Addition

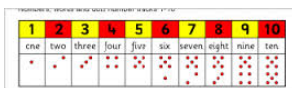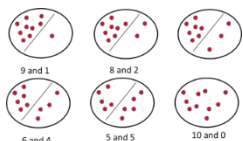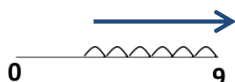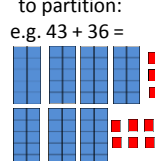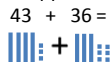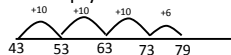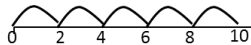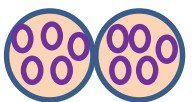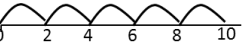|	YrR	Yr1	Yr2	Yr3	Yr4	Yr5	Yr6
Mental	• One more, one less • Counting up/ counting down • Using quantities and objects, add and subtract 2 single digit numbers and count on or back the answer. • Number bonds to 5 • Number bonds to 10 Recognise/ use numicon	• Count forwards/ backwards in 1s, 2s, 10s, 1ps, 2ps • Add 1 digit numbers within/ to 20 including 0: $12 + 8 = \square$ $\square = 9+6$ • Add 10 to a number • Add 0 to a number • Represent on number line: eg. $3 + 6$ • Use numicon • Use and understand addition to 20 grid • Use number square – identify patterns. • Represent numbers as jottings |||₋₋	• Count forwards/ backwards in 2s, 3s, 5s, 10s • Add 2 digit and 1 digit numbers: $25+4 = \square$ 25 29 • Partition eg $27 + 8$ (+3) (+5) 27 30 35 • 2 digits add 10's: $27+ 40 = \square$ +10 +10 +10 +10 27 37 47 57 67 • Bridge through 10s $16 + 8$, $26 + 8$ • Doubles & near doubles/Compensating e.g. $8 + 7 = 8 + 8 - 1$ • Missing numbers e.g. $4 + \square = 11$ • Use number lines/ square	• Count forwards/ backwards in 10s, 20s, 50s, 100s, 15s • Add 3 digit numbers to 1 digit using empty number line: $432+7=$ +7 432 439 • 3 digit add 10's using number line. e.g. $72 + 50$ • Bridge through 100s • **2 digit add 2 digit using partitioning** $46 +78 = \square$ 40 + 6 70 + 8 + • Number bonds: multiples of 5/ 10 to 50/ 100 e.g. $65 + \square = 100$	Count forwards/ backwards in 20s, 50s, 25s, 75s, 0.1s, 10p, 20p, 5p, 50p Continue to **use number line** to support mental methods. Bridge through 100s/ 100s Add several numbers/ 2 or more sums of money Number bonds: multiples of 5/ 10 to 50/ 100 Add multiples of 10/50 up to 1000	Count forwards/ backwards in 0.25s/ fractions/ negative numbers Use empty number line to add negative numbers and time Add increasingly large numbers.	Count forwards/ backwards up to 1,000,000 and in 0.25s/ fractions/ negative numbers Order of operations (BIDMAS) **Use most efficient mental methods of addition.**
Written	(All supported by visuals and manipulatives) • Number formation • Begin to write number sentences alongside the visual. • Use pictures to record calculations	(All supported by visuals and manipulatives) • Number formation • Write 2 digit numbers and partition using Diennes • Write number sentences alongside the visual/ with jottings • Use number lines. Starting from largest number, adding on • Use number squares to add on.	• 2 digit add 2 digit – use manipulatives e.g. numicon to partition: e.g. $43 + 36 =$ • Support with jottings $43 + 36 =$ • Use empty number line +10 +10 +10 +6 43 53 63 73 79 • Missing numbers $24 + \square = 51$ (Jottings -draw total, remove what we already have)	• Identify appropriate method e.g. formal v informal, number line/ jottings v column. • Empty number line/ jottings. • Add 3 digit and 2 digit numbers • Add 3 digit and 3 digit numbers • Use expanded method $200 + 70 + 4$ $100 + 80 + 7$ 274 • Use the column method: 274 +187 461 1 1	Add up to 4 digits using formal written methods of column addition 2734 +3496 6230 1 1 1 Add decimals e.g. money $38p + 37p$ $£0.38 + £0.37$	Add whole numbers with more than 4 digits Use column addition Use informal methods as appropriate	**Use most efficient formal/ informal written method for addition**
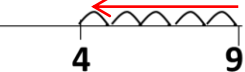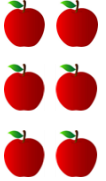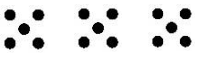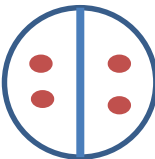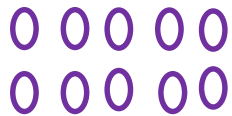
Subtraction

	YrR	Yr1	Yr2	Yr3	Yr4	Yr5	Yr6
Mental	One more, one less Using quantities and objects, add and subtract 2 single digit numbers and count on or back to find the answer. Take 2 away Recognise/ use numicon one two three four five Use number line to count back -5 4 9	Count forwards/ backwards in 1s, 2s, 10s Subtract 1 and 2 digit numbers to 20, incl. 0. Inverses of number bonds to 10/ 20 9 – 5 = ☐ Teacher modelling number line as visual representation -5 4 9 Recognise and use the inverse 9 - 5 = 9 - 4 = Board games/ 100 square games	Count forwards/ backwards in 2s, 3s, 5s, 10s Inverses of number bonds (incl. for checking) Subtract 2 digit numbers and ones. 24 – 6 = ☐ -6 18 24 (Begin to be more efficient 24 – 4 – 2) Subtract 2 digit numbers and 10's 36 – 20 = -10 -10 16 26 36 Missing numbers ☐ - 12 = 24	Count forwards/ backwards in 10s, 20s, 50s, 100s, 15s Inverses of number bonds Subtract 3 digits and 1's 437 – 5 = ☐ Subtract 3 digits and 10's 273 – 30 = ☐ Subtract 3 digits and 100's 437 – 300 = Use empty number line, counting back in efficient jumps. Find a difference by adding on: 50 – 48 = +2 48 50	Count forwards/ backwards in 20s, 50s, 25s, 75s, 0.1s, 10p, 20p, 5p, 50p Continue to use number line to support mental methods. Bridging through 100s/ 1000s. Subtract several numbers Subtract multiples of 100/ 10 from 4 digit number Subtracting involving negative numbers representing on number line e.g. 3°C – 9°C (vertical number line) Find a difference by adding on: incl. decimals and money.	Count forwards/ backwards in 0.25s/ fractions/ negative numbers Subtract mentally with increasingly large numbers 12462 – 2300 = 10162 (Using place value) Find differences of time (number line) Subtract fractions	Count forwards/ backwards in 0.25s/ fractions/ negative numbers Order of operations (BIDMAS) Subtract negative numbers e.g. -4 - - 6 = 2, 4—6 = 10 Use most efficient mental method of subtraction.
Written	(All supported by visuals and manipulatives) • Number formation • Begin to write number sentences alongside the visual. • Use pictures to record calculations	(All supported by visuals and manipulatives) Correct number formation Write numbers sentences (1 number, 1 symbol per square) Visual support: Numicon and pegs Used marked number line, number square Physical/ pictorial representations Jottings: 9-5 = 	Use of number lines Bridging through 10s Partitioning Draw jottings and cross out. 32 - 11 For confident ch: (exchange using jottings/ manipulatives) 32 – 17 = = Then remove (32) (32)	Expanded column method (with exchanging) 20 400 30 12 200 10 7 _____ Compact column subtraction with exchange 2 4 3̸ 12 - 2 1 7 2 1 5 _____ Cont. use empty number lines	Compact column subtraction up to 4 digits (with exchange) 6 1 6 7̸ 8 9 - 4 6 9 2 2 0 9 7 _____ Use efficient informal methods if appropriate e.g. 3003- 2998 using number line.	Subtract whole numbers and decimals with more than 4 digits Choose most appropriate formal/ informal method.	Use most efficient written method of subtraction. Use mental method if appropriate.

Multiplication

	YrR	Yr1	Yr2	Yr3	Yr4	Yr5	Yr6
Mental	Count forwards/ backwards in 2s, 5s, 10s Using concrete objects solve problems using doubling, and grouping. Two 2 Four 4 Six 6 Use numicon for doubling halving	Count forwards/ backwards in 2s, 5s, 10s Concrete objects to show grouping. Use numicon for doubling halving Spot number patterns on a 100 square or groups of Recognising odds and evens	Count forwards/ backwards in 2s, 3s, 5s, 10s 2, 3, 5, 10 times tables. Use concrete objects and jottings Repeated addition Make links e.g. 3 x 2 = 6 6 ÷3 = 2 2 = 6 ÷3 30 x 2 = 60 (use numicon and balances) Dice pattern jottings: 	• Count forwards/ backwards in 10s, 20s, 50s, 100s, 15s • 3, 4, 8 times tables (use 'Multiplication in a flash') • x 10, x 100 (incl decimals) • Instant recall of x facts • square numbers • X by 0/1 1 digit x 1 digit x 1 digit 2 digit x 1 digit. Partition: 24 x 3 20 x 3 = 60 4 x 3 = 12 60 + 12 = 72	Count forwards/ backwards in 20s, 50s, 25s, 75s, 0.1s, 10p, 20p, 5p, 50p 6, 7, 9, 11, 12 times tables (use 'Multiplication in a flash') x 10, x 100,1000 (incl decimals) 3 x 15 = 3x3x5 = 9 x 5 = 45 Using factor & multiple pairs Square/ prime numbers Partitioning 39 x 7 = 30 x 7 + 9 x 7 (2x3)x4=2x(3x4) Distribution law Associative law 1 digit x 1 digit x 1 digit Use lang. of multiplication	Count forwards/ backwards in 0.25s/ fractions/ negative numbers Reinforce times tables ('Multiplication in a flash') Use knowledge of factors x10, x100, 1000 Including decimals. Using factor & multiple pairs Square/ prime numbers Round number and estimate to check written answers	Count forwards/ backwards up to 1,000,000 →and in 0.25s/ fractions/ negative numbers Reinforce times tables ('Multiplication in a flash') Order of operations (BIDMAS) Perform mental calculations including mixed operations and large numbers.
Written	Use practical/ pictorial resources to begin to write simple number sentences using repeated addition. 2 + 2 = 4 4 = 2+ 2	Use concrete objects to write arrays O O O O O O O O O O 2, 4, 6, 8, 10 2 lots of 5, 5 groups of 2 etc Write as repeat addition Counting in 2's 5's and 10's on a number line with the support of teacher.	Write multiplication number sentences Write arrays with multiplication symbol O O O O O O O O O O 2 x 5 = 10 lots of/ sets of 5 x 2 = 10 groups of Write as repeat addition Switches: 3x2=6, 2x3=6 (commutative law)	Grid method: 24 x 3 = 72 	x	20	4
3	60	12	 60 + 12 = 72 Expanded method: 20 + 4 x3 12 (4 x 3) 60 (20 x 3) ___ 72 Find missing values using inverse	Grid method: 26 x 25 = 	x	20	6
20	400	120
5	100	30	 400 120 + 100 30 ___ 650 Expanded ladder method:276 x6 36 (6x6) 420 (70 x 6) 1200 (200 x 6) ____ 1656 Standard method: 276 x 6 ____ 1656 4 3 Find missing values using inverse	Standard method 276 x 6 ____ 1656 4 3 Long multiplication 2754 x 28 _____ 22032 + 55080 _____ 77112 2 x 2 digits 2 x 3 digit 2 x 4 digit Incl decimals e.g 2.63 x 3 money/ measures → 2/3 step problems	Multiplying fractions Multiplying 2 →decimals Multiplying 2 decimals less than 1 e.g. 0.4 x 0.5

Division

	YrR	Yr1	Yr2	Yr3	Yr4	Yr5	Yr6
Mental	(Counting/ forwards backwards as per multiplication) Solve problems, including halving and sharing. Grouping concrete objects Sharing equally in contexts 6 cakes shared between 2 6 cakes put into groups of 2 	(Counting/ forwards backwards as per multiplication) Solve one step problems using concrete objects, pictorial reps and arrays with support (of teacher). How many apples in each bowl if I share 12 apples between 3 bowls? Use concrete objects/ represent pictorially Share equally Halves and quarters of objects, numbers and quantities 	(Counting/ forwards backwards as per multiplication) Calculate mathematical statements for ÷ within the multiplication tables (2,3,5, 10s) and write them using symbols Grouping Four eggs fit in a box. How many boxes would you need to pack 20 eggs? Also sharing: 20 eggs in 5 boxes, how many in each box? Odds and evens (using practical resources) Inverses $20 \div 5 = 4$ $20 \div 4 = 5$ $25 \div \square = 5$ Fractions of a number = ½ , ¼ of 12	(Counting/ forwards backwards as per multiplication) Write and calculate mathematical statements for ÷ using the x tables they know (including 2 digit divided by 1 digit mentally progressing.) e.g. $24 \div 4 =$ Know factors and multiples Number lines (start from zero and count up in jumps) Reinforce language of 'groups of' Understanding division as repeated subtraction $33 \div 5 = 6$ r3 Missing numbers using the inverse	(Counting/ forwards backwards as per multiplication) Multiply *(and divide)* 2 digit and 3 digit numbers by a 1 digit number using a formal written layout. (short division by 1 digit with exact answers.) $348 \div 4 = 87$ 80 x 4 7 x 4 0 320 348 Partitioning (multiples of the divisor) mentally $177 \div 4 = 44$ r 1 40 x 4 = 160 4 x 4 = 16 (176) *Also in contexts with remainders, rounding appropriately.* Know factors and multiples Missing numbers using the inverse	(Counting/ forwards backwards as per multiplication) Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context. Grouping (efficient) Number line to support as appropriate Partitioning mentally $247 \div 7 = 35$ r2 30 x 7 = 210 5 x 7 = 35 (245)	(Counting/ forwards backwards as per multiplication) Divide numbers up to 4 digits by a two-digit whole number using the efficient written method of short & long division, and **interpret remainders as whole number remainders, fractions, decimals** or by rounding, as appropriate for the context

Written	6 cakes shared between 2
	
	Begin to write number sentences alongside the visual. E.g.
	
	6 cakes put into groups of 2
	
	$2 + 2 + 2 = 6$
	
	Use jottings/ pictorial representations
		Number tracks / Number line
		Counting up
		(modelled using bead strings)
		
		Share into 4 groups etc
		
		Number stories
		
			Write division number sentences
			$8 \div 2 = 4$
			Number lines / Number strings/ Arrays
			e.g. $15 \div 5$
			
			0 5 10 15
			
			Partitioning
			$28 \div 2$
			    $20 \div 2 = 10$
			    $8 \div 2 = 4$
			Also in contexts with remainders
			Use concrete objects/ jottings to support
				Number lines (start from zero) using known facts for efficiency e.g. multiples of 10, 5, 2
				$96 \div 6 = 16$
				(How many 6s can we take from 96?)
				10 x 6 6 x 6
				
				0 60 96
				
				Partitioning (early chunking) using multiples of the divisor)
				$50 \div 4 = 12$ r2
				    10 x 4 = 40
				    2 x 4 = 8
				Also in contexts with remainders, rounding appropriately.
					Partitioning (multiples of the divisor) mentally
					
					$177 \div 4 = 44$ r1
					  40 x 4 = 160
					  4 x 4 = 16 (176)
					Also in contexts with remainders, rounding appropriately.
					
					Move onto short division (by chunking) – 2 digit by 1 digit, with and without remainder
					    22 r 3
					4)91
					   40 (10 x 4)
					   51
					   40 (10 x 4)
					   11
					    8 (2 x 4)
					    3
						Short division by chunking
						   947
						6)5682
						  5400 (900x6)
						   282
						   240 (40x6)
						   42
						   42 (7x6)
						   0
						
						Short division (up to 4 digit by 1 digit)
						
						$291 \div 3$ (estimate: 270 ÷ 3 = 90)
						
						  9 7
						3)2 9²1
							Order of operations (BIDMAS)
							
							Short' division with bigger numbers and decimals
							
							Long division incl. decimals, fractions
							432 ÷ 15 becomes
							
							Answer: 28·8