - Place Value CPA - Lots of practical activities - making, matching, counting, sorting …

Stage 1 - 1.1 , 1.2, 1.4

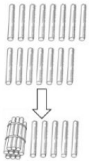
Collections of objects to count
-Organise into rows when counting

Ordering numbercards - which one is missing?

100 square - paint the squares
https://www.topmarks.co.uk/learning-to-count/paint-the-squares

Unifix at this stage (not Dienes)
Focus on 'teen' numbers

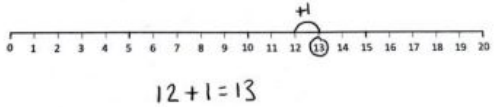
Bundles of straws
for teen numbers



Numicon - teen numbers

16 = 10+ 6

Find 1 more and 1 less from any given number within 20



Stage 2 - 1.7, 1.9, 1.12, 1.14

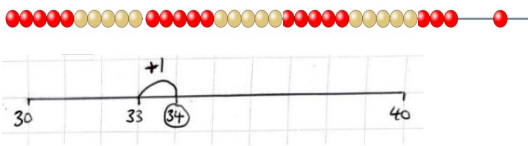
Money - make amounts with 10ps and 1ps

Length - Use metre sticks to measure
Mass - Use 10g and 1g weights
Capacity - Count in 10 ml and 1ml
Pots of Dienes to count and position on number line
Numbers to make with Dienes
100 bead string to count in 10s and ones

Counting stick

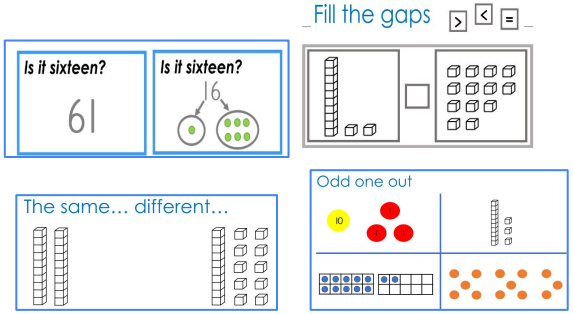
Position numbers on blank number square/ blank numberline - discussion why is 4 positioned there? (nearly 10…)

Find 1 more and 1 less from any given number within 50

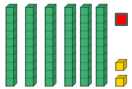


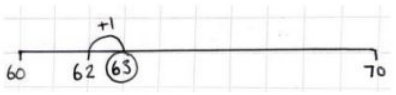
End of year Expectations

Find one more and one less of a given number.
Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number
Count, read and write numbers to 100 in numerals.
Identify and represent numbers using objects and pictorial representations,including the number line, and use the language of: equal to, more than, less than (fewer), most, least.

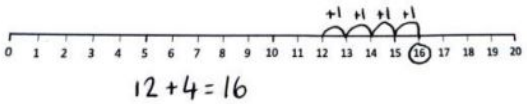


Find 1 more and 1 less from any given number within 100





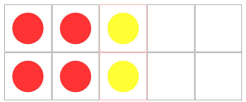
Addition and Subtraction Year 1 - Progression

Stage 1 - 1.1, 1,2 and 1. 4	Stage 2 - 1.5 and 1.7	End of year Expectations
1.1 partition numbers up to 5. 1.2 can partition numbers up to 7. solve problems using partitioning. find one more and one less. 1.4 partition 6, 7, 8 and 9. solve addition and subtraction problems.	partition 6, 7, 8 and 9. use number bonds and related subtraction facts for 6, 7, 8, and 9 use number bonds to partition in different ways. solve one-step problems. use number bonds to 10. use number bonds to solve one-step problems. solve one-step addition and subtraction problems. reason using known facts. problem solve using number bonds to 10.	Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs. Represent and use number bonds and related subtraction facts within 20 Add and subtract one-digit and two-digit numbers to 20, including zero. Solve one-step problems that involve addition and subtraction using concrete objects and pictorial representations, and missing number problems such as 7 = □ – 9 

Addition Year 1 - CPA

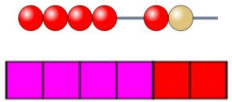
Stage 1

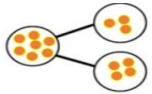
Represent numberbonds **within** 10. (5, 6, 7, 8, 9)



Draw on large paper using tens frame stamp as template
Draw on 10s frame stickers

Draw around numicon on large paper with felt tips
Draw numcicon on 10s frame stickers

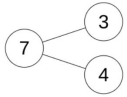




Draw on large paper with felt tips
Draw using squares in book for each circle

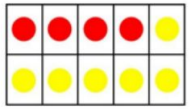
Make on part-whole template with cubes
Draw on big paper
Use stickers in books

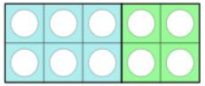
4 + 2 = 6



Stage 2

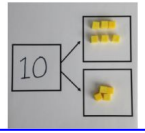
Use numberbonds **within** 10 (8, 9, 10)
And I know number bonds that make 10





Draw on 10s frame stickers
Draw using squares in book

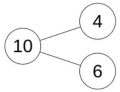
Draw numcicon on 10s frame stickers
Draw a representation using squares in book - coloured circles

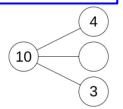


Draw on given template
Draw using squares in book for each circle

Draw on given template
Draw part-whole in books

4 + 6 = 10

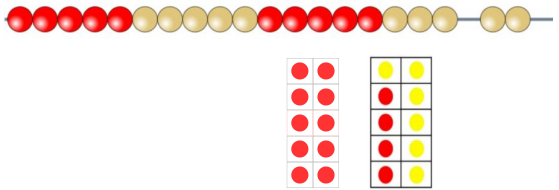




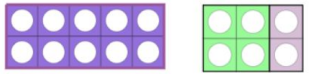
10 = 4 + 6

End of year Expectations

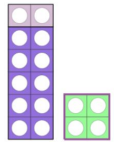
Represent and use number bonds **within** 20.
And I know number bonds that make 20.



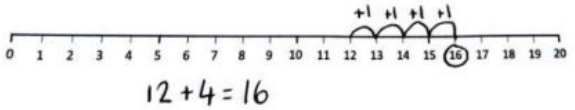
If I know 4 + 2 = 6 .... I know 14 + 2 = 16
Numicon



Add 1 digit and 2-digit numbers to 20



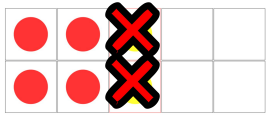
Introduce counting in ones on a structured numberline



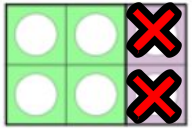
Subtraction Year 1 - CPA

Stage 1

Represent numberbonds **within** 10.
(5, 6, 7, 8, 9)



Draw on large paper using tens frame stamp as template
Draw on 10s frame stickers



Draw around numicon on large paper with felt tips
Draw numcicon on 10s frame stickers.
Draw 6 and cross out.

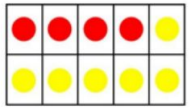
Draw on large paper with felt tips
Draw using squares in book

Use small world to make real stories
Draw real pictures on big paper - people on bus, birds in a tree, apples in a bowl.

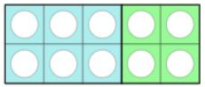
6 - 2 = 4

Stage 2

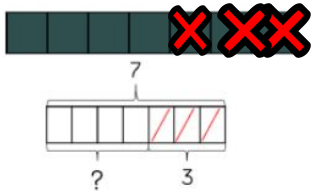
Use numberbonds **within** 10 (8, 9, 10)
And I know number bonds that make 10



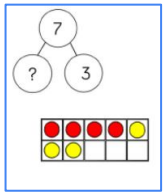
Draw on 10s frame stickers
Draw using squares in book

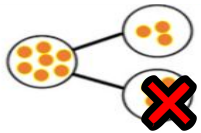


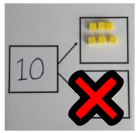
Draw numcicon on 10s frame stickers
Draw a representation using squares in book - coloured circles

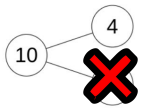


Part - whole Link add and sub





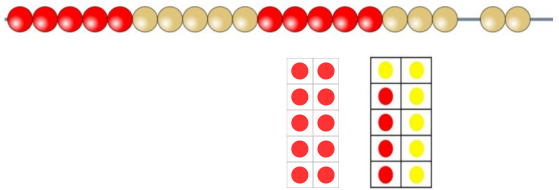




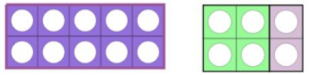
10 - 6 = 4 10 - 4 = 6 6 + 4 = 10 4 + 6 = 10

End of year Expectations

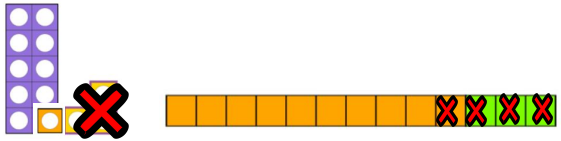
Represent and use number bonds **within** 20.
And I know number bonds that make 20.



If I know 6 - 2 = 4 .... I know 16 - 2 = 14
Numicon



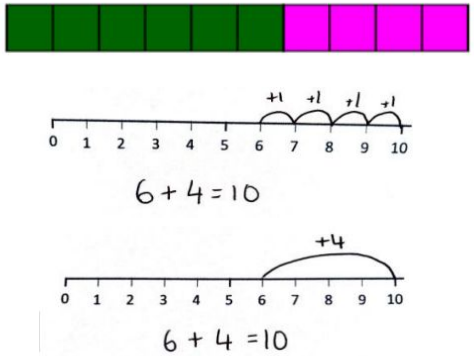
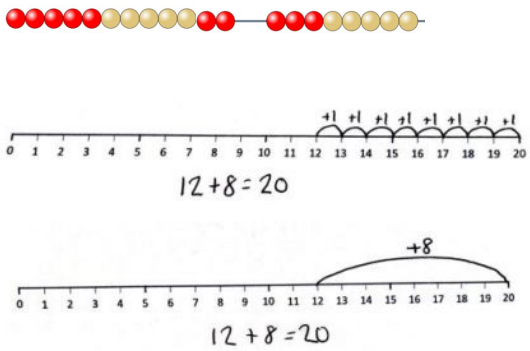
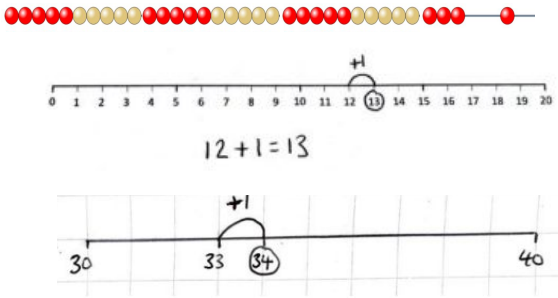
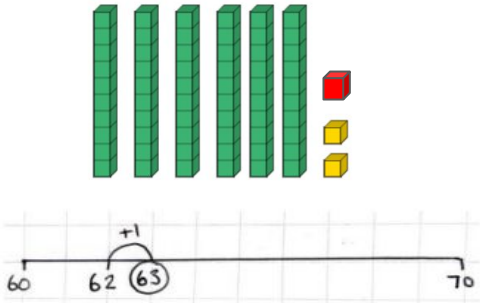
Subtract 1 digit and 2-digit numbers to 20



Introduce counting back in ones on a structured numberline

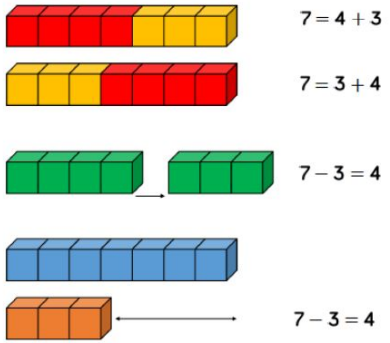
12 - 3 = 9

Addition and Subtraction Year 1 - Numberline Progression CPA

Stage 1	Stage 2	End of year Expectations
Represent numberbonds within 10. 6 + 4 = 10 	Use numberbonds within 10 	Represent and use number bonds within 20 
Find one more from any given number within 20. 	Find 1 more from any given number within 50 	Find 1 more from any given number within 100 

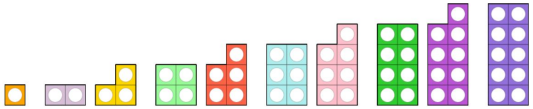
Primary models and images for Year 1

Cubes

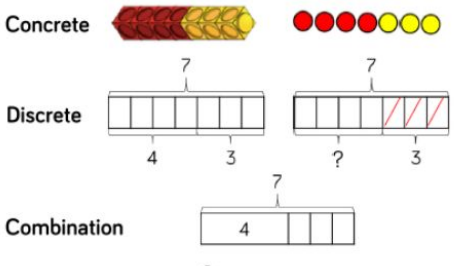


Bead String

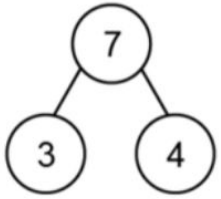
Numicon



Simple Bar Model

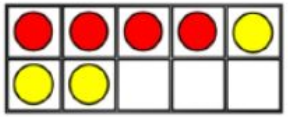


Part-whole



7 – 3 = 4

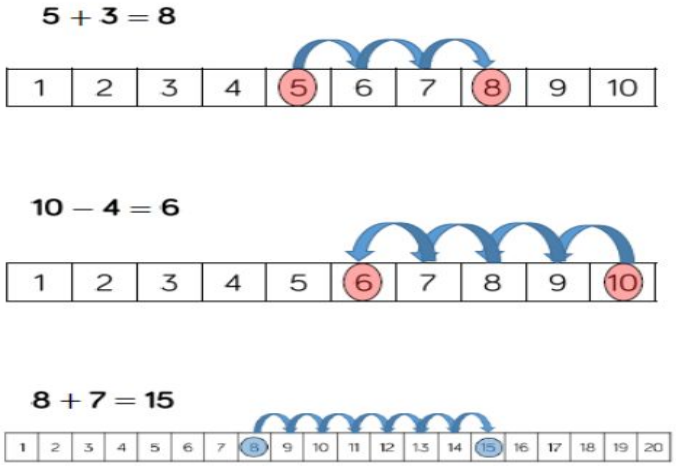
Ten Frames (within 10)



4 + 3 = 7
3 + 4 = 7
7 – 3 = 4
7 – 4 = 3

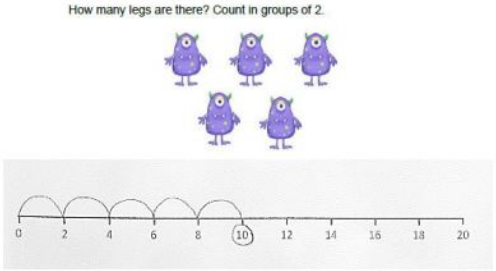
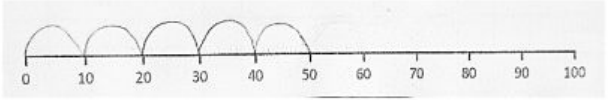
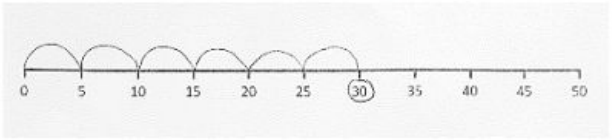
4 is a part.
3 is a part.
7 is the whole.

Number Tracks

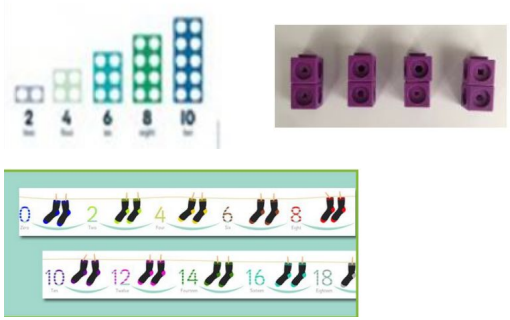
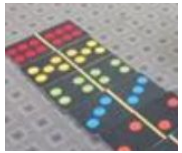
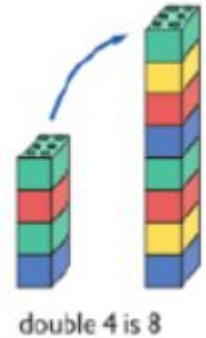
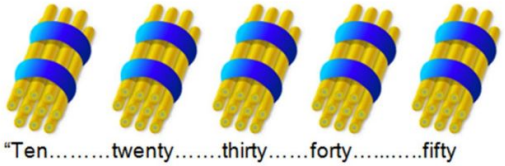
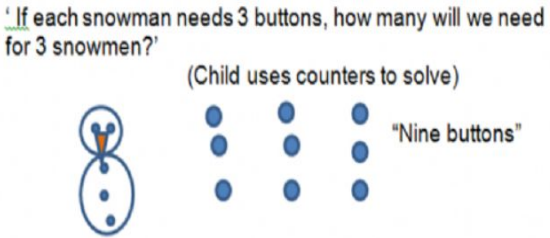
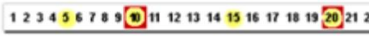
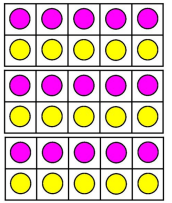


Multiplication Year 1 - Progression

Working with arrays helps pupils to become aware of the commutative property of multiplication, that 2 × 5 is equivalent to 5 × 2

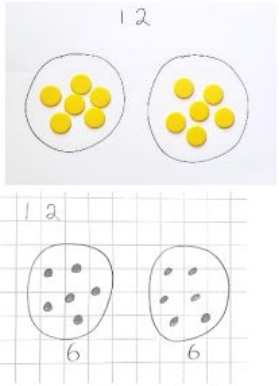
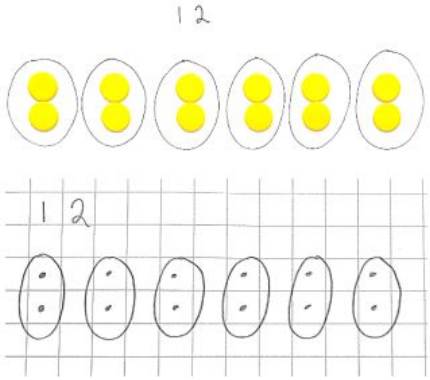
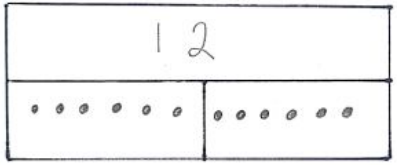
Stage 1 - 1.3	Stage 2 - 1.6	End of year Expectations 1.10, 1.13
Count in multiples of 2 2 4 6 8 10 12 14 16 18 20 Solve one step multiplication, by calculating the answer using pictorial representations (twos) Structured number line, e.g: 	Count in multiples of 10 10 20 30 40 50 60 70 80 90 100 Solve one step multiplication, by calculating the answer using pictorial representations (tens). Structured number line, e.g: *There are 10 crayons in a box.* *How many crayons will I have if I buy 5 boxes?* 	Count in multiples of 5 5 10 15 20 25 30 35 40 45 50 Count in multiples of 2, 5 and 10 Solve one step multiplication, by calculating the answer using pictorial representations (fives). Structured number line, e.g:  

Multiplication Year 1 - Progression

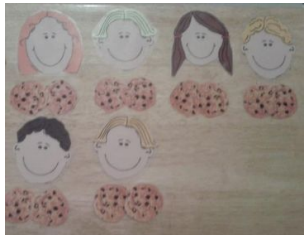
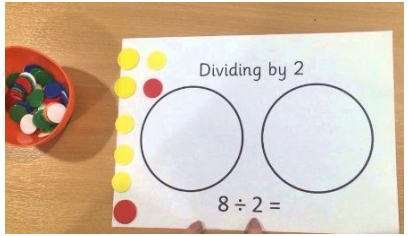
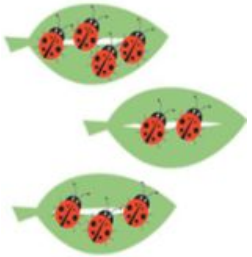
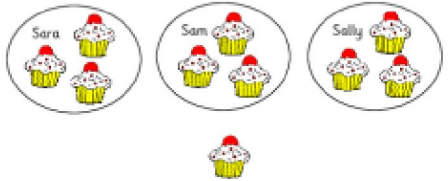
Stage 1 - 1.3	Stage 2 - 1.6	End of year Expectations 1.10, 1.13
Counting in 2s using Numicon.  Doubles    	Counting in 10s  Solve one step multiplication, by calculating the answer using pictorial representations. 'How many eggs/ cakes would we need to fill the box? How do you know?'  What if we fill 2 boxes? 3 boxes?	Solve one step multiplication, by calculating the answer using pictorial representations.  Counting in 5s See the link to counting in tens   Ten frames 

Division Year 1 - Progression

Working with arrays helps pupils to become aware of the commutative property of multiplication, that 2 × 5 is equivalent to 5 × 2

Stage 1 - 1.3	Stage 2 - 1.6	End of year Expectations 1.10, 1.13
Making equal groups – sharing. Concrete objects and pictorial representations, e.g: *I have 12 sweets and share them between myself and a friend (2 people), how many will we each have?*  "If I share **12** equally between **2** groups, there will be **6** in each group."	Making equal groups – grouping. Concrete objects and pictorial representations, e.g: *I have 12 cookies to put in bags.* *If I put 2 in each bag how many bags will I need?*  "There are **12** altogether. There are **6** equal groups of **2**."	Making equal groups (including finding half of a quantity). Bar models, e.g: *I had 12 grapes and I ate half. How many are left?*  "There are **12** altogether. They are shared into **2** equal groups. There are **6** in each group. Each group is half of the whole. I know that there are **6** grapes left."

Division Year 1 - Progression

Stage 1 - 1.3	Stage 2 - 1.6	End of year Expectations 1.10, 1.13
Making equal groups – sharing. Concrete objects and pictorial representations, e.g:  	Share equally  	Share equally Can you share the ladybirds into equal groups?  3 each and 1 left over: 

HIAS progression documents adapted
https://maths.hias.hants.gov.uk/pluginfile.php/10385/mod_resource/content/0/Multiplication%20and%20Division%20Progression%20in%20Calculation.pdf

Year 2

What does a maths lesson in Year 2 look like?

Refer to the learning journey.

Recap previous learning and revisit previous day's reasoning tasks for the whole class to access.

Recording in books, modelled and use of WAGOLL - high expectation in recording in a neat and organised way.

Large squares in books to support accurate representation of the concrete.

Majority of lessons have some fluency, problem solving and reasoning tasks.

All children - no matter ability - have tasks that they can access indpendenly during the week.

Carefully chosen resources to support mathematical thinking for all children in all lessons.

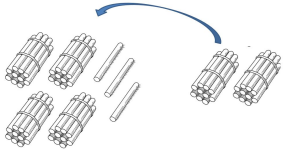
Some floor work - using big paper and resources to explore concepts practically and record with freedom.

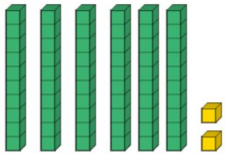
Place Value Year 2 - Progression

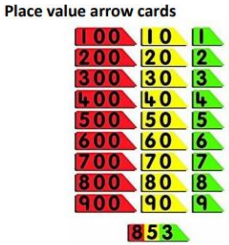
Stage 1 - 2.1 , 2.2, 2.4	Stage 2 - 2.5, 2.7, 2.8, 2.12, 2.14	End of year Expectations
Count to and across 100, forwards and backwards. Represent numbers using different representations. Order numbers up to 100. Reason where to put numbers on a number line. Find the nearest multiple of 10 on a number line. Compare and order numbers using <, > and = Write numbers in words. Explore patterns when counting forwards and backwards in tens. Add and subtract one and ten. <u>Measure - length</u> Compare lengths using >, < and = Measure in centimetres (cms). <u>Money</u> Recognise the value of coins. Count in 2s, 5s and 10s. Find different combinations of coins that equal the same amounts of money,	<u>Measurement - Mass, capacity and length</u> Compare and describe mass. Estimate mass. Estimate and measure mass. measure capacity accurately. Statistics count in steps of 2s, 5s, 10s, and 3s. Interpret simple tally charts. Interpret simple pictograms. Ask and answer simple question. Money find different combinations of coins that equal the same amounts of money. Measure - Time Tell the time to 5 minutes. Compare and order time intervals. Order durations of time. Add multiples of 10 to any number. partition numbers in different ways. partition number in tens and ones in different ways. position numbers on a number line.	Recognise the place value of each digit in a two□digit number (tens and ones). • Identify, represent, and estimate numbers using different representations using the number line. • Compare and order numbers from 0 up to 100; using <, > and = signs. • Read and write numbers to at least 100 in numerals and words. • Use place value and number facts to solve Problems Count in steps of 2, 3 and 5 from 0, and in tens from any number forward or backwards. • Given a number, identify one/ten more and one/ ten less.

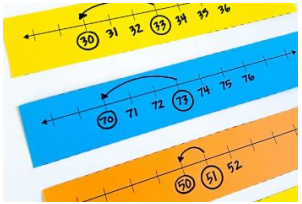
Place Value Year 2 - Progression CPA

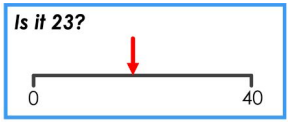
Stage 1 -





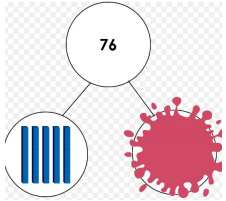




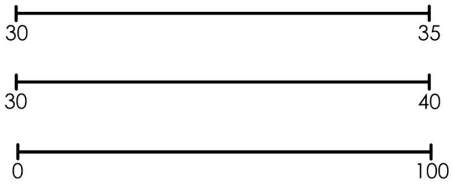


Stage 2 -

76 = 70 + 6
76 = 60 + 16
76 = 50 + 26
76 = 40 + 36…

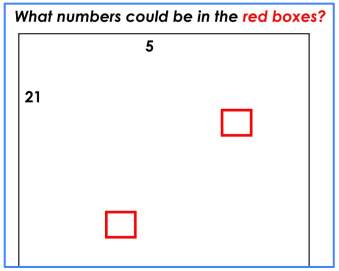


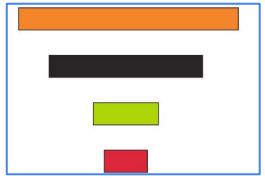
Show **34** on each number line.



Using weights in 10s and 100s …

End of year Expectations





Investigate

Use these digits: 3 8 1

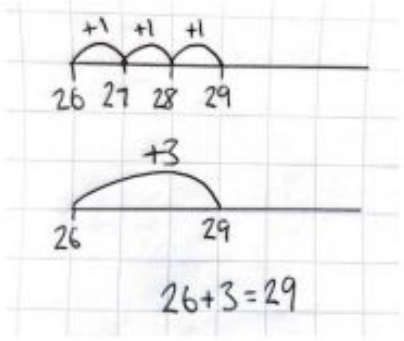
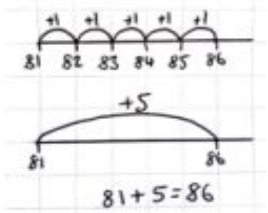
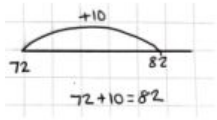
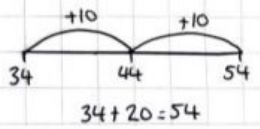
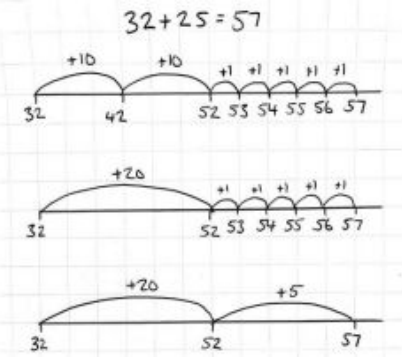
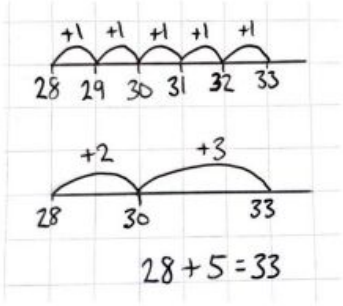
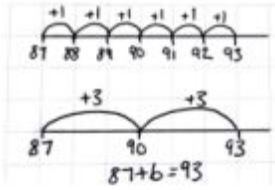
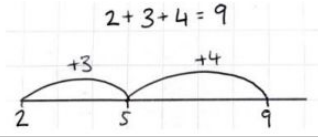
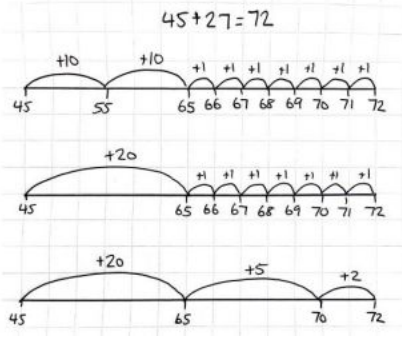
Make a 2-digit number and a 1-digit number. □□ □

Make the difference between the numbers small.

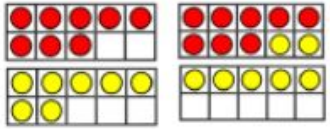
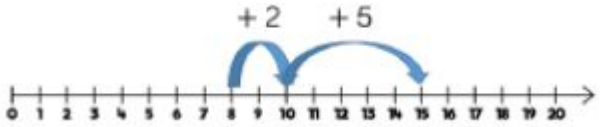
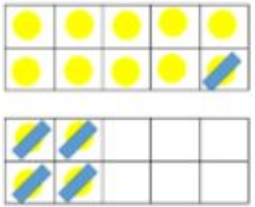
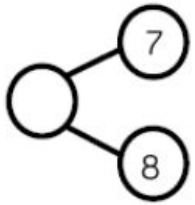
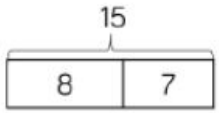
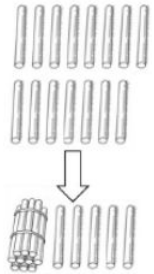
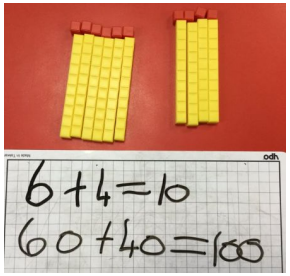
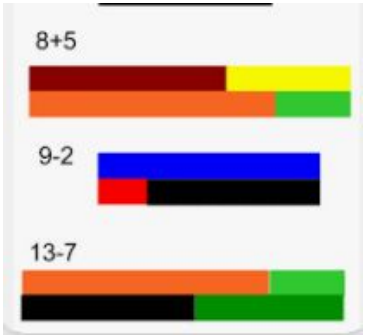
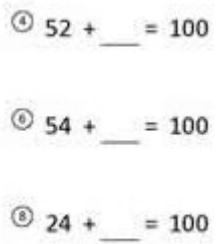
Addition and Subtraction Year 2 - Progression

Stage 1 - 2.1, 2.2, 2.4	Stage 2 - 2.5, 2.7	End of year Expectations 2.9, 2.12
Know number bonds to 10 and then 20. Find all the ways to partition any number up to 20. Add and subtract a 2-digit number with a 1 digit with no bridging. Add and subtract 2-digit and a multiple of 10 Add and subtract within 20 using known facts. Use number bonds to solve missing number problems. Find different combinations of coins that equal the same amounts of money, Add a 2-digit number with a 1 digit with no bridging in the context of money. Add 2-digit and multiples of 10 in the context of money. Add three one-digit numbers. Subtract a 2-digit number with a 1 digit with no bridging in the context of money. Subtract 2-digit and multiples of 10 in the context of money	Add a two-digit number and ones without bridging. Add three one-digit numbers. Add two-digit number and tens. Add a two-digit number and ones with bridging. Subtract a two-digit number and ones without bridging. Subtract a two-digit and tens. Subtract a two-digit number and ones with bridging. Show that addition can be done in any order. can derive and use related facts. Add multiples of 10 to any number. Recognise and use the inverse. Solve one-step problems.	Add two two-digit numbers. Subtract two two-digit numbers. Solve problems with addition and subtraction. Add and subtract a two-digit number and ones. Add and subtract a two-digit number and tens. Add and subtract two two-digit numbers without bridging. Add two two-digit numbers with bridging. Subtract two two-digit numbers with bridging. Add three one-digit numbers. Explain commutativity. Recognise the inverse calculation. Solve missing number problems. Solve two-step problems using addition and subtraction.

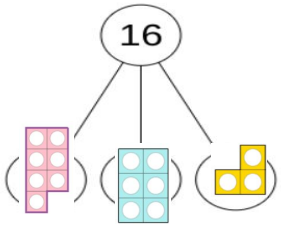
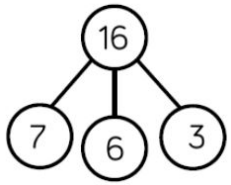
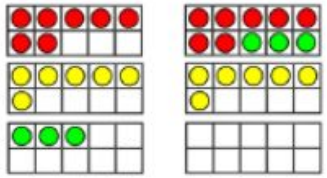
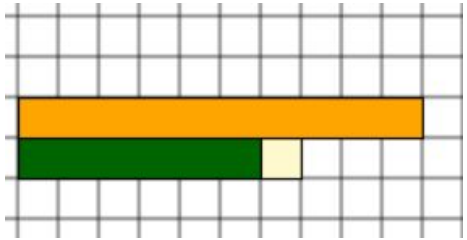
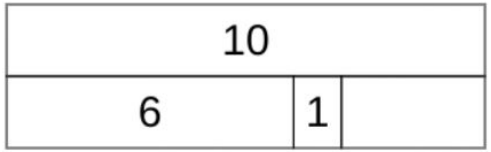
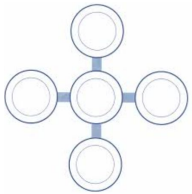
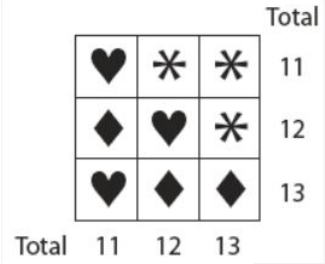
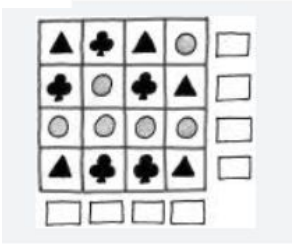
Addition Year 2

Stage 1	Stage 2	End of year Expectations
Add 2-digit numbers and ones to 50 without bridging. 	Add 2-digit numbers and ones to 100 without bridging.  Add 2-digit and tens.  	Adding two 2-digit numbers without bridging. 
Add 2-digit numbers and ones to 50 with bridging. 	Add 2-digit numbers and ones to 100 with bridging.  Add 3 1 digit numbers 	Adding two 2-digit numbers with bridging. 

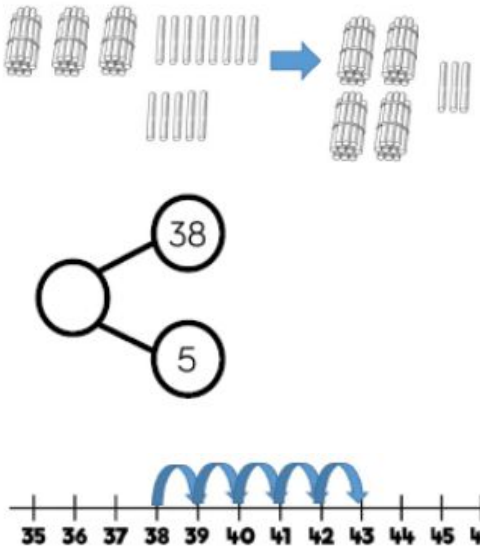
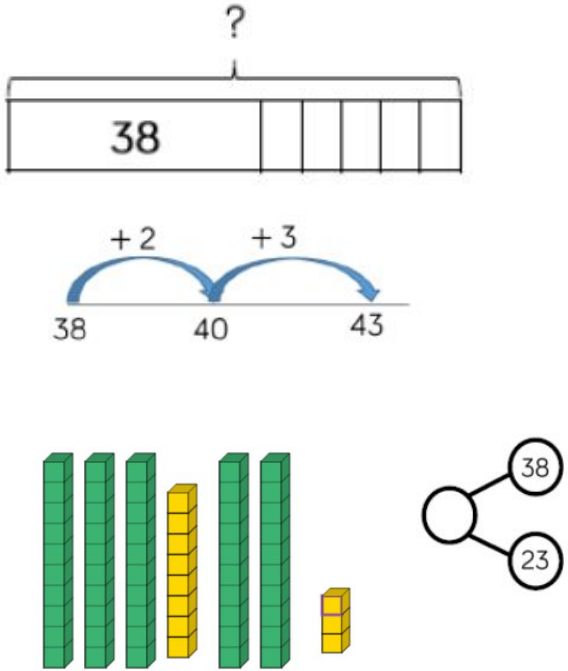
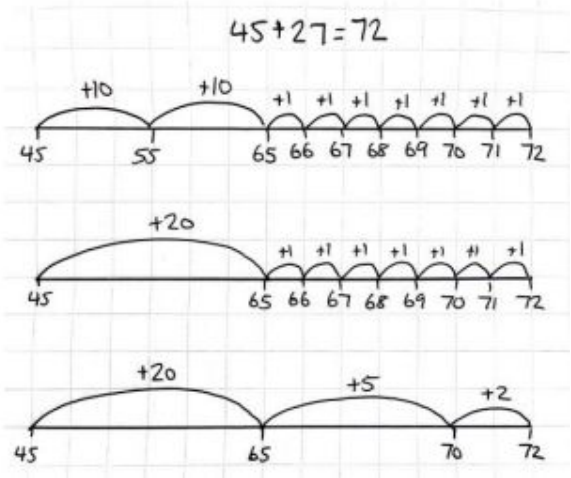
Addition and Subtraction - Year 2 - CPA

Stage 1 -	Stage 2 -	End of year Expectations
If I know 4 + 2 = 6 .... I know 14 + 2 = 16 Numicon  8 + 7 = 8 + 2 + 5 = 15   14 - 5 = 14 - 4- 1 = 9 	7 + 8 = 15      	recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 

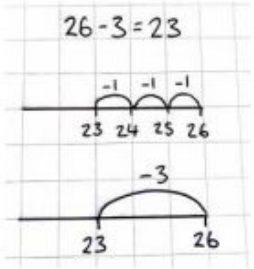
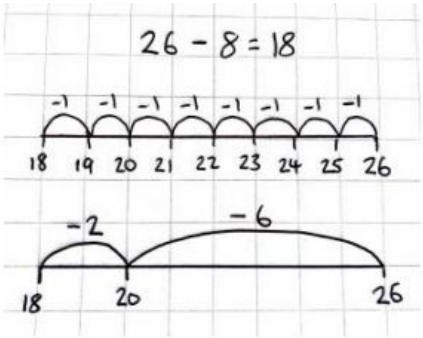
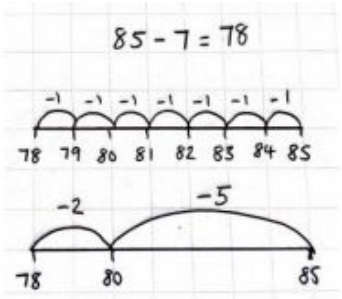
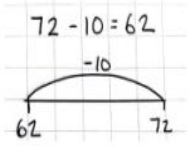
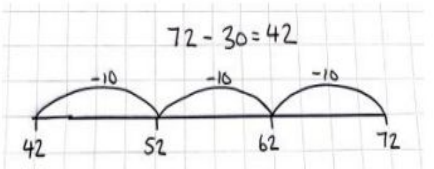
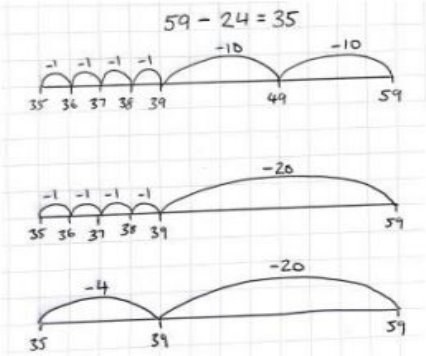
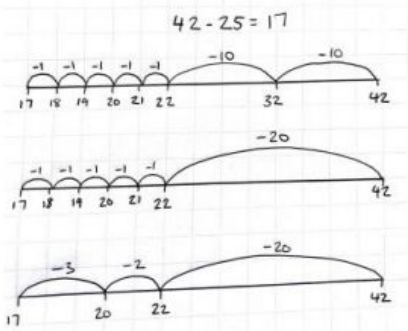
Addition and Subtraction - Year 2 - CPA

Stage 1 -	Stage 2 -	End of year Expectations
   7 + 6 + 3 = 16 10	6 + 1 + ☐ = 10  	Add three one-digit numbers. Arrange 15 counters So that each row and Column has a sum of 10.   

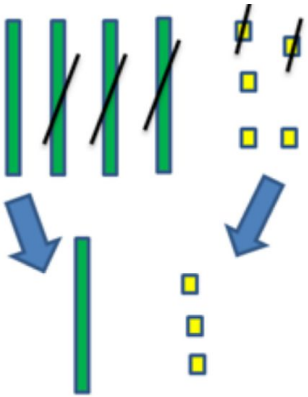
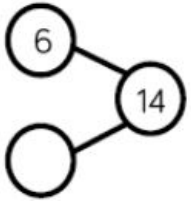
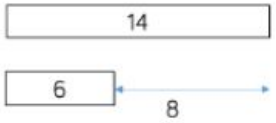
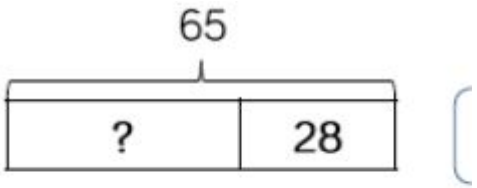
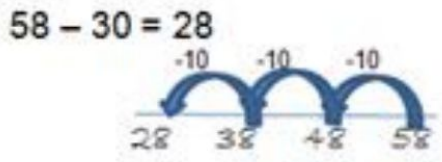
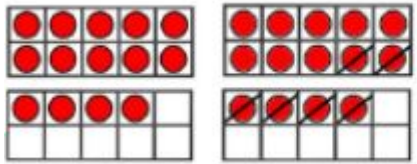
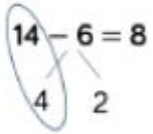
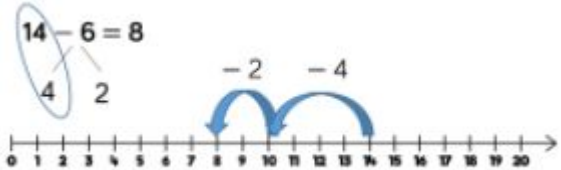
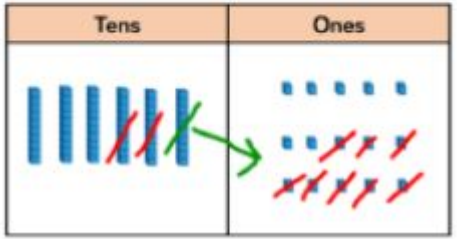
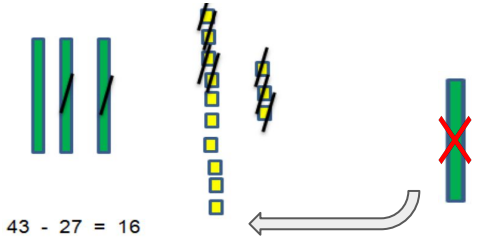
Addition and Subtraction - Year 2 - CPA

Stage 1 -	Stage 2 -	End of year Expectations
38 + 5 = 	Add 1 digit and 2 digit numbers to 100 	Add two 2 digit numbers to 100 

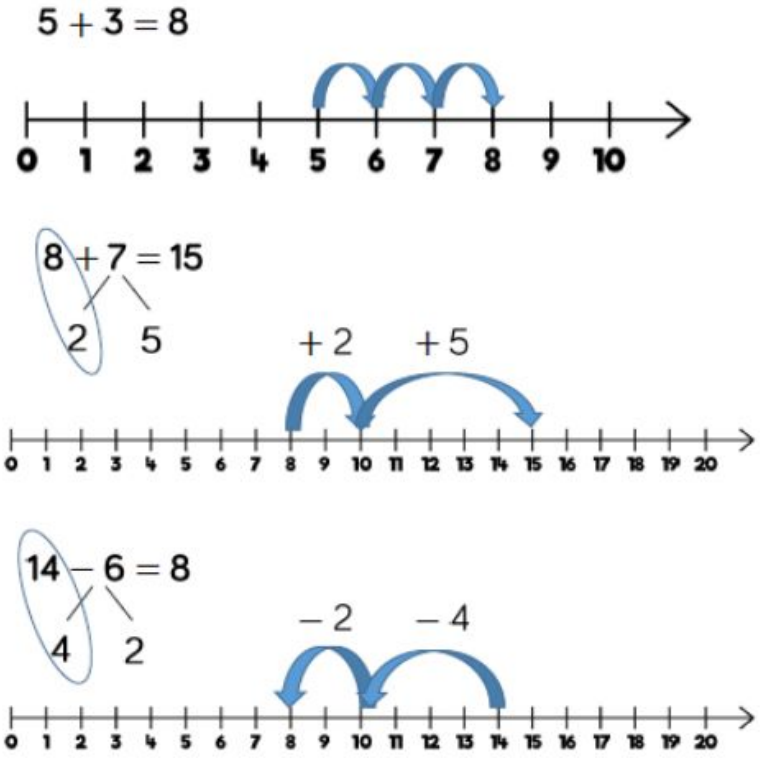
Subtraction Year 2

Stage 1	Stage 2	End of year Expectations
Subtract 2-digit numbers and ones with numbers to 50 without bridging.  Subtract 2-digit numbers and ones to 50 with bridging. 	Subtract 2-digit numbers and ones to 100 without bridging. Subtract 2-digit numbers and ones to 100 with bridging.  Subtract 2-digit numbers and tens.  	Subtract two 2-digit numbers without bridging.  Subtract two 2-digit numbers with bridging. 

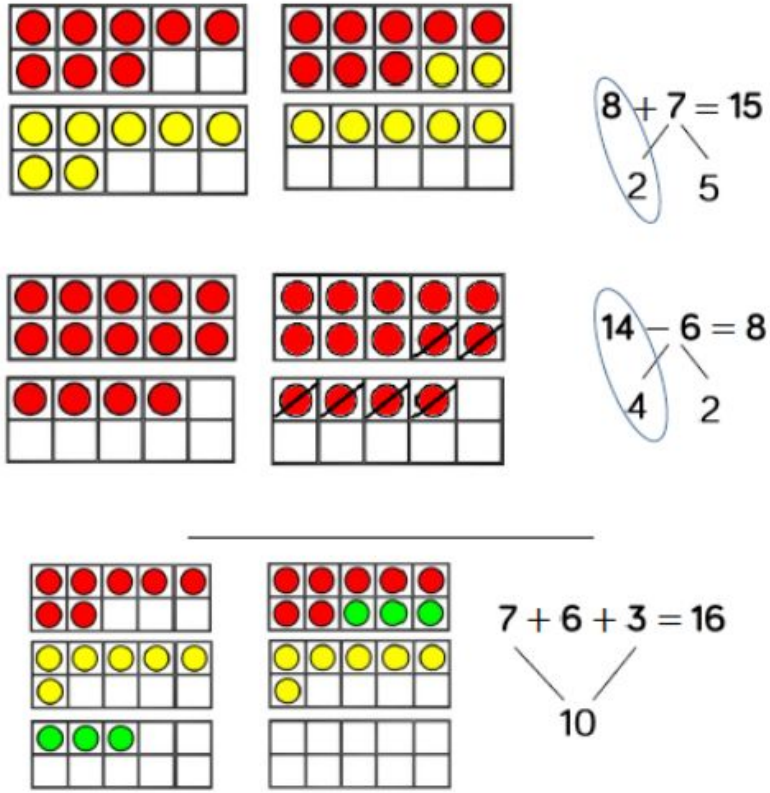
Addition and Subtraction - Year 2 - CPA

Stage 1 -	Stage 2 -	End of year Expectations
	 	
	  	 

Number Lines (labelled)

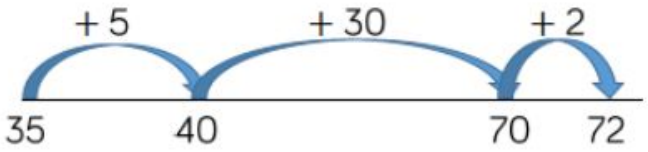


Ten Frames (within 20)

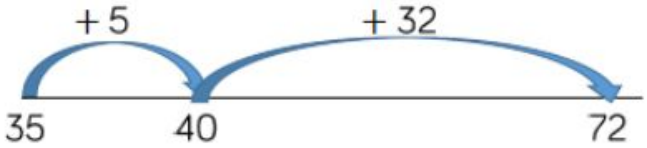


Number Lines (blank)

35 + 37 = 72



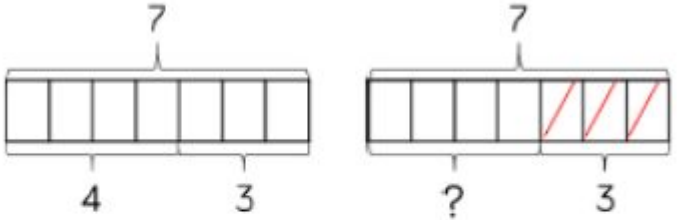
35 + 37 = 72



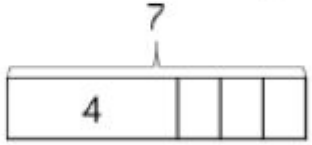
Bar Model

Concrete

Discrete



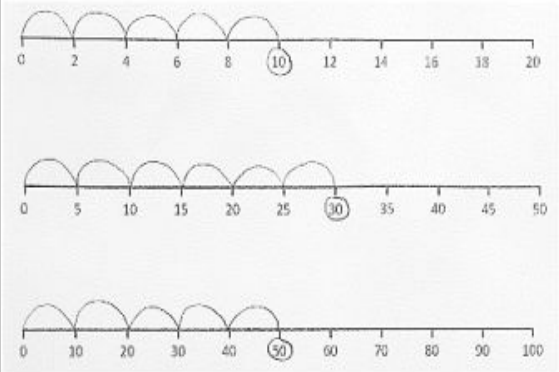
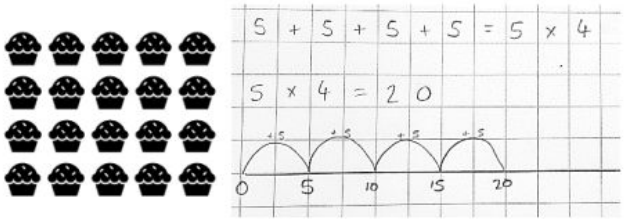
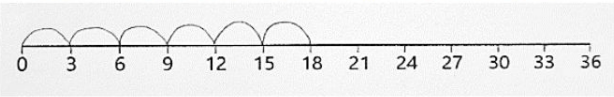
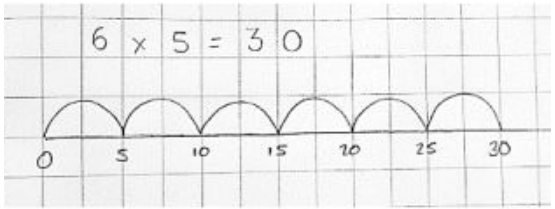
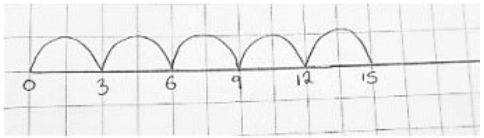
Combination



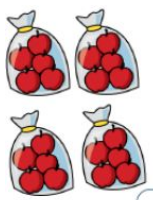
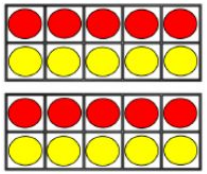
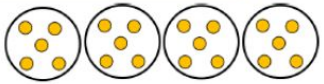
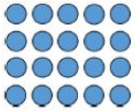
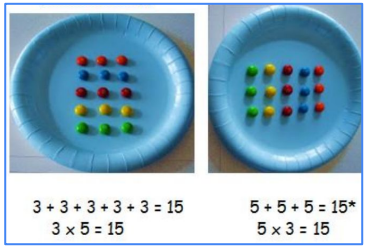
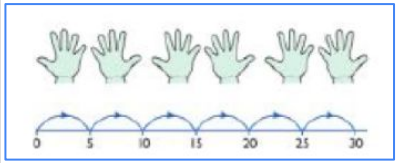
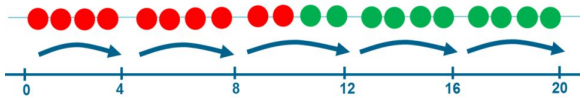
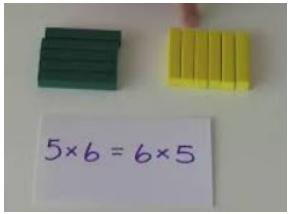
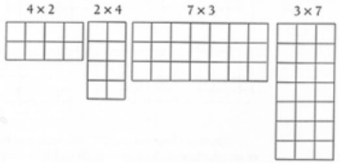
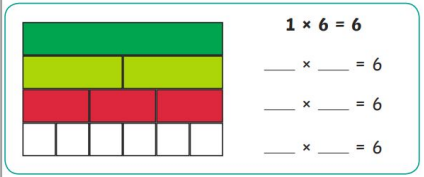
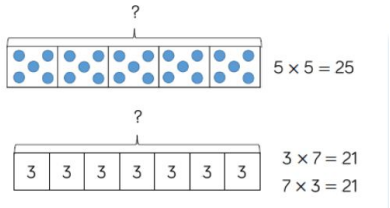
Continuous

Multiplication Year 2 - Progression

Working with arrays helps pupils to become aware of the commutative property of multiplication, that 2 × 5 is equivalent to 5 × 2
Pupils should look for and recognise patterns within tables and connections between them (e.g. 5× is half of 10×).
Pupils should recognise multiplication and division as inverse operations and use this knowledge to solve problems.

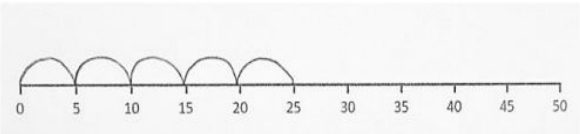
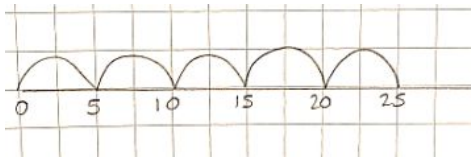
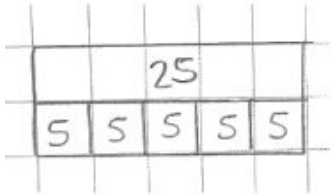
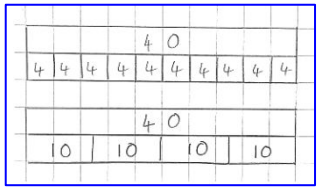
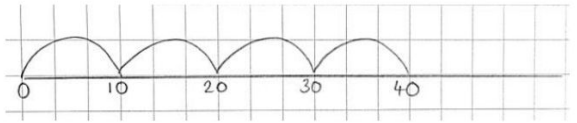
Stage 1 - 2.3	Stage 2 - 2.6,2.7,2.8	End of year Expectations 2.10,2.13
Count in steps of two, five from 0 and in tens from any number, forward and backward. Structured number line.  Count in steps of 3. Number track 3 6 9 12 15 18 21 24 27 30	Solve problems involving multiplication using repeated addition. Unstructured number line, e.g *How many muffins are there altogether?*  Count in steps of 3. Structured number line, e.g *Tilly ran 3 miles every day.* *How many miles has she run after 6 days?*  	Recall and use multiplication facts for the 2, 5 and 10 multiplication tables. Unstructured number line to 'prove it' ' 6 teams play football. Each team has 5 children. How many children play football altogether?  Count in steps of 3. Unstructured number line 

Multiplication Year 2 CPA

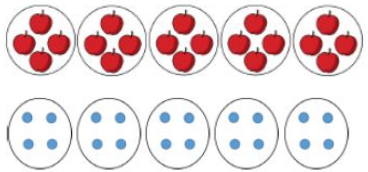
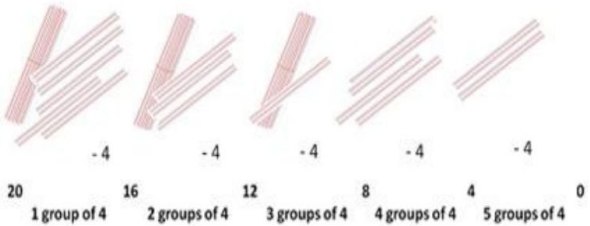
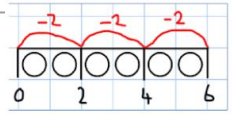
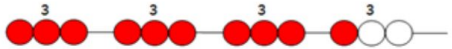
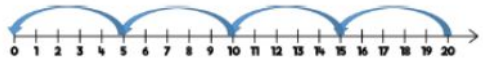
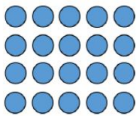
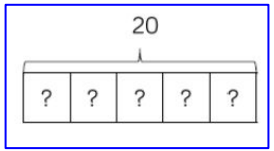
Stage 1	Stage 2	End of year Expectations
   One bag holds 5 apples. How many apples do 4 bags hold?    5 + 5 + 5 + 5 = 20 4 × 5 = 20 5 × 4 = 20   or in a more ordered pattern, with the groups of three indicated by the border outline: 	 3 + 3 + 3 + 3 + 3 = 15 3 × 5 = 15 5 + 5 + 5 = 15* 5 × 3 = 15   	 4x2 = 4+4 = 8 7x3 = 7+7+7 = 21 2x4 = 4+4+4+4 = 8 3x7 = 3+3+3+3+3+3+3 = 21 4x2 = 2x4 7x3 = 3x7   5 × 5 = 25 3 3 3 3 3 3 3 3 × 7 = 21 7 × 3 = 21 Boys 3 3 3 3 3 Girls 3

Division Year 2 Progression

Working with arrays helps pupils to become aware of division as inverse operations and use this knowledge to solve problems.
They should also recognise division as both grouping and sharing.

Stage 1 2.3	Stage 2 2.6, 2.7,2.8	End of year Expectations 2.10,2.13
Count back in 2, 5 and 10. explore patterns when counting in 2s, 5s and 10s. count back in 3s create arrays with concrete objects. understand the difference between sharing and grouping. solve problems involving groups of 2, 5 and 10 objects using pictorial recording. Skip counting on a structured number line, e.g: 25 ÷ 5 = □ 	Count back in steps of two, three and five to 0. Skip counting on an unstructured number line, e.g: 25 ÷ 5 = □  Bar model representation:  Recognise, find, and name a half as one of two equal parts of an object, shape or quantity.	Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables. Number line or bar model to 'prove it' ' Ben has 40 cards. He shares them equally between 4 party bags. How many does he put in each bag? Recognise, find, and name a half as one of two equal parts of an object, shape or quantity.  "If I know that 4 x 10 = 40, then I know 40 ÷ 4 = 10". 

Division Year 2 CPA

Stage 1	Stage 2	End of year Expectations
There are 20 apples altogether. They are shared equally between 5 bags. How many apples are in each bag?  20 ÷ 5 = 4  	 12 ÷ 3 = 4    There are 20 apples altogether. They are put in bags of 5. How many bags are there?  68 ÷ 2 = 34 20 ÷ 4 = 5 20 ÷ 5 = 4 	How many groups of 3 in 12? 12 ÷ 3 =  13 ÷ 4 =   

Progression - models and images - Year 2 - division and multiplication

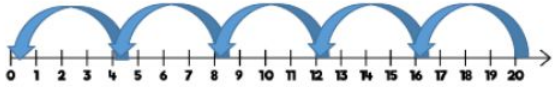
Number Tracks

$6 \times 3 = 18$
$3 \times 6 = 18$

$18 \div 3 = 6$

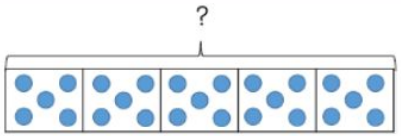
Number Lines (labelled)

$4 \times 5 = 20$
$5 \times 4 = 20$

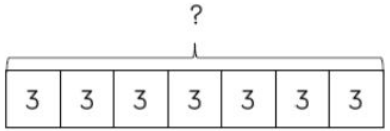


$20 \div 4 = 5$

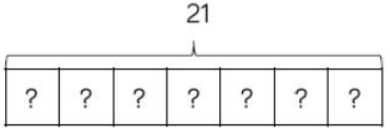
Bar Model



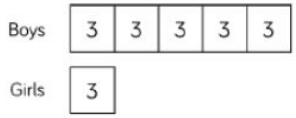
$5 \times 5 = 25$



$3 \times 7 = 21$
$7 \times 3 = 21$



$21 \div 7 = 3$



Progression in manipulatives		
EYFS	Year 1	Year 2
Real life objects Numicon		
Number track to 10 and 20	Numbertrack to 10, 20, 50, 100	Numberline to 50, 100
Numbered Counting Stick	Counting Stick	Counting Stick
Tens Frame with objects	Tens Frame with counters	Multiple Tens Frames
Interlocking cubes	Interlocking cubes grouped in 10s	Dienes
Bead Strings to 10	Bead Strings to 10 and 20 and 100	Bead Strings to 20 and 100
Part Whole with objects	Part whole with objects/counters	Part whole with Dienes
	Bundles of straws	Bundles of straws
	Bar Model and Unifix	Bar Model and Cuisenaire
		Arrow Cards

Glossary

Array – An ordered collection of counters, cubes or other item in rows and columns.

Commutative – Numbers can be multiplied in any order.

Dividend – In division, the number that is divided.

Divisor – In division, the number by which another is divided.

Exchange – Change a number or expression for another of an equal value.

Factor – A number that multiplies with another to make a product.

Multiplicand – In multiplication, a number to be multiplied by another.

Partitioning – Splitting a number into its component parts.

Product – The result of multiplying one number by another.

Quotient – The result of a division

Remainder – The amount left over after a division when the divisor is not a factor of the dividend.

Scaling – Enlarging or reducing a number by a given amount, called the scale factor

Glossary

Addend - A number to be added to another.

Aggregation - combining two or more quantities or measures to find a total.

Augmentation - increasing a quantity or measure by another quantity.

Commutative – numbers can be added in any order.

Complement – in addition, a number and its complement make a total e.g. 300 is the complement to 700 to make 1,000

Difference – the numerical difference between two numbers is found by comparing the quantity in each group.

Exchange – Change a number or expression for another of an equal value.

Minuend – A quantity or number from which another is subtracted.

Partitioning – Splitting a number into its component parts.

Reduction – Subtraction as take away.

Subitise – Instantly recognise the number of objects in a small group without needing to count.

Subtrahend - A number to be subtracted from another.

Sum - The result of an addition.

Total – The aggregate or the sum found by addition.