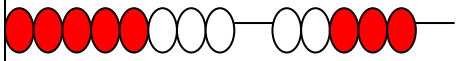
ST CHARLES' CATHOLIC PRIMARY SCHOOL

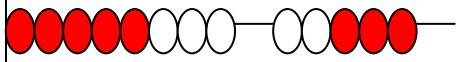
"Let all that you do be done in love" St Charles' Borromeo

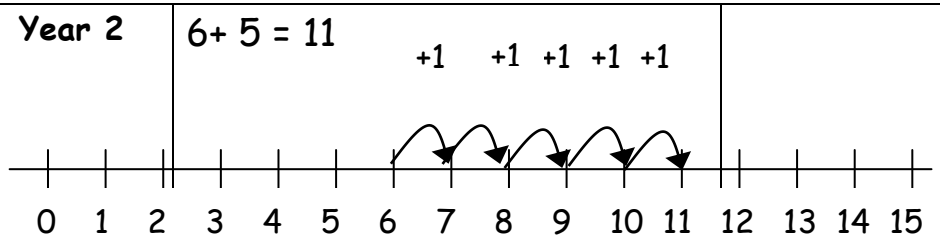
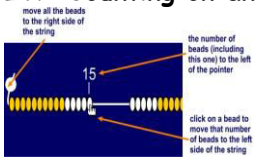
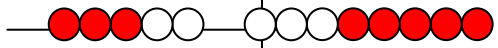
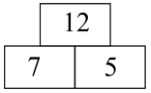
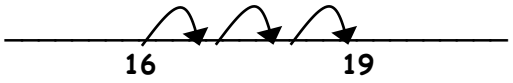
LOVE IS MADE POSSIBLE BY RESPECT

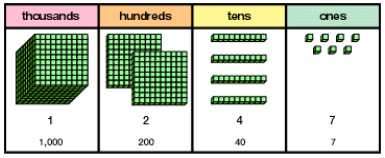
PROGRESSION IN ADDITION

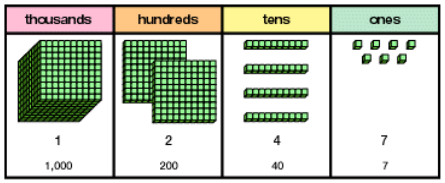
Children are taught to understand addition as combining two sets and counting on.
Children are encouraged to consider if a mental calculation would be more appropriate before using written methods.

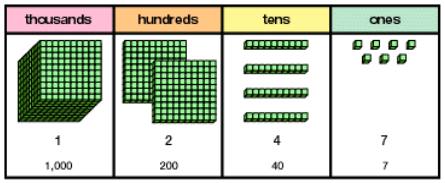
Steps	Examples	Suggested activities	Models and images	Vocabulary
Reception	**Finding one more or one less than a given number**   	Singing songs to count up and back. Recognising numbers before and after if missing on a number line. Ordering number tiles. Songs, rhymes, games, counting on and back… using objects and apparatus (eg 'One, two, three, four five, once I caught a fish alive….'' 'One, two, buckle my shoe…') Recognising numbers before and after if missing on a number line. Songs, rhymes, games, counting up and back in ones on a number line. Use Numicon to recognize and compare numbers	**bead strings**  **fingers,**  **cubes, counters** **Numicon**  **number line in ones,** **practical objects in classroom setting**  **number tracks intervals ones** **counting stick/ peg line in ones.** **Number tiles** 	add, more , and , make, sum, total, altogether, score, double, one more, two more, ten more, is the same as, equals, answer, count, sort, group, list, match

Year 1	**4 + 2 =** At a party I eat 4 cakes and my friend eats 2 How many cakes did we eat altogether?  **7 + 4 =** 7 people are on the bus. Four more get on at the next stop. How many people are on the bus now? ||||||| |||| **= 7 + 4** We try and write calculations in a range of ways. **Quick recall of number bonds within 10** Eg: Adding a number in different ways up to 10 How many different ways can you make a total of 7? 3+4= 7 2+5 = 7 7 = 6 + 1 7 = 1 + 6 etc	Children could draw a picture to help them work out the answer or use objects to help them (try counting cars or conkers). Use concrete objects, in familiar practical contexts; pictorial representation and mental facts, Link to developing mental recall of number facts within 10 and 20 in various forms, as well as quick recall of number pairs to make 10 and 20) Children will need to develop rapid recall of number facts to and ***within*** 20 Introduce the symbols for equals and add Children could use dots or tally marks to represent objects (quicker than drawing a picture). Work should link related operations of addition and subtraction. They should realize the effect of adding zero.	**Practical contexts of counting** **objects, fingers** **counters** **beads** **hoops trays** **bead strings - 1 more 1 less**  **Numicon**  **pegs on a coat hanger** **Cuisenaire** 	*as above and also:* plus, near double, how much more is..? equals, sign, number sentence, operation, count on, near double, plus, equals, sign , put together, more than

Year 2	6+ 5 = 11  		**Different range of number lines marked in** **1's 2's 5's 10's** **ITP 'Counting on and back'**   **Using beadstrings** **100 square** **counting stick** **100 square** **multi-link cubes**  **Cuisenaire** **Number trios**  **100 square**  **Base 10** **Blank number lines** **Numicon** 	
	16 + 3 = 19  	Children begin to use a number line marked in ones to count up. The children then extend this to drawing their own 'blank number line', starting at the chosen number. Children need to add numbers using concrete objects, pictorial representations, and mentally including Two-digit number and ones A two-digit number and tens Two two-digit numbers Adding three one-digit numbers	

Year 2	**36 +42** **6+2=8** **30+40=70** **=78** **30+40=70** **6+2=8** **=78** **Collect the numbers together and recombine.**	Following work on Place value, and counting in tens, units/ partitioning numbers: Children use partitioning to add larger numbers, when children have a sound understanding of the value of the digits in a two digit number eg 47 = 40 + 7 This will link to progression in Place Value (see separate guidance) Children will begin to record addition in columns to support place value and prepare for formal written methods with larger numbers Children are taught to use estimation and inverses are used to check answers- adding numbers in a different order / using subtraction to check addition . This also establishes the commutativity and associativity of addition)	**Dienes base 10 equipment**  **place value chart**  **partitioning 2 digit numbers in different ways** **multi-link straws**	*as above and also:* addition , one hundred more, tens boundary, calculate, calculation, mental calculation, jotting, symbol inverse , value, digit, place value, estimate, inverse

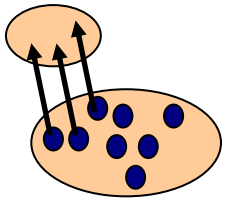
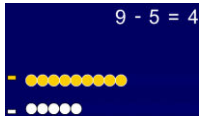
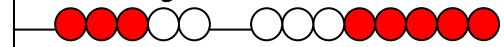
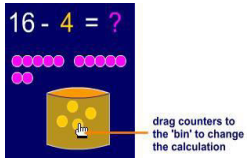
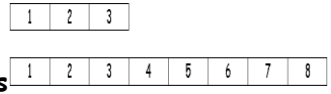
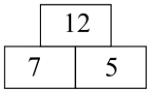
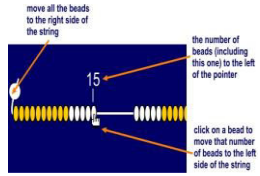
Year3	**Expanded vertical written method: Link to mental calculations, using partitioning** 47 + 25 There are 47 children on the bus. 25 children are on another bus. How many children are there altogether? Expanded method… add units first, then tens. Add tens and units starting with most significant numbers 47 → 47 +25 + 25 12 72 60 1 72 **<u>NOTE</u>: Use this expanded method <u>briefly</u> to model the carrying, leading into the compact written method.**	Children will continue to develop skill in mental addition, including adding mentally -a three-digit number and ones -a three-digit number and tens A three-digit number and hundreds Children will be taught written methods for those calculations they cannot do 'in their heads'. Expanded methods build on mental methods and make the value of the digits clear to children. Start with the units each time. The language used is very important (7+5, 40 + 20 then 60 + 12 – add this mentally not in columns, starting with the most significant number…ie 60+10(70) +2 = 72 *Most children by the end of YEAR 3 would be using this short formal method to add including numbers of up to 3 digits*	**Dienes base 10 equipment**   **place value chart**	*<u>as above and also</u>:* hundreds boundary , method, equation, inverse, one hundred more, one hundred less,

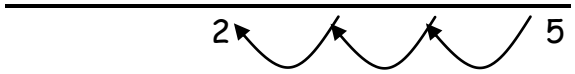
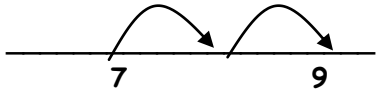
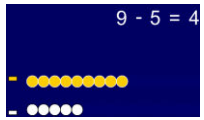
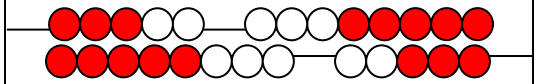
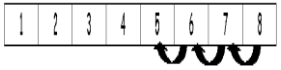
Year 4	**Compact vertical written method:** **3147 + 225** **The postman delivered 3147 letters on Tuesday and 225 letters on Wednesday.** **How many letters did he deliver?** **3147** **+ 225** **3372** **1**	Children will develop their use of the compact written method to add pairs of numbers of up to 4 digits. They will continue to develop mental methods with increasingly large numbers to aid fluency.	**place value chart**  	*as above and also:* increase inverse, operation, estimate
Year 5/6	**158.3 + 15.8** **John drove 158.3 miles on the Saturday and 15.8 miles on the Sunday.** **How far did he travel over the weekend?** **158.3** **+ 15.8** **174.1** **11**	As children become more confident they will use compact method using decimals, and larger 4 and 5 digit numbers. Extend mental strategies with increasingly large numbers (eg 12,462 + 2300 = 14,762) Children will use addition as part of solving multi-step problems in context. Estimation and inverses are used to check answers- adding numbers in a different order / using the inverse to check additions (also re-enforcing the commutativity and associativity of addition)		*as above and also:* units boundary tenths boundary , strategy, thousandth

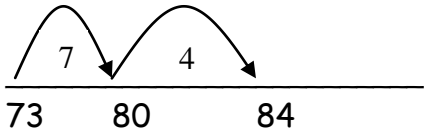
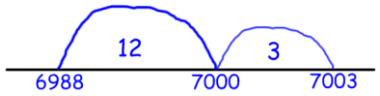
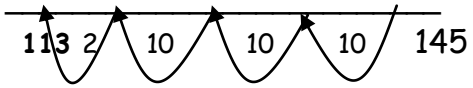
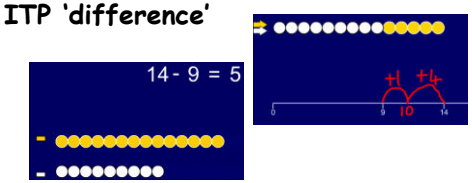
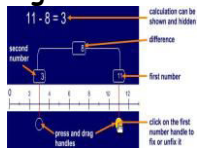
PROGRESSION IN SUBTRACTION

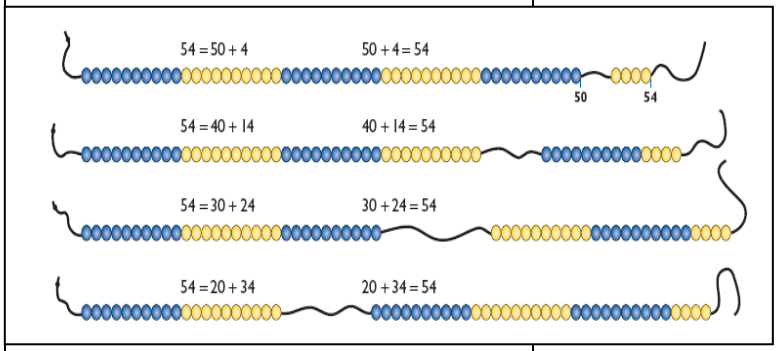
Children are taught to understand subtraction as taking away (counting back) and finding the difference (counting up).
Children are encouraged to consider if a mental calculation would be more appropriate before using written methods.

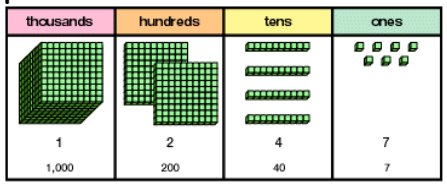
Steps	Examples	Suggested activities	Models and images	Vocabulary
Reception	**Finding one more or one less than a given number**   	Songs, rhymes, games, counting on and back... using objects and apparatus (eg 'Five little speckled frogs'; 'Ten green bottles') Recognising numbers before and after if missing on a number line. Songs, rhymes, games, counting on and back in ones on a number line. Use number lines and tracks marked in ones Use Numicon to compare the relative size of numbers	**bead strings** **fingers, cubes, counters** **comparing objects on a line** **practical objects in classroom setting** **number line, intervals of one**  **number track** **Numicon** 	how many more to make.., how many more is … than…? take (away), leave how many have gone? How many are left / left over? One less, two less…, ten less, . how many fewer is… than…?, .difference between, is the same as, is the same as

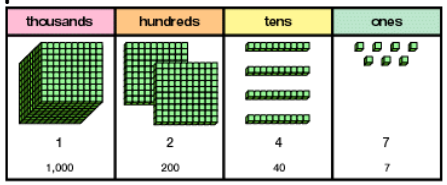
Year 1	**8-3=** **Take away** *There are eight biscuits on this plate. Take three of the biscuits to eat. How many biscuits are left on the plate?*  **Find the difference** A teddy bear cost £5 and a doll cost £2. How much more does the bear cost?  *Here are six toy cars. How many more cars are needed to make a set of eight cars?* 	Children explore problems in familiar practical contexts which include both finding the difference, and 'taking away'. Drawing a picture helps children to visualise the problem. Children at this stage will also develop knowledge and use of number bonds both to and within 10 and 20 to perform calculations. They may be taking away objects, or counting back to 'take away' where differences are small. Where differences between numbers are larger, children find the difference by counting on from the smallest number to the largest. Use images / models / pictures and practical objects in context to support. The use of the number line may be extended to using a 'blank number line' where children can start from any given number and count on Children build on understanding of subtraction alongside its inverse (addition), in building mental strategies and understanding of number bonds up to and within 10 and 20 to establish addition and subtraction as related operations.	**ITP 'difference'**  **Bead strings in tens to a hundred**  **Number lines intervals in ones** **Number lines intervals of 10** **ITP 'Number facts'**  **Blank number lines (starting at numbers other than 0)** **Numicon**  **Cuisenaire**  **Number tracks**  	*<u>as above and also</u>:* one hundred less, tens boundary, symbol, calculate, calculation, mental calculation, jotting, correct, take away, distance between, more than and less than **ITP 'counting on and back'** **Number tracks to show the difference** Number trios  **ITP 'counting on and back'** 

Year 1	**Counting <u>up and back</u> on a number line (marked in ones)** Record steps **counting *back, below*** the number line 5 - 3 =2  Record steps ***counting on, above*** the number line, 9-7 = 2  	Children by Year 1 need to experience subtraction as both difference and take away. Children may draw pictures (extending to using an image such as the 'Singapore Bar') to model subtraction. They may use concrete objects to solve problems using subtraction as take away, and difference. They solve problems in practical contexts using pictorial representation as well as mental facts . Children are introduced to the symbols for equals and subtract. Link to developing mental recall of number facts within 10 and 20 in various forms, as well as quick recall of number pairs to make 10 and 20) Children will need to develop rapid recall of number facts to and ***within*** 20 By Year 1 children draw their own number line to count on and back in ones. Work should link the related operations of addition and subtraction. Children should be taught the effect of subtracting zero.	**ITP 'difference'**  **Bead string and bar (inc double bars)**  **Number lines marked in ones** **Counters, comparing objects** **Cuisenaire**  **Numicon**  . **Number tracks**  	*<u>as above and also</u>:* subtract, take away, how much more is…?, minus, leave, how much less is..? is the same as, equals, sign, operation, number sentence, subtract

Year 2	**84-73** **Counting on to find the difference**  7003-6988 Firstly counting on to the next ten.  12+3=15 **Counting back** (where appropriate..eg numbers with a small difference, or without crossing tens boundaries). Steps back are recorded below the line (or if more appropriate, would be completed mentally, without the number line) **145 – 32 =**  14+ ☐ =35. What is the missing number? How do you know? What subtraction could you do to find the answer?	Children build on their understanding of subtraction to interpret 14 – 9 as finding the difference between 14 and 9 , or 'How many more must I add to 9 to get 14?' They may use a number line to count on and find a difference ('Shopkeepers method'), counting on from smallest to largest number. Children count to the next ten first. As they become more efficient they will count on using fewer steps. Children must be able to choose the most efficient method depending on the calculation given, whether to count up or back; whether to perform mentally, or with a number line / jottings Children develop the relationship between subtraction and addition using 'missing number' problems, supported by number trios. Links are made to work on mental calculation, where children are taught to partition given numbers in a variety of ways, beyond simple tens and ones.	**ITP 'difference'**  **Blank number lines** **Number lines showing tens boundaries** **ITP 'Number line'**  **Missing number 'empty box' problems** **eg** 14+ ☐ =35 **Missing numbers on a number line** **Numicon**  **Cuisenaire** 	*as above and also:* hundreds boundary, method, equation, increase, decrease, inverse, strategy, efficient

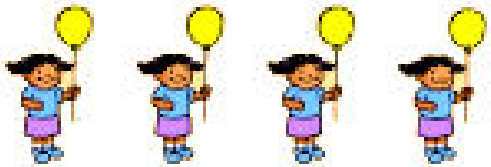
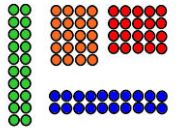
	Children learn to partition numbers in a variety of different ways. 30 (54) 24 or 50 (54) 4 or 40 (54) 14	By the end of Year 2, most children will Children subtract numbers using concrete objects, pictorial representations, and mentally including -Two-digit number and ones -A two-digit number and tens -Two two-digit numbers -Adding three one-digit numbers Children will begin to record subtraction in columns to support place value and prepare for formal written methods (linked to developing work on place value)	**Number trios** 35 14 **Bead strings in tens to 100** 	

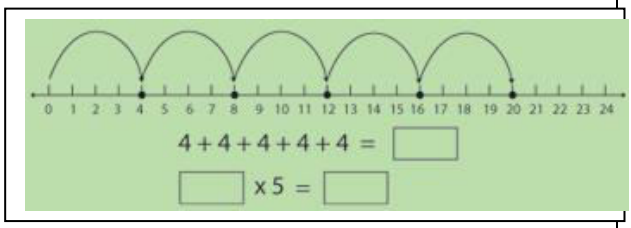
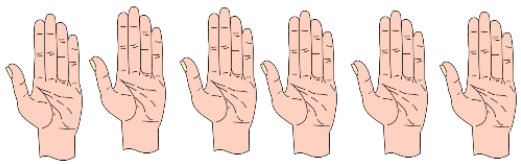
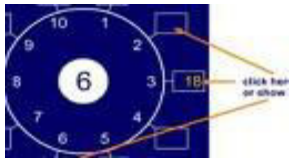
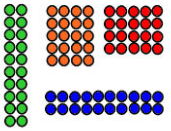
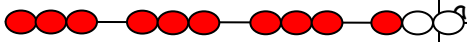
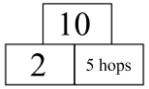
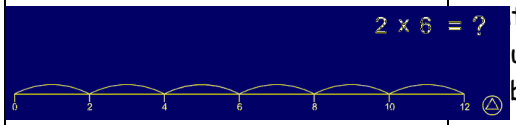
Year 3/4	**Compact written method** **Children use when competent and confident in using a number line. Numbers are lined up using place value columns.** **54-36=** There are 54 children in the school. If 36 children go on a school trip, how many will be left in school? 4 1 ~~5~~4 -36 18 ***Children do 4-6 and find they do not have enough units to complete the calculation so they have to exchange a ten. This means they now have 14 in the units column and only 4 in the tens column.*** This method is extended to include the subtraction of numbers up to 3 digits 4 1 5~~5~~4 -236 318	Children set out a subtraction vertically with the largest number on the top of the working out. Children will find at this stage that sometimes it is not possible to subtract the number underneath from the number on the top (e.g. you can not do 4-6). Children now learn to exchange by taking from the number to the left. This work relies on confident and competent understanding of place value. Children continue to develop mental strategies to subtract, including 'special cases' such as finding 57 – 29, by subtracting 30, then adding one to adjust, similarly, subtracting 99 mentally or 1.9, using rounding and approximation. Children consider whether a mental or written method is more efficient, depending on the given numbers. They discuss their methods and look for methods that they can do most easily in their heads Children apply their calculation skills to subtract multiples of 10 , 100 and 1000, eg they work out what to add to 370 to make 1000 or 910 – 740 based on their knowledge of 91-74 Children are taught to use estimation and inverses to check answers – using addition to check. Most children by the end of YEAR 4 will be using this short column method to subtract.	**Dienes base 10 equipment**  **place value chart**  	*<u>as above and also</u>:* units boundary, tenths boundary, strategy, exchange, tens, units, column, place value, place holder, hundredths, carry, exchange

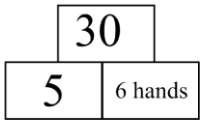
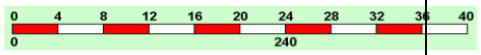
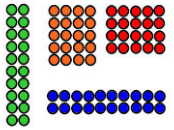
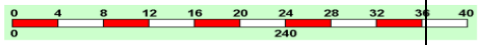
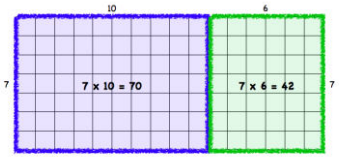
Year 5/6	**72.2 – 45.7** = 26.5 $^{6}\not{7}\ ^{11}\not{2}\ .\ ^{1}2$ -4 5 . 7 2 6 . 5 **£53.94 - £21.78=** Lucy has £53.94 pence in her bank. She spends £21.78. How much money does she have left. 8 1 £5$\not{3}$.94 -£21.78 £ 32.16	Children will practice using the formal written methods of columnar subtraction with increasingly large numbers (with more than 4 digits, and including decimals), to aid fluency. This is linked to continuing to develop fluency in mental subtraction, with increasingly large numbers . When subtracting decimals, children need to understand that decimal points line up underneath each other. The children should be able to choose the most efficient method between a number line or vertical compact method (or calculator) depending on the numbers. Children should be encouraged to consider if a mental calculation would be appropriate before using written methods.	**dienes equipment** **place value chart**  	*<u>as above and also</u>:* thousandths

PROGRESSION IN MULTIPLICATION

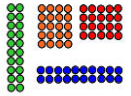
All children will be encouraged to develop skills in mental calculation alongside development of written methods. Children by the end of Year 6 need to be confident and competent in choosing the most efficient method appropriate to the numbers given.
Children are taught to understand multiplication as repeated addition. Multiplication is related to both grouping and sharing.

Steps	Examples	Suggested activities	Models and images	Vocabulary
Reception	**Counting in 2's,** **Number rhymes..One two, buckle my shoe**   **Counting in steps of equal size**	Counting orally in 1's 2's 5's 10's Count repeated groups of the same size	**hands socks** **legs shoes** **Using equipment, washing line, socks, counting hands, objects related to topic work / classroom environment**	count, sort, group, set, choose, collect
Year 1	**Each child has two legs. How many legs do four children have?** **How would you say this?**  2 + 2 + 2 + 2	Children draw pictures, or use concrete objects / apparatus Counting on and back in 1's 2's 5's 10's Multiplication taught as repeated addition. Use a number line to show repeated addition in steps of constant size. Cuisenaire on a 'rule line' to show steps of constant size.	**practical objects related to topic / classroom environment** **counting in groups** **number lines (marked intervals)** **number tracks**  eg if the frog hop in twos, where will he be after 5 hops? **Cuisenaire** **Bead strings** **Arrays** 	*as above and also:* How many groups of? (links with division), double, near double, count out, number sentence, sign, operation

Year 2	**3 x 4= Read as 'three multiplied by four'** **A chew costs 3p.** **How much do 4 chews cost?**  or **4 x 5: Shown as repeated steps on a number line**   *How many fingers are there altogether on six hands?*	Drawing an array (3 rows of 4 or 3 columns of 4) gives children an image of the answer. It also helps develop the understanding that 4x3 is the same as 3x4. Use a number line to make the link between repeated addition and multiplication, firstly on a marked number line with steps of equal size, then leading to use of a blank number line. At this stage, children develop memory of multiplication facts to help with mental calculations. By the end of Year 2, most children will be fluent in their 2,5 and 10 times tables facts. Chn are encouraged to use mental recall, and consider the most efficient strategy (eg it wouldn't be appropriate to draw a number line if I know that 4 x 5 is 20) The relationship between multiplication and division is re-enforced using arrays and number trios (linked to mental work using number facts and recall of times tables) Children investigate the effect of changing the order in multiplication (commutative properties..using an array to model)	**ITP Number dial**  **arrays**  **excel array creator (spreadsheet)** **bead strings**  **Cuisenaire**  **Number trios**  **number lines (marked intervals)** **blank number lines** **Counting sticks**	*<u>as above and also</u>:* how many times, lots of, groups of, times, multiply, multiplied by, multiple of, once, twice, three times, four times, five times, ten times, times as (big, long, wide, and so on), repeated addition, array, row, column, jotting, calculate, calculation, tal ulation, bol

	5 x 6 = 30  	Children are taught commutativity and inverse relations to develop multiplicative reasoning (eg 4x5 = 20 and 20÷5 = 4), and establish the links between multiplication and division.	 	
Year 3/4	**There are 16 children in seven classes, how many children all together?** 16 x 7 = 10 x 7 =70 6 x 7 = 42 70 + 42=112 **23 books were sold. Each book cost £9.** **How much money was taken?** 23 x 9= 20 x 9 = 180 3 x 9 = 27 180 + 27 = 207	Use the partitioning and recombining methods. Children are encouraged to learn their times tables to help with their calculations. Children use their knowledge of number facts and place value. Children develop fluency in times tables 3,4 and 8. By the end of Year 4, most children will have fluent recall of times tables up to 12 x 12. Chn begin using jottings to support mental work,. Chn should be taught to choose the most efficient methods either mental with jottings, written or calculator. Eg need to understand that to x5, then x10 and half; to multiply by 4- double and double again etc.) This method can be extended into larger numbers. 16 is partitioned into parts (10 and 6) and each of these is multiplied by 7. The two answers are then added together.	**arrays (to link into and demonstrate the grid method)**  **ITP: area** can be used to show arrays easily **Cuisenaire** **Counting sticks**  **An array used to model links with the grid method to show partitioning:** **7 x 16 =** 7 x (10 + 6) =  **70 + 42 = 112**	*as above and also:* product, method, equation, divisible by, factor, square number,

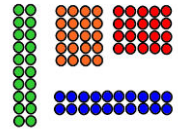
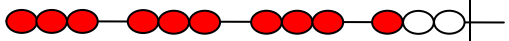
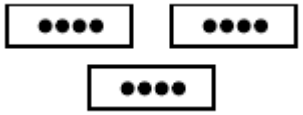
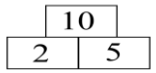
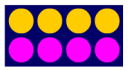
Year 3/4	Demonstrate the expanded written method in order to link the partitioning method to the compact written method. **X** **10** **6** **7** | **70** | **42** **16** **x 7** **42 (7x 6)** **70 (7 x 10)** **112** **16** **x7** **112** **4**	Children will be solving problems in context using multiplication. The children will be introduced to the compact written where more efficiency is needed. Links are made between the 'grid method' and the expanded written method, before compacting it to the short written algorithm. Children make decisions as to the most efficient methods (may be mental, written, calculator, depending on the calculation) Most children will be introduced to the compact written method in Year 3. By the end of Year 4, most children will be using the compact written method to multiply 2 digit and 3 digit numbers by a single digit.	**ITP multiplication facts** **arrays** **ITP Multiplication grid** **ITP: Number dial** **Excel "array creator"**	*no new vocabulary*

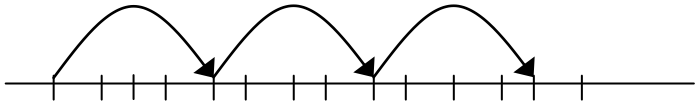
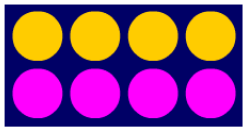
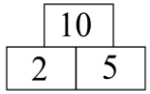
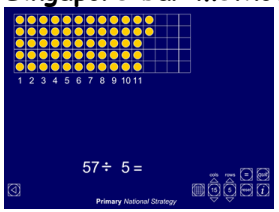
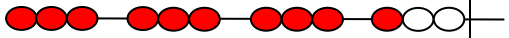
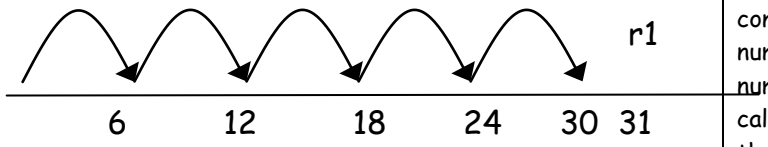
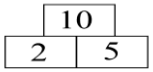
Year 5/6	**Expanded long multiplication:** **1.6 x 4** 72 x 34 288 (4 x 72) 2160 (30 x 72) 2448 1.6 x 4 6.4 2	Most children by Year 6 will be using the short compact method to multiply , and written expanded method for long multiplication (where they are multiplying by a 2 digit number) *Children make decisions as to the most efficient methods (may be mental, written, calculator, depending on the calculation)*	**ITP multiplication fact** **arrays**  **ITP** **Multiplication grid** **Excel "array creator"**	*no new vocabulary*

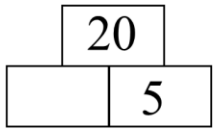
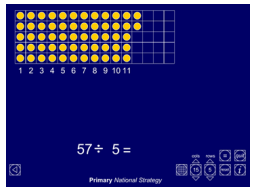
PROGRESSION IN DIVISION

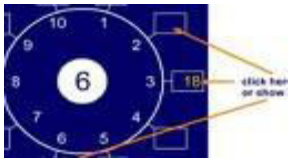
All children will be encouraged to develop skills in mental calculation alongside the development of written methods. Children by the end of Year 6 need to be confident and competent in choosing the most efficient method appropriate to the numbers given.

Steps	Examples	Suggested activities	Models and Images	Vocabulary
Reception	**Counting in 2's,** **Number rhymes..One two, buckle my shoe**   	Count repeated groups of the same size; Share objects into equal groups and count how many in each group.eg: trays with small compartments for sorting; collections of things: bottle tops, sequins, threads, tiny pieces of fabric, etc. Model sharing out the objects equally. For example: do you all want sequins? I'll put 5 each on your trays. Can you give everybody the same number of these? Have you got the same? Hang up 3 bags outside for making collections. Put a number 2 on each bag. Encourage the children to collect 2 of any treasured object in each bag, for example fir cones or smooth pebbles.	**Using equipment, washing line, socks, counting hands, objects related to topic work / classroom environment**	twos, tens, count , count in ones, twos, groups, equal groups, same, set, sort, share, share equally, each, one each, two each….
Year 1	**Children will experience division as both sharing and grouping, using word problems in context:** **Sharing:** 6 Easter eggs are shared between 2 children. How many eggs do they get each? 	Solve practical problems, using objects in context - grouping and sharing (up to groups of 20). Children will experience equal groups of objects and will count in 2s, 5s and 10s. They will work on practical problem solving activities involving equal sets or groups,	**arrays** Here are 20 counters. Arrange them in equal rows. Is there a different way to arrange them in equal rows? **ITP grouping** **ITP' Multiplication',**	as above, and also inverse, multiply, halving, lots of, groups of, double, half, left, left over

	<u>Grouping:</u> eg 6 socks, how many pairs of socks can you make?  Show me on a number line how you could do: 12 ÷ 3 = 4 3 3 3 3 The bead bar will help children with interpreting division calculations such as 12 ÷ 3 as 'how many 3s make 12?'	Children may also draw pictures as a helpful tool in understanding and solving division problems. They will begin to show steps of equal size on a number line to solve problems Introduce and begin to use the symbol for division Use arrays to model the link to multiplication and the inverse (as a means of checking)	**Number tracks**: eg If the frog hops in 2s, how many hops will there be before he lands on 10?   **Cuisenaire** **Number line** **Bead strings and bar** 	
Year 2	**12÷4** **Read as '12 divided into 4 groups' and '12 divided into groups of 4'** There are 12 apples and you can fill each basket with 4 of them. How many baskets will you need ? 	Children will use practical and informal written methods in context - including calculations with remainders. Children use the symbol for division in number sentences, and understand it as both sharing and grouping. At this stage, children will begin to apply their knowledge of multiplication facts to work out answers mentally... Eg 'I know that 2x3 = 6. So to share 6 into 2 groups, there will be three in each group'.	**Number trios**  **Number lines (intervals of one)**  **arrays** **<u>ITP</u> Multiarray** **ITP Grouping** **Cuisenaire**	<u>as above and also..</u> rows and column, remainder, divided by, divided into, array, n umber trio, related facts

	 Can you give two multiplication and two division sentences to describe this array? 8 ÷ 2 = 4 8 ÷ 4 = 2 2 x 4 = 8 4 x 2 = 8  Use number trios to help to calculate the value of an unknown in a number sentence (e.g. □ ÷ 2 = 5)  **6 6 6 6**	By the end of Year 2, most children will be fluent in the 2,5 and 10 times tables. The relationship between multiplication and division is re-enforced using arrays, and number trios (linked to mental work using number facts and recall of times tables). eg 2 × 4 gives the same answer as 4 × 2. They also use the image to show how many twos make 8 and how many fours make 8. Children should use number lines or bead bars to support their understanding.	**Singapore bar method**  **ITP remainders** **Bead strings and bars** 	
Year 3	**31 ÷ 6**  	Show division as repeated steps of constant size and record steps on a number line. Introduce the use of a blank number line to record steps. Include calculations that divide exactly and those that give rise to remainders. Link to knowledge of tables facts, and extend to use place value to find related facts of with multiples of 10.	**Blank number lines** **Cuisenaire** **Number trios**  ITP Multiarray ITP Grouping ITP 'Remainders'.	as above and also…. sharing and grouping share equally repeated steps equal groups of, divided by, divide, divide into, left over, remainder, factor, quotient, inverse

	 □ x 5 = 20 20 ÷ □ =5 **The use of times tables facts is developed to introduce the short written method to divide. Most children by the end of Year 3 will be beginning to use this written method.** **72 ÷ 5** **14 r2** **5) 72** 2	Understand that division is the inverse of multiplication and vice versa, use related facts to solve missing number problems (number trios) Develop alongside knowledge of mental methods to calculate. Extend mental strategies to divide, using partitioning of numbers. The children will be introduced to the short written method to divide towards the end of Year 3, which requires fluent use of times tables facts, and an understanding of remainders when dividing. Starting with the division of a 2-digit numbers, children may progress by the end of Year 3 to dividing a 3-digit number by a single digit number.		

Year 4-6	**Short 'algorithm'** $3\overline{)29^{2}1}$ 97 11) 4 9 5 6 — 4 5 r1 By the end of Year 6, children will be recording any remainders as a fraction. The answer is written as $45\frac{1}{11}$	By the end of Year 4, children are expected to be fluent in the rapid recall of all times tables facts up to 12 x 12. Children during Years 5 and 6 will continue to regularly practice times tables facts, committing them to memory and using them confidently in larger calculations. Examples of calculations are given within real life 'contexts' where possible. The children continue to develop mental strategies to divide, using place value, known and derived facts. The use of the traditional 'short' algorithm is practiced so as to become more fluent. By Year 5/6, children may record remainders as a fraction or as a remainder, as a decimal, or by rounding interpreting answers depending on the context of the questions. This can be developed to include dividing larger numbers and decimals. This method also ensures progression onto High School. At Delisle it is used for any division, including dividing by 2 digit numbers.	**ITP: Number Dial**  By the end of year 6, children will have a range of calculation methods, mental and written. Selection will depend upon the numbers involved.	<u>as above and also….</u> divisible by share equally repeated steps equal groups of, divided by, divide, divide into, left over, remainder, factor, quotient, inverse, multiple, factor pairs, prime, prime factor