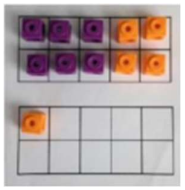
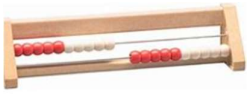
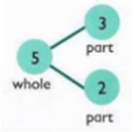
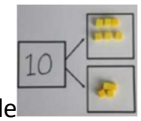
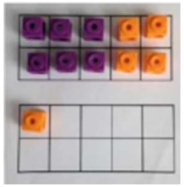
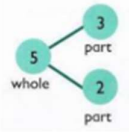
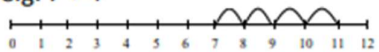
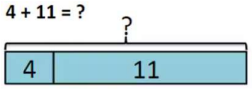
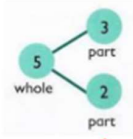
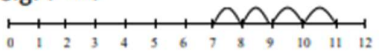
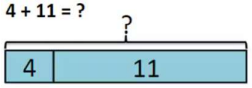
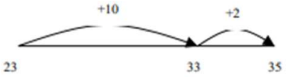
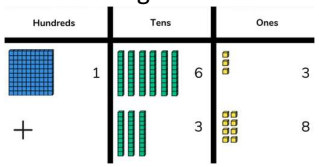
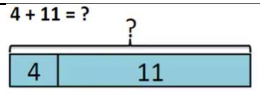
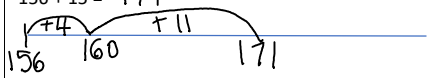
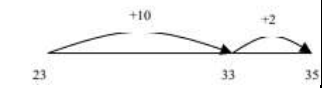
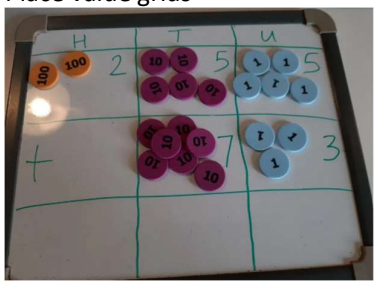
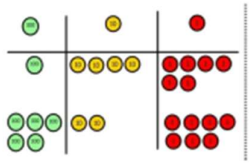
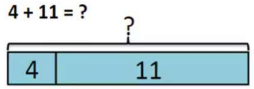
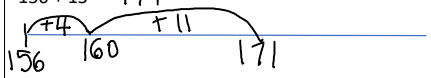
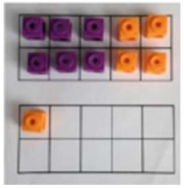
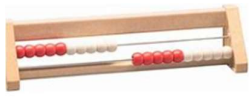
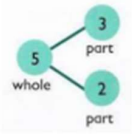
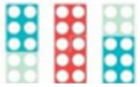
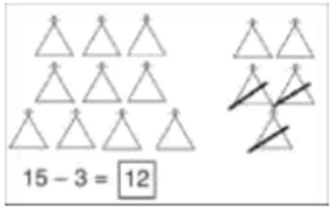
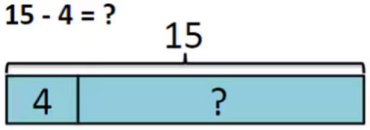
Bourton-on-the-Water Primary Academy Maths Calculations Policy 2026

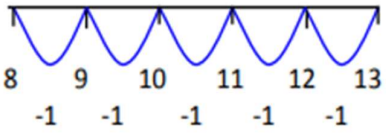
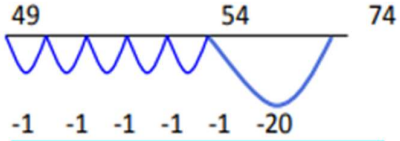
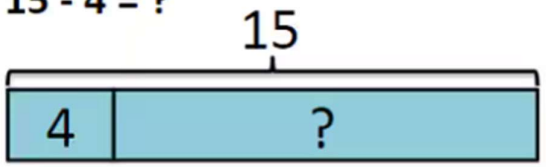
Objective	Year group	Concrete	Pictorial	Abstract	Vocabulary
Addition	Reception	Objects (e.g. counters, conkers, buttons, cubes etc..) Tens frame  Rekenrek Numicon  	Part-Part-whole 		subitise count add plus altogether 1 more part-part-whole number bonds double digit total
	Year 1	Numicon  Cubes  Rekenrek  part-whole  Number tracks and Cuisenaire rods   ten frames  Dienes base 10	Part whole Use pictures to add two numbers   **Number lines (numbered)** e.g. 7 + 4  Recording jumps on prepared lines, then constructing own when ready Bar model  Mental strategies: - count on or back in ones - reorder numbers in a calculation - begin to bridge through 10, and later 20, - when adding a single-digit number - use known number facts and place value to add or subtract pairs of single-digit numbers - add 9 to single-digit numbers by adding 10 then subtracting 1 - identify near doubles, using doubles already known	Use part-part-whole diagram  **4 + 3 = 7** **Progression:** Counting In Ones Ones add Ones Ones add Ones (Thru 10) to 20 / then 50 Addition with missing numbers a + 6 = 11	addition add together double equals total digit missing number problems 2-digit number greater near double number bonds symbol

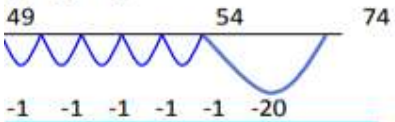
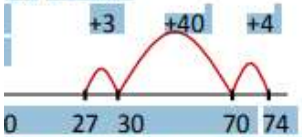
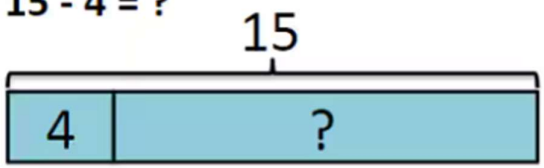
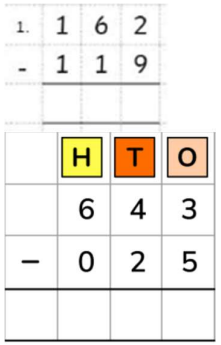
Addition	Year 2	Numicon  Dienes base 10 	**Number lines (numbered)** e.g. 7 + 4  Recording jumps on prepared lines, then constructing own when ready Bar model 4 + 11 = ?  <u>Mental strategies:</u> - count on or back in tens or ones - find a small difference by counting up from the - - smaller to the larger number - reorder numbers in a calculation – add three small numbers by putting the largest number first and/or find a pair totalling 10 – partition additions into tens and units then recombine – bridge through 10 or 20 – use known number facts and place value to add or subtract pairs of numbers – partition into '5 and a bit' when adding 6, 7, 8 or 9, then recombine – add or subtract 9, 19, 11 or 21 by rounding and compensating – identify near doubles – use patterns of similar calculations – use the relationship between addition and subtraction – use knowledge of number facts and place value to multiply or divide by 2, 5 or 10 – use doubles and halves and halving as the inverse of doubling	**Blank number line** largest number first and partition smaller number only  **23 + 12 = 35** **<u>Progression:</u>** TO + O to 20 TO + O thru 20 TO + Mult of 10 TO + TO to 50 TO + TO to 99	3-digit number sum commutative inverse calculation method ones tens operation partition value increase exchange addend (MN)

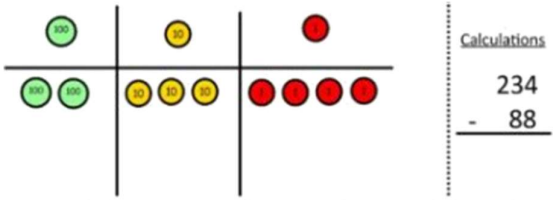
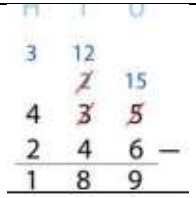
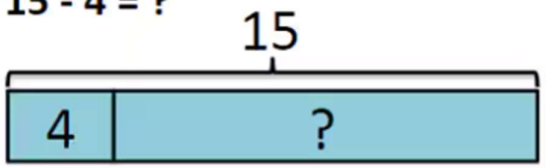
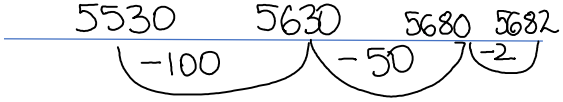
Addition	Year 3	Dienes base 10  Place value grids  	 Bar model <u>Mental strategies:</u> Place value mental method (smile) H T O H T O 152 + 426 = 578 578 Partitioning and recombining 456 + 526 = 982 HTO+HTO = HTO 400 + 500 = 900 50 + 20 = 70 6 + 6 = 12 900 + 70 + 12 = 982 Bridging through 10 and 100 156 + 15 = 171  Rounding and compensating 338 + 199 = 358 338 + 200 = 538 538 – 1 = 537	**Blank number line** largest number first and partition smaller number only  Column addition T H T O h 5 6 5 4 + 5 2 3 5 **<u>Progression:</u>** HTO+HTO Introduce carry Decimals involving money. Addition within contexts	estimate collumn addition exchange addend digit hundreds

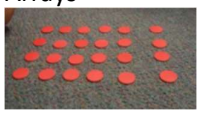
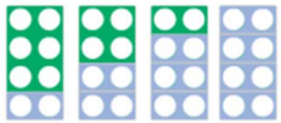
Addition	Year 4-6	Place value counters  Place value grids  	Make both numbers on a place value grid.  146 + 527 Add up the ones and exchange 10 ones for one 10. The use of number lines for rounding and time is a useful scaffold Bar model  <u>Mental addition strategies:</u> Place value mental method (smile) Th H T O Th H T O 4263 + 1234 = 5497 5 4 9 7 Partitioning and recombining 4562 + 5264 = 9826 4000 + 5000 = 9000 500 + 200 = 700 60 + 60 = 120 2 + 4 = 6 9000 + 700 + 120 + 6 = 9826 Bridging through 10 and 100 156 + 15 = 171  Rounding and compensating 3382 + 199 = 3581 3382 + 200 = 3582 3582 – 1 = 3581	**Compact Method** 324 + 807 1131 1 1 From Year 4, children are expected to master using the compact method (where appropriate) to solve addition problems with increasingly large numbers. From year 5, children may choose to use a number line if they believe it would lead to quicker solutions. 72.8 + 54.6 127.4 1 1 £ 2 3 . 5 9 + £ 7 . 5 5 £ 3 1 . 1 4 1 1 1 **Progression:** **Year 4:** ThHTO+ThHTO; decimals to two decimal places **Year 5:** More than 4-digits; decimals to three decimal places; adding more than two numbers **Year 6:** More than 4-digits; decimals to three decimal places; adding more than two numbers	4 digit numbers operation methods efficient round thousands place holder <u>Year 5</u> accurate approximate constant strategy

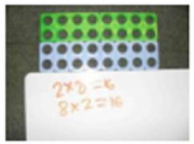
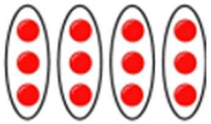
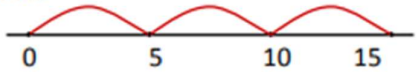
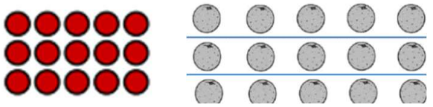
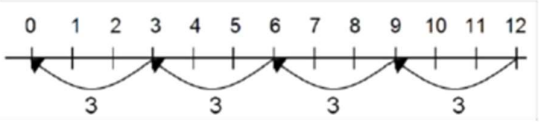
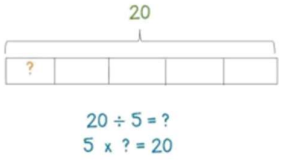
Subtraction	Reception	Objects (e.g. counters, conkers, buttons, cubes etc..) Tens frame  Rekenrek  Numicon 	Part-Part-whole 		take away minus part 1 less left
	Year 1	Use physical objects e.g. counters, cubes etc, to show how many objects can be taken away.  Number tracks and Cuisenaire rods   Numicon  Ten frames  Make 14 on the ten frame. Take away the four first to make 10 and then takeaway one more so you have taken away 5. You are left wi the answer of 9. Dienes base 10	Cross out drawn objects to show what has been taken away.   Bar model **15 - 4 = ?** 	6-3 = 3 Subtraction with missing numbers – 7 - ? = 4 **<u>Progression:</u>** In Ones Ones take Ones Ones take Ones (Thru 10) from 20 Subtraction with missing numbers 6 - a= 3	subtraction subtract difference missing number problems less minus symbol

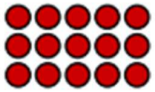
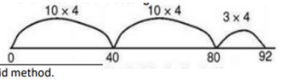
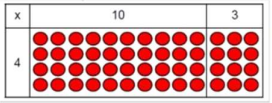
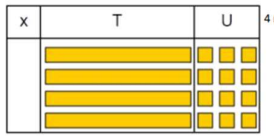
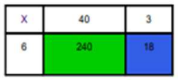
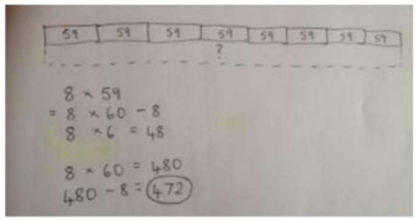
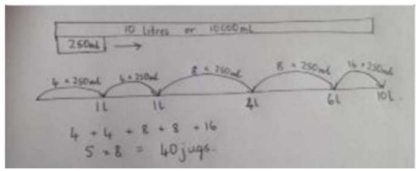
Subtraction	Year 2	Numicon  Dienes base 10 	**Number lines – counting back** 13-5=8  **Number lines – counting back** 74 -25 = 49  [Also jumps can be in 10s and 1s] Note – jumps below the line Bar model **15 - 4 = ?**  	Put 12 in your head, count back 4. What number are you at? Use your fingers to help. Worded questions for example: Fred has 23 sweets, George has 15 sweets. Find the difference between the number of sweets. 16 – 8 = **Progression:** TO - O from 10 then 20 TO - O thru the 10 TO - Mult of 10 from 50 TO - TO from 50 TO - TO from 99	exchange efficient method decrease

Subtraction	Year 3	Dienes base 10 	**Number lines – counting back** 74 -25 = 49  [Also jumps can be in 10s and 1s] Bridging through 10 or 100 **Number lines – counting on** 74 -27 = 47  [Also jumps can be in 10s and 1s] 58 - 25  Dienes base 10 build biggest number and cross out what you are taking away. Bar model **15 - 4 = ?**  	Column subtraction  **Progression:** HTO-TO HTO - HTO Introduce exchange Decimals involving money. Subtraction within contexts	column subtraction estimate minuend subtrahend inverse place holder

Subtraction	Year 4-6	Counters maybe used to scaffold – where appropriate.  Start with the ones, can I take away 8 from 4 easily? I need to exchange one of my tens for ten ones.	 From Year 4, children are expected to master using compact method (where appropriate) to solve subtraction problems with increasingly large numbers. From year 5, children may choose to use a number line if they believe it would lead to quicker solution. Bar model **15 - 4 = ?**  <u>Mental strategies:</u> Place value mental method (smile) Th H T O Th H T O 6789 – 1523 = 5266 5266 Bridging through 10 or 100 5682 – 152 = 5530  Round and compensating 5681 – 199 = 5480 5681 – 200 = 5481 5481 + 1 = 5482 Partitioning and recombining 9624 – 3212 = 6412 9000 – 3000 = 6000 600 - 200 = 400 20 - 10 = 10 4 - 2 = 2 6000 + 400 + 10 + 2 = 6412	**<u>Progression:</u>** **Year 4** ThHTO- HTO; ThHTO- ThHTO decimals to two decimal places **Year 5:** More than 4-digits; decimals to three decimal places; subtracting more than two numbers **Year 6:** More than 5-digits; decimals to three decimal places; subtracting more than two numbers	4 digit numbers operation methods efficient round accurate approximate strategy

	Reception	**Multiplication:** Use of objects like cubes, counters, buttons etc **Division:** Use of objects like cubes, counters, buttons, oranges, shape etc, to show half of an object or shape	**n/a**	**n/a**	double half sharing even fair odd digit near double equal groups unequal group
Multiplication and division	Year 1	**Multiplication:** Use of objects like cubes, counters, buttons etc  Numicon  Arrays   Cuisenaire rods **Division:** Use of objects like cubes, counters, buttons etc and putting them into groups  Numicon 	**Multiplication:** 3 plates, 2 cakes on each plate  **Division:** 6 cakes shared between 2 people:   Childre use pictures to share quantities. 	**Multiplication:** **<u>Progression:</u>** 2x Doubles One step problems **Division:** **<u>Progression:</u>** Halves ÷ 2 One step problems	twice as many multiplicatio n division arrays share even fair grouping unequal divide repeated addition

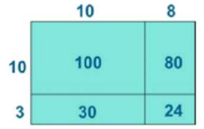
Multiplication and division	Year 2	**Multiplication:**  Arrays: 5 x 3 Numicon   Cuisenaire rods **Division:**  Arrays 12 ÷ 3 = 4 Numicon 	**Multiplication:** **Repeated addition** 5 x 3  0 5 10 15 **Arrays** 5 x 3  **Division:** Using number lines to show jumps in groups. The number of jumps equals the number of groups.  0 1 2 3 4 5 6 7 8 9 10 11 12 3 3 3 3 Bar model – think of the bar as a whole. Split it into the number of groups you are divising by and work out how many would be within each group.  20 ? 20 ÷ 5 = ? 5 x ? = 20	**Multiplication:** **Progression:** 5x 10x One step problems involving the 2x, 5x and 10x tables **Division:** **Progression:** ÷ 10 ÷ 5 One step problems involving the 2x, 5x and 10x tables	commutative multiplication tables repeated addition divide lots of multiply twice

Multiplication and division	Years 3-4	**Multiplication:** Arrays for scaffold  Cuisenaire rods 	**Multiplication:** Number line with jottings  Show the link with arrays to first introduce the grid method.  Grid method Move on to using Base 10 to move towards a more compact method.  Compact grid method 43 x 6  Bar model Bar modelling and number lines can support learners when solving problems with multiplication alongside the formal written methods.   			exchange missing number problems derived facts factor product distributive law square numbers correspondence remainders formal written layout dividend divisor quotient commutative inverse multiples scaling efficient multiplicative reasoning short multiplication short division

x	1000	300	40	2
10	10000	3000	400	20
8	8000	2400	320	16

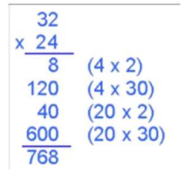
Multiplication:
Grid method

Moving forward, multiply by a 2 digit number showing the different rows within the grid method.



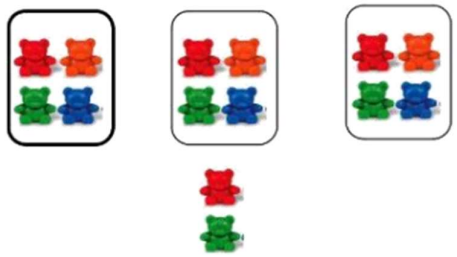
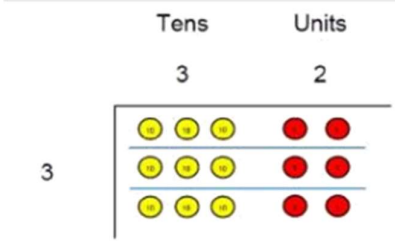
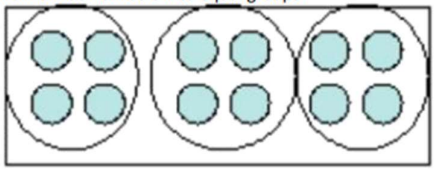
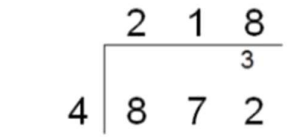
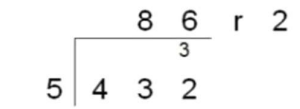
Long multiplication

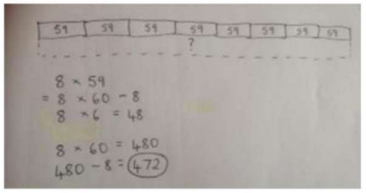
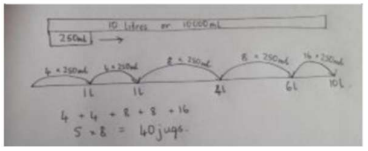
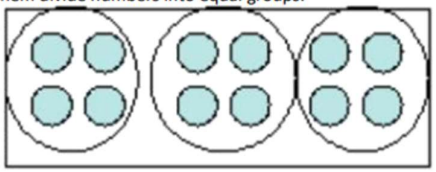
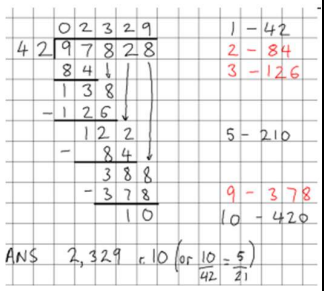
Short multiplication

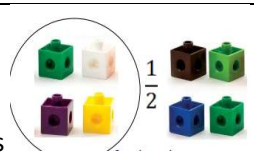
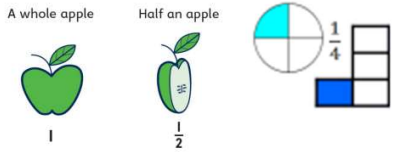
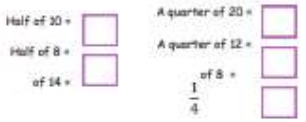
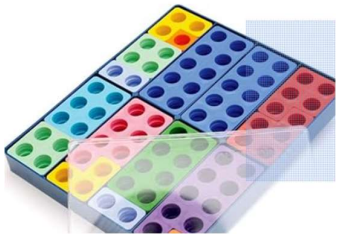
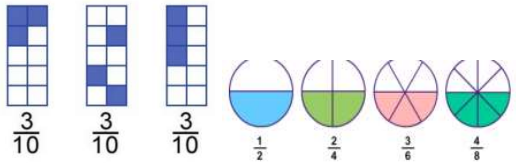
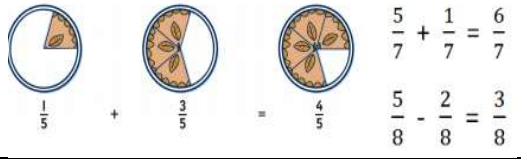


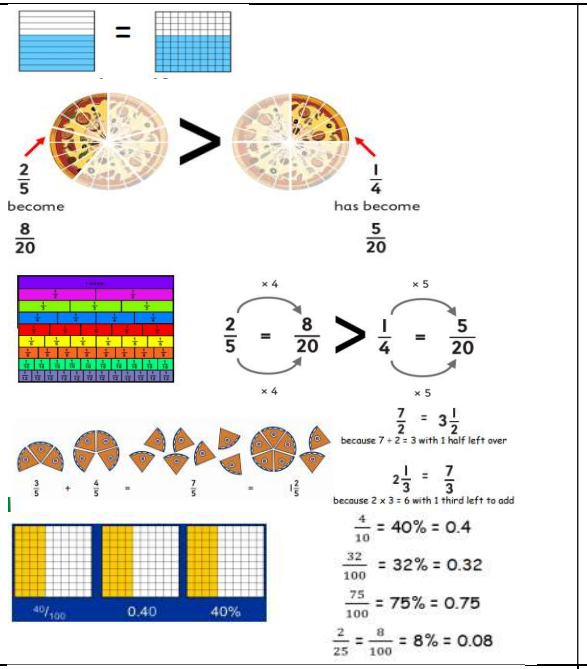
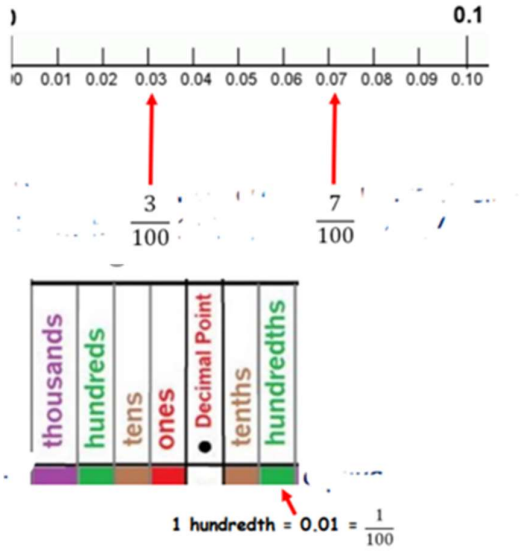
multiplication

435
× 72

Multiplication and division		**Division:** **14 ÷ 3 =** Divide objects between groups and see how much is left over  Alongside short division, place value counters can be used as a scaffold: 	**Division:** Draw dots and group them to divide an amount and clearly show a remainder.  Students can continue to use drawn diagrams with dots or circles to help them divide numbers into equal groups.  Encourage them to move towards counting in multiples to divide more efficiently.	**<u>Progression:</u>** Year 3 TO x O Year 4: TOxO; HTOxO **Division:** Begin with divisions that divide equally with no remainder.  Move onto divisions with a remainder.  **<u>Progression:</u>** All ÷ tables Year 3 TO ÷ O Year 4: TO÷O; HTO÷O Simple remainder e.g r3	

Multiplication and division	Years 5-6	**Multiplication:** Concrete objects can be used as a scaffold **Division:** Concrete objects can be used as a scaffold	**Multiplication:** Bar modelling and number lines can support learners when solving problems with multiplication alongside the formal written methods.   **Division:** Students can continue to use drawn diagrams with dots or circles to help them divide numbers into equal groups.  Encourage them to move towards counting in multiples to divide more efficiently.	**Multiplication:** Short division Worded problems 1342 × 18 13420 10736 24156 1 **Progression:** **Year 5:** ThHTOxO; ThHTOxTO **Year 6:** HTOxO.t Numbers with 1dp x single digit Children in Year 6 may also be taught the lattice method (Nappier's Bones) of multiplication to aid transition to secondary school (this is the preferred method at the Cotswold School). **Division:** Short division with decimals 14.6 (16, 21) 35 | 511.0 Worded problems  **Year 6 –** Long division **Progression:**	multiples prime numbers cube numbers short division long division dividend divisor quotient powers of long multiplication order of operation BIDMAS BODMAS

				Year 5 ThHTO ÷ O, with remainders; ThHTO ÷TO, with remainders in context **Year 6** ThHTO ÷ TO with remainders in context TO.t ÷ O Remainders as fractions or decimals where known (e.g. 4/8 = 0.5), long division	
Fractions, decimals and percentages	Years 1-2	cubes  counters 		 **Progression:** **Year 1** ½ and ¼ **Year 2** ½, ¼, 1/3 2/4 and ¾ Above of numbers to 10 then 20	half whole quarter equal parts three quarters third equivalent fractions numerator denominator one whole
	Year 3 - 4	Numicon to scaffold equivalences and addition/subtraction of fractions 	  Number lines 	**Progression:** **Year 3 and Year 4** Increasing denominations to 1/10 Equivalences pictorially Add and subtract simple fractions within 1	unit fractions non-unit fractions tenths hundredths equivalence convert proper fractions improper fractions decimal points mixed numbers integer

Fractions, decimals and percentages	Year 5	Cuisenaire rods 		$\frac{3}{5} = \frac{6}{10} = \frac{60}{100}$ $\frac{3}{4} = \frac{75}{100}$ $\frac{1}{5} = \frac{2}{10} = \frac{20}{100}$ **Progression:** **Year 5** Equivalence Methodology of equivalence Introduce mixed numbers Introduce percentages as fractions out of 100 and therefore as decimals Fractions of fractions	thousandths percentages facotrs integer common denominator
	Year 6			of 60 = 0.6 because 60 ÷ 100 = 0.6 of 70 = 0.7 so of 70 = 0.07 **Progression:** **Year 6** O.thth place value Add and subtract numbers with different denominations	simplify common multiples simplest form recurring