Addition			
Early Years Fou	Indation Stage		
Key Vocabulary: add, more, a	nd, make, sum, total, altogether, is the s	same as, one more, two more, how many more	to make?
Learning	Concrete	Pictorial	Abstract
Intentions			
Develop fast recognition of up to 3 objects, without having to count them individually ('subitising'). Recite numbers past 5. Say one number for each item in order: 1,2,3,4,5. Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle'). Show 'finger numbers' up to 5. Solve real world mathematical problems with numbers up to 5. Compare quantities using language: 'more than' Understand the 'one more than relationship between consecutive numbers Explore the composition of numbers 0-5 and some to 10. including double facts.	Children are encouraged to develop a ment calculation. Children count forward from of Children are given opportunities to use cound Children learn songs and rhymes involve Children will be encouraged to mark make A range of resources e.g. dominoes and dice Recognise numbers 0 to 10 0 1	al picture of the number system in their heads to us different starting points. nting on during play situations (e.g. How many ted ing counting. to represent their thinking.	se for dies have come to the picnic?) Notes

Year One			
Key Vocabulary: add,	more, plus, make, sum, total, altogether, is the	same as, equals, balances, sign, one more, two	o more, ten more, how many more is?
How many more is	than?		
Learning	Concrete	Pictorial	Abstract
Intentions			
Combining two parts to make a whole: part part whole (PPW) model	Combining two parts to make a whole (use other resources too e.g. eggs, shells, teddy bears, cars).	Children to represent the cubes using dots or crosses. They could put each part on a part whole model too.	4 + 3 = 7 4 is a part, 3 is a part and the whole is seven.
Counting on from the	Using number lines, cubes or Numicon	A bar model which encourages the children to	(4) (3) The abstract number line:
biggest number		count on, rather than count all.	What is 2 more than 4? What is the sum of 2 and 4? What is the total of 4 and 2 or 4 + 2?
Regrouping to make 10	Using ten frames and counters/cubes or using Numicon. 6 + 5	Children to draw the ten frame and counters/cubes.	7 + 4= 11 If I am at seven, how many more do I need to make 10. How many more do I add on now? Children to develop an understanding of

			equality e.g. $6 + \Box = 11$ $6 + 5 = 5 + \Box$ $6 + 5 = \Box + 4$
Represent and use number bonds and related subtraction facts within 20	5 +2 5 + 3 = 8 • • • • • • • • • • • • • • • • • • •	4 + 3 = 7 $x x x x 0$ $0 0$ $Crev # maxes holds$ $5 + 2 =$	Emphasis should be on the language '1 more than 5 is equal to 6' '2 more than 5 is 7' '8 is 3 more than 5' 8 + 2 balances 10

Year Two			
Key Vocabulary: add,	addition, more, plus, make, sum, total, altogeth	er, is the same as, equals, balances, sign, one	more, two more, ten more, how many
Learning Intentions	Concrete	Pictorial	Abstract
Adding multiples of 10 Using known facts		$x \times x \times + x \times = 6$ $        = 60$ $4 \text{ tens } + 2 \text{ tens } =$	I know that $3 + 4 = 7$ 30 + 40 = 70 20 + 30 = 50 70 = 50 + 20 $40 + \Box = 60$
To add 2-digit to 1-digit 2-digit to ten 2-digit to 2-digit ( bridging and not bridging)	Make the biggest number on the place value mat. Then make the next number.	Children to represent the base 10 e.g. lines for tens and dot/crosses for ones.	Children add by partitioning 41+8 $41+8$ $40+9=49$ $40+9=49$ $41+8$ $40+9=49$ $40+9=49$ $44$ $4$ $37+46 =$

	T     O       Image: Constraint of the tens       Then add the tens       Image: Constraint of the		7 + 6 = 13 30 + 40 = 70 Re-combine 70 + 13 = 83 46 $\frac{+ 37}{83}$ I
To add 3 1-digit numbers	A + 3 + 6 = Combine to make 10 if possible, bridge 10 and add 3 <sup>rd</sup> digit or use near doubles then add 3 <sup>rd</sup> digit	Combine the two numbers that make/bridge 10 then add on the 3 <sup>rd</sup> $4 + 7 + 6 = 10 + 7$ $= 17$	<ul> <li>7 + 5 + 3 =</li> <li>I know 7 + 3 = 10. Then add the 5 it balances 15.</li> <li>4 + 5 + 4 =</li> <li>I know that double 4 equals 8. Then add 5 more. The answer is 13.</li> </ul>

Subtraction			
<b>Early Years</b>	Foundation Stage		
Key Vocabulary: take	(away), leave, subtract, how many are left/left	over? One less, two less, fewer, difference be	tween, how many have gone?
Learning	Concrete	Pictorial	Abstract
Intentions			
Experiment with their own symbols and	Children are encouraged to develop a mental pi	cture of the number system in their heads to u	se for calculation.
marks as well as numerals. Solve real world mathematical problems with	Children are given opportunities to practise counting backwards in a variety of contexts e.g. by jumping on an outdoor number line, learning songs and rhymes.		
problems with numbers up to 5. Compare quantities using language: 'fewer than'. Compare numbers. Understand the 'one less than' relationship between consecutive numbers. Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts)	Children are introduced to the concept of diffe	erence through play. E.g. Who has the fewest?	How many fewer do you have?

Year One			
Key Vocabulary: subtr	ract, take (away), minus, leave, how many are le	ft/left over? How many are gone? One less, two	o less, ten less, how many fewer
isthan? How muc	ch less is? difference between, is the same	as, equals, balance, sign	
Learning	Concrete	Pictorial	Abstract
Intentions			
Taking away ones	Physically taking away and removing objects from	Cross out drawn objects to show what has been	$7_{-1} = 2$
	a whole (ten frames, Numicon, cubes and other	taken away.	7-4-5
*Must ensure that	items such as beanbags could be used).	え え え え え え	
children are ready to			
use the - sign	6-4=2	$\wedge \wedge \wedge \wedge \wedge \wedge$	16 0 7
		t t t t t	16—9 = 7
		15 - 3 - 12	
	4-2=2	15-5= 12	
Counting back	Moves objects away from group counting back	Count back in ones using the number line	Put 13 in your head, count back 4. What
			number are you at?
		5 - 3 = 2	
	· • • •	0-0-2	
	Move the beads back along the beadstring as you	** * !	
	count backwards		
		-1 -1 -1	

Finding the difference	Compare different amounts 'Seven is 3 more than four' 'I am 2 years older than my sister' Perces 3 trases A Lay objects to represent bar model.	Count on using the number line to find the difference	Hannah has 12 sweets and her sister has 5. How many more does Hannah have than her sister? 12 - 5 = 7
Represent and use number bonds and related subtraction facts within 20	Link to addition by using the PPW to model the inverse	Use pictorial representations to show the part.	Move to using number within the PPW model

Make 10	Make 14 on the ten frame. Take 4 away to make	Draw the 10 frame and use crosses for ones.	13-7
	ten. Then take one more away so that you have taken 5.	Then cross out 4.	
Year Two			
Key Vocabulary: subt	ract take (away) minus leave how many are le	ft/left over? How many are gone? One less tw	o less ten less how many fewer
isthan? How muc	ch less is? difference between, is the same	as, equals, balance, sign	o less, ten less, now many rewer
Learning	Concrete	Pictorial	Abstract
Intentions			
To subtract without			57 - 24 = 33
bridging ten (no re-	57 - 24 =		7 - 4 = 3
grouping)			50 - 20 = 30
		** **	30 + 3 = 33
			1
	Children to use the Dienes to make the biggest		
	Children to use the Dienes to make the biggest number. Then physically remove. Always taking away the ones first. Then minus the tens. Then		

	recombine T O O O O O O O O O O O O O O O O O O	57 -24 33 ×
To subtract when bridging ten (re- grouping)	45 - 27 = Begin by making 45 using the Dienes. $\boxed{T} \qquad 0 \qquad $	$t 0$ $\downarrow t 0$ $\downarrow t 0$ $3 4 15$ $-2 7$ $\downarrow 5 - 27 = 18$ $\downarrow 5 - 27 = 18$ $\downarrow 5 - 27 = 18$ $\downarrow 6 - 27 = 18$ $\downarrow 7 - 10 - 2 - 5$

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Multiplication			
Early Years Key Vocabulary: odd,	even, groups of, lots of, double, pattern		
Learning Intentions	Concrete	Pictorial	Abstract
<b>Intentions</b> Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally	Children will experience equal groups of objects and will count in groups. They will work on practical problem solving activities involving equal sets or groups.		
	How many socks do 4 children wear? I giv	ve you each 4 strawberries how many Are there altogether?	
		1,2,3, <b>4</b> المناف المناف	
	1 <b>,2</b> ,3 , <b>4</b> , 5, <b>6,</b> 7 , <b>8</b>		

Year One				
Key Vocabulary: odd,	Key Vocabulary: odd even double near double multiple pattern times multiplied groups of lots of			
Learning Intentions	Concrete	Pictorial	Abstract	
Doubling (up to double 10 )	Use practical activities using manipulatives including cubes and Numicon to demonstrate doubling	Draw images to double numbers $\begin{array}{c c c c c c c c c c c c c c c c c c c $	4 + 4 = 8 5 + 5 = 10 12 = 6 + 6 3 + ? = 6	
Counting in multiples	Count the groups as children are skip counting, children may use their fingers as they are skip counting.	Children make representations to show counting in multiples.	Count in multiples of a number aloud. Write sequences with multiples of numbers. 2, 4, 6, 8, 10 5, 10, 15, 20, 25 , 30	

	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		
Repeated addition	Use different objects to add equal groups	There are 3 sweets in one bag. How many sweets are in 5 bags altogether? 3+3+3+3+3 = 15 2 2 2 2 2 2 2 2	Write addition sentences to describe objects and pictures.
Understanding Arrays	Use objects laid out in arrays to find the answers to 2 lots of 5, 3 lots of 2 etc.	Draw representations of arrays to show understanding.	3 lots of 2 = 6 5 times 2 = 10

	*****		
Year Two			
Key Vocabulary: odd,	even, double, near double, multiple, pattern, tim	es, multiplied, groups of, lots of	
Learning	Concrete	Pictorial	Abstract
Intentions			
Doubling	Doubling using place value using Dienes	Double 24 = 48 $t \circ$ $   \times \times \times \times$ $   \times \times \times \times$ $   \times \times \times \times$	Partition a number and then double each part before recombining it back together. 16 20 12 20 + 12 = 32
Counting in multiples Of 2s, 3s, 5s, 10s (forwards and backwards)	Count the groups as children are skip counting, children may use their fingers as they are skip counting. Use bar models.	Number lines, counting sticks and bar models should be used to show representation of counting in multiples.	Count in multiples of a number aloud. Write sequences with multiples of numbers. 0, 2, 4, 6, 8, 10

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	5 + 5 + 5 + 5 + 5 + 5 + 5 = 40       111       111       2		0, 3, 6, 9, 12, 15 0, 5, 10, 15, 20, 25 , 30
Multiplication is commutative	Create arrays using counters and cubes and Numicon           Image: Constraint of the state of t	Use representations of arrays to show different calculations and explore commutativity.	12 = 3 × 4 12 = 4 × 3 Use an array to write multiplication sentences and reinforce repeated addition. 00000 5+5+5=15 3+3+3+3+3=15 $5 \times 3 = 15$ $3 \times 5 = 15$

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Using the Inverse

This should be taught alongside division, so pupils learn how they work alongside each other.



	20 4 5
	$ \begin{array}{c} \ \times \ \square \ = \ \square \\ \ \ \times \ \square \ = \ \square \\ \ \ \div \ \square \ = \ \square \\ \ \ \div \ \square \ = \ \square \\ \ \ \div \ \square \ = \ \square \\ \end{array} $
$3 \times 4 = 12$ $4 \times 3 = 12$ $12 \div 4 = 3$ $12 \div 3 = 4$	

Division					
Early Years Foundation Stage					
Key Vocabulary: half,	smallest, less, equal groups, share, equally				
Learning	Concrete Pictorial Abstract				
Intentions					
Count back in 1s	In division children will be introduced as both shari	ng and grouping using a variety of resources.			
from any given number	Children will understand equal groups and share ite	ems out in play and problem solving.			
	The focus at this stage will be practical,				
Begin to count back using number rhymes	with the teacher demonstrating, and (				
Explore and					
represent patterns	If I have 6 I	buttons and I share			
to 10 including	them betw	een 2 people, now			
how quantities can	many will each person get?				
be distributed					
equally	Children solve grouping problems				
	(G	et yourselves into groups of'.			

Year One				
Key Vocabulary: half, halves, smallest, less, equal groups, share, equally, divide, division, group, half				
Learning Intentions	Concrete	Pictorial	Abstract	
Halving	Children use practical apparatus to share equally	Use a picture to share in two sets equally	Half of 4 = 8 1/2 of 4 = 8	
		Half of $6 = 3$	I know that double 4 balances 8 so half of 8 is 4.	
Division as sharing	I have 10 cubes, can you share them equally in 2 groups?	Sharing: 4 12 shared between 3 is 4	12 shared between 4 groups is 3 If I share 6 sweets equally between 2 friends, they will have 3 each.	



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## Year Two

Key Vocabulary: half, halves, smallest, less, equal groups, share, equally, divide, division, group, half

Learning	Concrete	Pictorial	Abstract

Intentions			
Division as sharing	Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding.	Children use bar modelling to show and support understanding.	Use inverse I know that 3 x 4 = 12 so 12 ÷ 3 = 4
Division as grouping	I have 20 pencils. 5 go in each pot. How many pots will I need?		Use inverse I know that 5 x 4 = 20 so there will be 4 pots.

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