Reception – Development Matters

22-36	30-50	40-60
• Begins to make comparisons between quantities. • Uses some language of quantities, such as *'more'* and *'a lot'*. • Knows that a group of things changes in quantity when something is added or taken away.	• Knows that numbers identify how many objects are in a set. • Beginning to represent numbers using fingers or pictures. • Compares two groups of objects, saying when they have the same number. • Shows an interest in number problems. • Separates a group of three or four objects in different ways, beginning to recognise that the total is still the same.	• Uses the language of 'more' and 'fewer' to compare two sets of objects. • Finds the total number of items in two groups by counting all of them. • Says the number that is one more than a given number. • Finds one more or one less from a group of up to five objects, then ten objects. • In practical activities and discussion, beginning to use the vocabulary involved in adding and subtracting. • Records, using marks that they can interpret and explain. • Begins to identify own mathematical problems based on own interests and fascinations. **Early Learning Goal** **Children count reliably with numbers from one to 20, place them in order and say which number is one more or one less than a given number. Using quantities andobjects, they add and subtract two single-digit numbers and count on or back to find the answer. They solve problems, including doubling, halving and sharing.**

Vocabulary	Add, more, and, make, sum, total, altogether, score, double, one more, two more, ten more, how many more to make..? How many more is…than…? Take away, leaves, how many are left? How many have gone? One less, two less, ten less, how many fewer is…than… ?, difference between,

Mental Calculations	• Count on from any number, count back from any number, to and from at least 20 (lots of use of numicon number lines, hundred square) • Put number in head and count on 1, 2, 3….5, count back 1, 2, 3……5 (initially using number line) • Simple word problems involving addition and subtraction e.g. Max had 5 sweets and his friend gave him 2 more, how many did he have altogether (allow children to use written i.e. whiteboards, initially) • Count on and back in 1s, 2s, 10s (initially looking at number line and hundred square) • Show a number (visualise numeral using pictoral representation), how many more would I need to make…? How many would I need to take away to make……? With numbers to 5 then up to 10

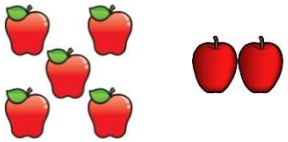
Addition

Term 1

- Practical addition using concrete objects and real life situations (through play) to develop vocab- **and, more, altogether, makes**
- Add one more to a group of objects and say how many
- Explore how numbers are made up from other numbers (using numicom)
- Begin to explore making amounts/numbers using combinations of numbers (using numicon)

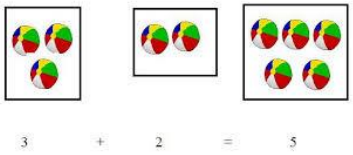
Term 2

- Adding 2 or 3 to a group of objects and working out how many altogether **by counting on**
- Pictoral representations of objects (including children drawing pictures to represent number stories told by adults) e.g. Max had 5 apples and his friend gave him 2 more, how many did he have altogether?



7

- Begin to recognise and use + and = signs. Understand that = means **balance/equal to**



Use pictoral representation alongside numerals and signs. (**Move on to numicon/spots to represent objects**)

- Begin to count on from larger amount rather than counting both sets to find total

Subtraction

Term 1

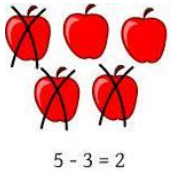
- Practical subtraction using concrete objects and real life situations (through play) to develop vocab- **take away. less, makes**
- Take one away form a group of objects and say how many
- Explore how numbers are made up from other numbers (using numicom)
- Begin to explore the difference between numbers to 10 (using numicon)

Term 2

- Subtracting 2 or 3 from a group of objects and working out how many altogether **by counting back as they remove objects**
- Pictoral representations of objects (including children drawing pictures to represent number stories told by adults) e.g. Max had 4 bananas and a monkey came and ate 3 how many did he have left?

1

- Begin to recognise and use – and = signs. Understand that = means **balance/equal to**



Use pictoral representation alongside numerals and signs. (**Move on to numicon/spots to represent objects**)

- Represent numbers using fingers **rapidly**. Use fingers to add numbers with totals to 10
- Begin to recall bonds of numbers to 5

Term 3

- Begin to record number sentences **without** pictoral representation and use counting equipment to solve addition e.g. counters, numicon
- Introduce number **tracks** as a way to add by counting on. (numicon number lines)

- Begin to develop understanding of number bonds of all numbers up to 10
- Begin to complete simple **missing number** calculation problems in a practical and pictoral way

- Count on from larger amount rather than counting both sets to find total
- Begin to add on 1, 2, 3,4,5 by putting number in head and counting on using fingers (know to have correct amount of fingers ready)

- Represent numbers using fingers **rapidly**. Use fingers to subtract from up to 10
- Begin to recall subtraction facts of numbers to 5

Term 3

- Begin to record number sentences **without** pictoral representation and use counting equipment to solve subtraction e.g. counters, numicon
- Introduce number **tracks** as a way to take away by counting back (numicon number lines)

- Begin to develop understanding of subtraction facts for numbers up to 10
- Begin to complete simple **missing number** calculation problems in a pictoral way e.g.

The class had 7 footballs when he went out to play but when he came back he only had 5 left. How many did he loose?

7- ? = 5

- Begin to take away 1. 2,3,4,5 by putting number in head and counting back using fingers (know to have correct amount of fingers ready)

Year 1- NC 2014

Addition and subtraction Pupils should be taught to: • 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 (9 + 9, 18 - 9), including zero • solve simple one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems.	**Multiplication and division** Pupils should be taught to: • solve simple one-step problems involving multiplication and division, calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.

Vocabulary	Add, more, plus, and, make, sum, total, altogether, score, double, near double, one more, two more, ten more, how many more to make..? How many more is…than…? Take away, subtract, minus, leaves, how many are left? How many have gone? One less, two less, ten less, how many fewer is…than… ?, difference between, half, halve, Is the same as, equals, sign Groups of, lots of, multiply, repeated addition, array Share, share equally, divide

Mental Calculations	• Count on from any number, count back from any number, to and from at least 50 (lots of use of numicon number lines, hundred square) • Put number in head and count on 1, 2, 3….5, count back 1, 2, 3……5 • Simple word problems involving addition and subtraction e.g. Max had 8 sweets and his friend gave him 5 more, how many did he have altogether? • Count on and back in 1s, 2s, 5s,10s (looking at number line and hundred square) • Show a number (visualise amount initially)- how many more would I need to make…? How many would I need to take away to make……? With numbers to at least 10 then 20 • Know doubles and halves to 10 and then beyond. Know near doubles to 10 • Add or subtract single digit to 2 digit number (or multiple of 10 to 2 digit number) by counting on or back (when adding put larger number first) • Partition and recombine tens and ones (**always using visualisation** e.g. numicon, sweet 10s, bead strings) • Recall addition and subtraction facts **for all numbers** to 10 • Add or subtract 10 from any number (**always using visualisation** e.g. sweet 10s, cubes in 10s, numicon)

Addition

Term 1

- Represent numbers to 10 using fingers **rapidly**. Put largest number in head and count on (up to 5) using fingers to complete addition sums with total of up to 30 (know to have correct amount of fingers ready)
- Recall bonds of numbers to 5
- Begin to recall addition facts and corresponding subtraction facts of numbers up to 10 (**visualise-numicon**)
- Use a number track or numicon number line to 20 to add 2 numbers

- Partition and recombine numbers 11-20 **in a practical way** and understand that 10+1=11, 10+2=12 etc. (using sweet counters, cubes in 10 towers, bead strings)
- Introduction of **number lines** and understanding difference between track and line
- Complete simple **missing number** calculation problems using equipment (numicon, bead strings, cubes) or drawings

- Solve simple word problems by drawing pictures and writing the number sentence

Subtraction

Term 1

- Represent numbers to 10 using fingers **rapidly**. Put number in head and count back (up to 5) to complete subtraction sums with numbers to 30 (know to have correct amount of fingers ready)
- Recall subtraction facts of numbers to 5
- Begin to recall subtraction facts for numbers up to 10 (**visualise-numicon**)
- Use a number track or numicon number line to 20 to subtract

- Through partitioning and recombining of numbers, begin to understand that 11-1=10, 12-2=10 (using sweet counters, cubes in 10 towers, bead strings)
- Introduction of **number lines** and understanding difference between track and line
- Complete simple **missing number** calculation problems using equipment (numicon, bead strings, cubes) or drawings

7 - ? = 5 , ? - 3 = 4

- Find the difference of up to 5 (then10) using visual aids and begin to relate to subtraction

- Solve simple word problems by drawing pictures and writing the number sentence

Term 2

- Represent numbers to 10 using fingers **rapidly**. Put largest number in head and count on (up to 8) using fingers to complete addition sums with total of up to at least 50 (know to have correct amount of fingers ready)

- Recall addition facts of numbers up to 10 (**visualise-numicon**)

- Use a number track or numicon number line to 20 to add 2 numbers

- Partition and recombine numbers 11-50 **in a practical way** and understand that 30+1=31, 40+5=45 etc. (using sweet counters, cubes in 10 towers, bead strings)

- Introduction of **number lines** and understanding difference between track and line

- Complete simple **missing number** calculation problems using equipment (numicon, bead strings, cubes) or drawings

- Solve simple word problems by making marks and writing the number sentence

- Develop understanding hundred square and how it can be used for addition

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Term 2

- Represent numbers to 10 using fingers **rapidly**. Put number in head and count back (up to 8) to complete subtraction sums with numbers to 50 (know to have correct amount of fingers ready)

- Recall subtraction facts for numbers up to 10 (**visualise-numicon**)

- Use a number track or numicon number line to 20 to subtract

- Through partitioning and recombining of numbers, begin to understand that 11-1=10, 12-2=10 (using sweet counters, cubes in 10 towers, bead strings)

- Introduction of **number lines** and understanding difference between track and line

- Complete simple **missing number** calculation problems using equipment (numicon, bead strings, cubes) or drawings

7 - ? = 5 , ? - 3 = 4

- Find the difference of up to 10 using visual aids and relate to subtraction. Begin to find the difference using a numberline

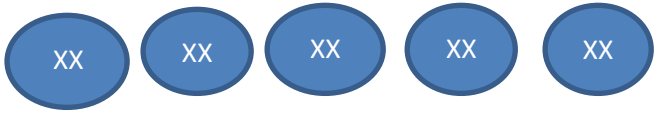
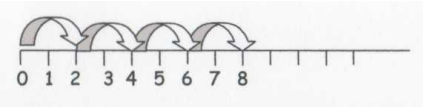
- Solve simple word problems by making marks and writing the number sentence

- Develop understanding of hundred square and how it can be used for subtraction

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Term 3	**Term 3**
• Consolidate term 2 • Introduce blank number lines to add up to 10 to numbers to 20 (and beyond) • Add 10 to numbers **in a practical way (**using numicon, sweet counters, 10 cube towers) • Begin to partition and recombine numbers to 100 in a practical way	• Consolidate term 2 • Introduce blank number lines to subtract up to 5 form numbers to 20 (and beyond) • Subtract 10 from numbers **in a practical way (**using numicon, sweet counters, 10 cube towers)

Year 1

Multiplication	Division
Term 2 • Solve problems involving multiplication by making pictoral representations and recording as repeated addition e.g. There are 5 bags of sweets. Each bag has 3 sweets in so how many sweets are there altogether?  **2+2+2+2+2=10** • Introduce language such as 3 lots of 2, 4 lots of 10 when working with practical equipment **Term 3** • Use an array (or a marked number line) to represent multiplication as repeated addition and division as repeated subtraction **2+2+2+2=8 and 4 sets of 2 = 8 (link to 2 sets of 4 and 4+4=8). In reverse 8 shared into 4 is 2 or 8 shared into 2 is 4.**  	**Term 2** • Using pictorial representations for equal sharing of objects through simple problem solving activities 12 children get into teams of 4 to play a game. How many teams are there?  • Use lots of practical apparatus (counters/objects etc) to develop language of sharing equally/dividing **Term 3** • As term 2 • Arrays to demonstrate division

Year 2- NC 2014

Addition and subtraction Pupils should be taught to: • solve simple one-step problems with addition and subtraction: -using concrete objects and pictorial representations, including those involving numbers, quantities and measures -applying their increasing knowledge of mental and written methods • recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 • add and subtract numbers using concrete objects, pictorial representations, and mentally, including: -a two-digit number and ones -a two-digit number and tens -two two-digit numbers -adding three one-digit numbers • show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot • recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems.	**Multiplication and division** Pupils should be taught to: • 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 • recognise and use the inverse relationship between multiplication and division in calculations • show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot • solve one-step problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

Vocabulary	Add, addition, more, plus, and, make, sum, total, altogether, score, double, near double, one more, two more, ten more, 100 more, how many more to make..? How many more is…than…? Take away, subtract, minus, leaves, how many are left? How many have gone? One less, two less, ten less, 100 less how many fewer is…than… ?, difference between, halvf, halve, Is the same as, equals, sign Tens boundary Lots of, groups of, times, repeated addition, array, multiply, multiplies by, multiple of, once, twice, three times, four times, ten times (as big/long/heavy as etc) row, column, double, halve, share, share equally, one each, two each, group in pairs, threes, tens, equal groups of, divide, divided by, divided into, left, left over

Mental Calculations	• Count on from any number, count back from any number, to and from at least 100 (use of hundred square) • Put number in head and count on 1, 2, 3….5, count back 1, 2, 3……5

	• Partition into '**5 and a bit'** when adding 6,7,8 or 9 • Simple word problems involving addition and subtraction e.g. Max had 18 sweets and his friend gave him 5 more, how many did he have altogether? • Count on and back in 1s, 2s, 5s,10s • Show a number- how many more would I need to make…? How many would I need to take away to make……? With numbers to at least 20 • Know doubles and halves to 20. Know near doubles to 10 • Add or subtract single digit to 2 digit number (or multiple of 10 to 2 digit number) by counting on or back (when adding put larger number first) • Recall addition and subtraction facts **for all numbers** to 20 • Add 9, 19, 29 or 11, 21, 31 by rounding up or down to 10 and then adjusting answer • Partition numbers and count tens and ones to find total (**using visualisation initially**-numicon, sweet 10s, dienes) • Partition; count on or back in ones and tens to find the difference • Add 3 numbers (by reordering, looking for bonds and partitioning) • Know what must be added to any number to make the next multiple of 10 e.g. 52+?=60 • Add and subtract multiples of 10 to any number (**using visualisation initially**-numicon, sweet 10s, dienes) • Use knowledge of number facts to multiply or divide by 2,5 or 10

Year 2

Addition

Term 1

- Represent numbers to 10 using fingers **rapidly**. Put largest number in head and count on (up to 8) using fingers to complete addition sums with total of up to at least 100 (know to have correct amount of fingers ready)
- Add 10 to any number using practical equipment (sweet counters/numicon/cubes in 10s/dienes rods)
- Use hundred square for addition of single digit numbers

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

- Recall addition facts of numbers up to 10
- Partition and recombine numbers 11-100 **in a practical way** and understand that 30+1=31, 40+5=45 etc. (using sweet counters, cubes in 10 towers, bead strings)
- Begin to add 2 digit numbers using practical equipment (sweet counters, numicon, dienes) by partitionaing into 10s and units, adding the tens and then the units
- Complete simple missing number calculation problems using equipment (numicon, bead strings, cubes) or drawings **and then by counting on**

Subtraction

Term 1

- Represent numbers to 10 using fingers **rapidly**. Put number in head and count back (up to 8) to complete subtraction sums with numbers to 100 (know to have correct amount of fingers ready)
- Subtract 10 from any number using practical equipment (sweet counters/numicon/cubes in 10s/dienes rods)
- Use hundred square for subtraction of single digit numbers

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

- Recall subtraction facts for numbers up to 10
- Through partitioning and recombining of numbers to 100, understand that 11-1=10, 12-2=10 (using sweet counters, cubes in 10 towers, bead strings)
- Begin to subtract 2 digit numbers using practical equipment (sweet counters, numicon, dienes) understanding that 10s may need to be exchanged for units
- Complete simple missing number calculation problems using equipment (numicon, bead strings, cubes) or drawings and **then by counting on**

$27 - ? = 15$, $? - 13 = 24$

- Find the difference using visual aids and relate to subtraction. Begin to find the difference using a number line or by **counting on mentally**

- Solve word problems by making marks and writing the number sentence **including 2 step problems e.g.**

Mrs Roberts gave Ellie 3 apples, her Mum gave her 2 and then her friend gave her 4 more. How many did she have altogether?

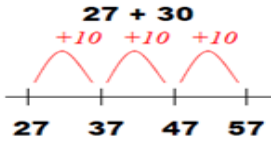
3+2+4=9

- Introduce blank number lines to add up to 10 to numbers to 50 (and beyond)

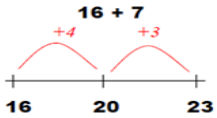
Term2

- Consolidate term 1- **emphasis on partitioning and recombining numbers to 100 and adding 2 digit numbers using dienes and other practical equipment**
- Add single digit to a 2 digit number mentally
- Introduce using blank number lines

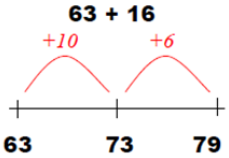
Add 2-digit numbers and tens:



Add 2-digit numbers and units:
(Bridging through 10s)



Add pairs of 2-digit numbers:



Complete **missing number** calculation problems

- Solve word problems by making marks and writing the number sentence **including 2 step problems**

Ellie had 11 apples, she gave Adam 2 and Sam 3. How many did she have left?

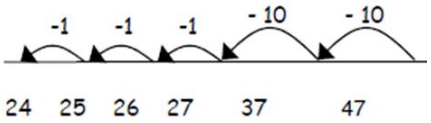
11-2-3=6

- Use blank number lines to subtract up to 10 form numbers to 50 (and beyond)

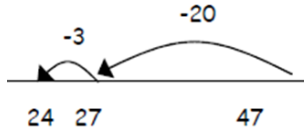
Term 2

- Consolidate term 1- **emphasis on partitioning and recombining numbers to 100 and subtracting 2 digit numbers using dienes and other practical equipment**
- Subtract single digit to a 2 digit number mentally
- Introduce using blank number lines

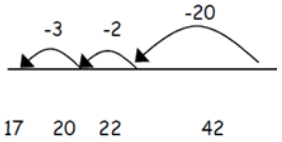
Subtracting pairs of 2-digit numbers on a number line:



Move towards more efficient jumps back, as below :



Teaching children to **bridge through ten**



Complete **missing number** calculation problems

Term 3

- **Consolidation terms 1/2**
- Mental calculations: Add 2 digit numbers by adding 10's then 1's
- Mental calculations: Adding 9,11, 19, 21 etc by adding ten/twenty then adding/subtracting 1

Term 3

- **Consolidation terms 1/2**
- Mental calculations: Subtract 2 digit numbers by taking away 10's then 1's
- Mental calculations: Subtracting 9,11, 19, 21 etc by taking ten/twenty then adding/subtracting 1

Multiplication

Term 1

Consolidate:

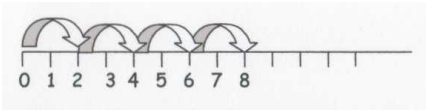
- Solve problems involving multiplication by making pictoral representations and recording as repeated addition e.g.

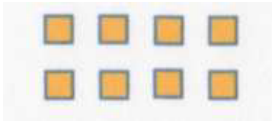
There are 5 bags of sweets. Each bag has 3 sweets in so how many sweets are there altogether?

2+2+2+2+2=10

- Introduce language such as 3 lots of 2, 4 lots of 10 when working with practical equipment
- Use an array (or a marked number line) to represent multiplication as repeated addition

2+2+2+2=8 and 4 sets of 2 = 8 (link to 2 sets of 4 and 4+4=8)





New Learning:

Introduction of x sign:

Division

Term 1

Consolidate:

- Using pictorial representations for equal sharing of objects through simple problem solving activities

12 children get into teams of 4 to play a game. How many teams are there?

- Use lots of practical apparatus (counters/objects etc) to develop language of sharing equally/dividing

New Learning:

Introduction of ÷ sign:

- When solving problems (as above) write number sentences using the sign to go with pictoral representations or real objects

Term 2

- When solving problems (as above) write number sentences using the x sign to go with pictoral representations or real objects

Term 2

Consolidate term 1

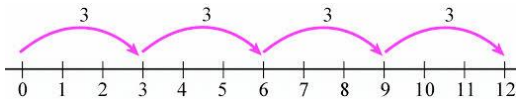
New Learning:

x = signs and missing numbers (using lots of practical equipment)

7 x 2 = □ □ = 2 x 7
7 x □ = 14 14 = □ x 7
□ x 2 = 14 14 = 2 x □
□ x ∇ = 14 14 = □ x ∇

- Link counting in 2s, 5s, 10s to multiplication and use knowledge of these to work out multiplication sums

- Using number lines to multiply

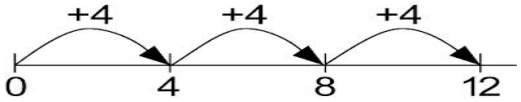


Term 3

Consolidate term 1 and 2

New learning:

- Using blank number lines to multiply



Consolidate term 1

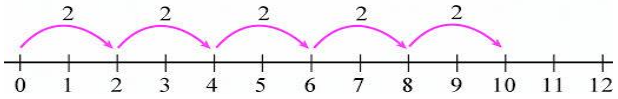
New Learning:

÷ = signs and missing numbers (using lots of practical equipment)

6 ÷ 2 = □ □ = 6 ÷ 2
6 ÷ □ = 3 3 = 6 ÷ □
□ ÷ 2 = 3 3 = □ ÷ 2
□ ÷ ∇ = 3 3 = □ ÷ ∇

Understand division as sharing and grouping

10 ÷ 2 can be modelled as:
Sharing – 10 shared between 2
Grouping - How many 2's make 10?



- Link counting in 2s, 5s, 10s to division and use knowledge of these to work out division sums

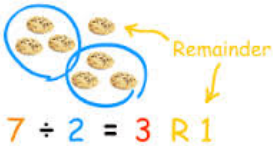
Term 3

Consolidate term 1 and 2

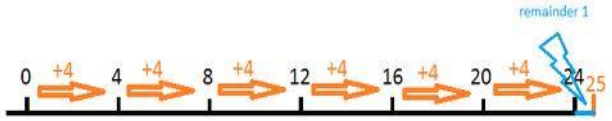
New learning:

Remainders:

- Understand that not all numbers can be shared equally.



- Use a blank number line to group and work out remainder

• Mental calculations: Use knowledge of 2,5, 10 (and 3, 4) times tables to work out multiplication sums	e.g. Sharing - 25 shared between 4, how many left over? Grouping – How many 4's make 25, how many left over? (25 ÷ 4 = 6 r1)  • Mental calculations: Use knowledge of 2,5,10 times tables to work out division sums

Year 3 - NC 2014

Addition and subtraction	**Multiplication and division**
Pupils should be taught to: • add and subtract numbers mentally, including: -a three-digit number and ones -a three-digit number and tens -a three-digit number and hundreds • add and subtract numbers with up to three digits, using the efficient written methods of columnar addition and subtraction • estimate the answer to a calculation and use inverse operations to check answers • solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.	Pupils should be taught to: • recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables • write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to efficient written methods • solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects.