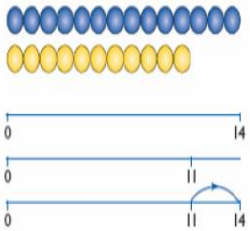
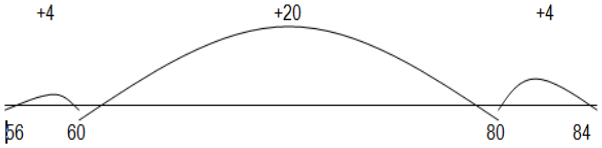
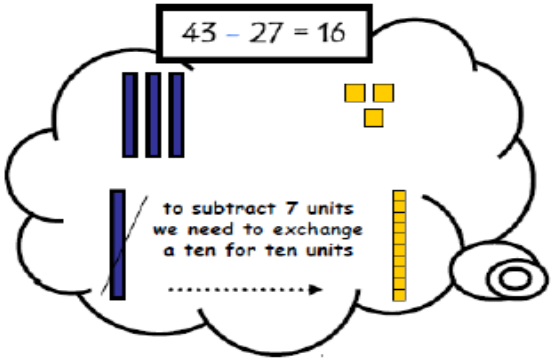
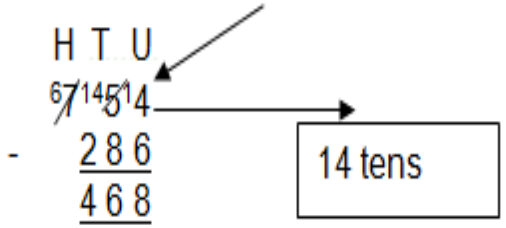
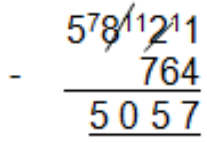
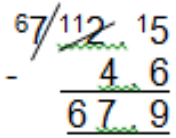
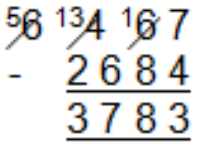
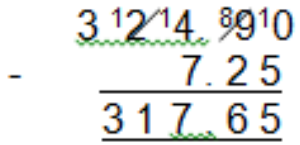
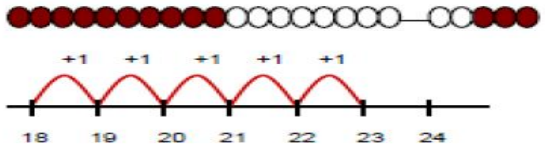
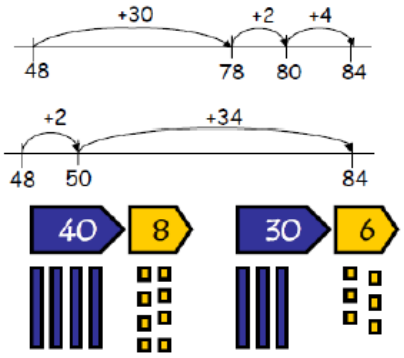
Guide to written methods for subtraction

Year	1	2	3
Key and mental skills	Represent and use number bonds and related subtraction facts within 20. Add and subtract one-digit and two digit numbers to 20, including zero	Recall and use addition and subtraction facts to 20 fluently, and develop and use related facts up to 100	Subtract multiples of 10 and 100. Subtract single digit by bridging through 10 and 100. Subtract near multiples of 10 and 100 by rounding and adjusting. Partition numbers to subtract.
Use of Jottings	Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = □ – 9	Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: * a two-digit number and ones * a two-digit number and tens * two two-digit numbers * adding three one-digit numbers	Add and subtract numbers mentally, including: * a three-digit number and ones * a three-digit number and tens * a three-digit number and hundreds
Developing written methods	Using marks on paper as symbols. Mum baked 9 biscuits. I ate 5. How many were left? 9-5=4 Check by counting back from 9 using fingers and then check by counting on from 4 to9 so children relationship between subtraction and addition (inverse).  The difference between 11 and 14 is 3. 14 – 11 = 3 11 + □ = 14 Read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs	84 – 56 = 28  Use of number lines to show finding the difference by counting on.	**Partitioning** 567 – 243 = 324 500 60 7 - 200 40 3 300 + 20 +4 Prepare children for formal written subtraction by using partitioning. Use practical equipment such as hundreds, tens and units (base 10) when using 'take to make' see below.  Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction. Below shows no 'take to make' required. 567 -243 324

Guide to written methods for subtraction

Year	4	5	6
Key and mental skills	Subtract multiples of 10s, 100s and 1000s. Fluency of 2 digit subtracted by 2 digit number. Continue with partitioning when using 'take to make' also known as decomposition or borrowing. Decimal subtraction involving money and measures. Subtract near multiples by rounding and adjusting	Subtract multiples of 10s , 100s, 1000s, tenths, Fluency of 2/3 digit subtracted a 2 digit number including decimals. Use of 0s with subtraction calculations. Continue with 'take to make' to 4-digits and beyond.	Subtract multiples of 10s , 100s, 1000s, tenths, hundredths Fluency of 2/3 digit subtracting 2 digit including decimals Use number facts, bridging and place value Adjust numbers to subtract.
Use of Jottings	Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.	Add and subtract numbers mentally with increasingly large numbers	Perform mental calculations, including with mixed operations and larger numbers
Developing written methods.	Continue to develop formal compact decomposition with different numbers of digits and decimals 4 take away 6, I can't do so I'm taking 10 to make 14. 14-6=8 	Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar/compact subtraction)  72.5km – 4.6km = 67.9km 	Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. More complex subtractions continuing with 'take to make' from all digits, including use of decimals.  

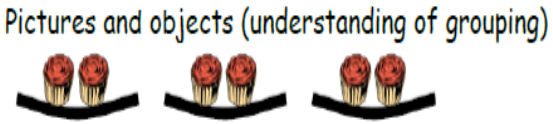
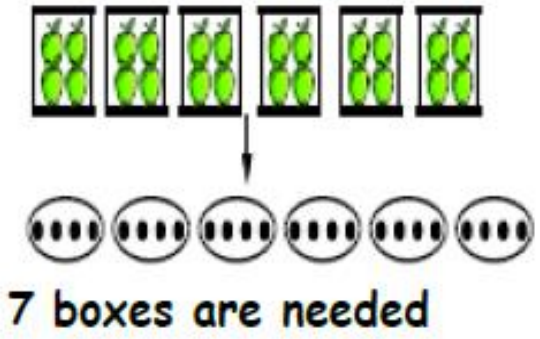
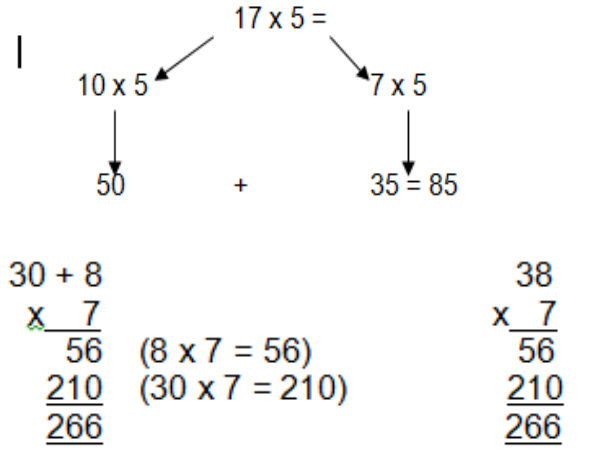
Guide to written methods for addition

Year	1	2	3
Key and mental skills	Represent & use number bonds and related subtraction facts within 20. Add and subtract one-digit and two digit numbers to 20, including zero. Add 1 and 10 more to a number. Number bonds of 5, 6, 7 and 8. Add by starting with largest number first. Add by adding on 10 first followed by ones. Double to 10. Use bonds to 10 to find bond to 11.	Recall and use addition and subtraction facts to 20 fluently, and develop and use related facts up to 100. Find 10 more than a given number. Know bonds to 12, 13, 14, 15, 16, 17, 18, 19 and 20. Add 1 digit number to digit using bonds to support (bridging). Doubles to 20. Partition number to add.	Add multiples of 10 and 100. Add 1 digit number to digit using bonds to support (bridging). Use near doubles to add e.g. 20 + 19=39 by 20 + 20 =40- 1 =39. Add pairs of number to 100 by using partitioning. Add near multiples of 10 and 100 by rounding and adjusting
Use of Jottings	Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = □ – 9	Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: * a two-digit number and ones * a two-digit number and tens * two two-digit numbers * adding three one-digit numbers	Add and subtract numbers mentally, including: * a three-digit number and ones * a three-digit number and tens * a three-digit number and hundreds
Developing written methods.	Read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs. Using marks on paper as symbols. 6 people are on the bus. 5 more get on at the next stop. How many people are on the bus now? Addition as Counting On Using a Number track / Number line – jumps of 1 (modelled using bead strings) Eg. 18 + 5 = 23 	Read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs. Number line (efficient jumps on an empty number line), which lead on to addition using partitioning.  40 + 30 + 8 + 6 40 + 30 = 70 8 + 6 = 14 70 + 14 = 84	Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction Introduction to column layout, using partitioning (supported by apparatus) **Use expanded method, adding least significant digit first.** 358 + 73 11 120 300 431 Progress to formal column method. 625 + 48 673 1

Guide to written methods for addition

Year	4	5	6
Key and mental skills	Add multiples of 10, 100 and 100s. Efficient addition skills 2 digit + 2 digit Decimal pairs of 10 and 1 Use near doubles to add Add near multiples of 10, 100 and 1000. Use partitioning and knowledge of place value to add efficiently.	Add multiples of 10s , 100s, 1000s, tenths, Efficient addition skills 2 digit + 2 digit including decimals. Use number facts, bridging and place value to add. Continue to use partitioning to add efficiently.	Add multiples of 10s, 100s, 1000s, tenths and hundredths. Efficient addition skills 2 digit + 2 digit including decimals. Use number facts, bridging and place value to add. Continue to use partitioning to add efficiently.
Use of Jottings	Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.	Add and subtract numbers mentally with increasingly large numbers.	Perform mental calculations, including with mixed operations and large numbers
Developing written methods.	Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition where appropriate. Use formal carrying method (compact method) and progress to decimals. Don't forget two lines mean equals. 3587 + 675 4262 111	Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction). Continue using column method including decimals. 72.5km + 54.6km **Remember to put the decimal point on the line.** 72.5 + 54.6 127.1 1	Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. 6584 + 5848 12432 ~~111~~ 401.20 26.85 + 0.71 428.76 ~~1~~

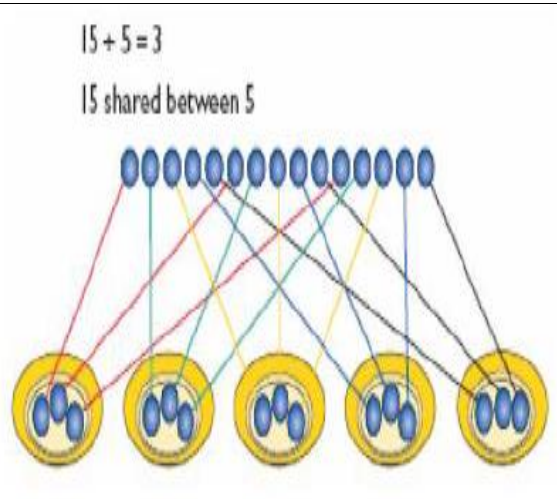
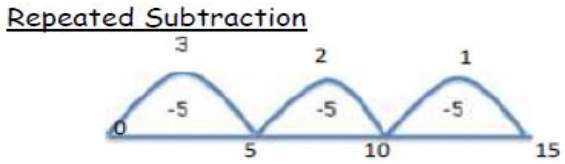
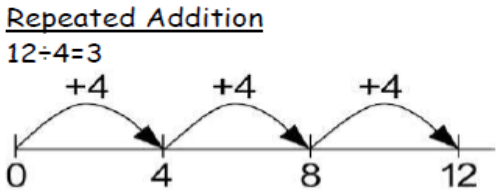
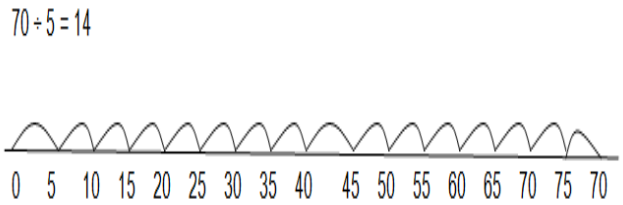
Guide to written methods for multiplication

Year	1	2	3
Key and mental skills	Count in multiples of twos, fives and tens. Doubles to 10. Doubles of multiples of 10.	Recall and use x and ÷ facts for the 2, 5 and 10 x tables, including recognising odd and even numbers. Doubles up to 20 and multiples of 5.	Recall and use x and ÷ facts for the 3, 4 and 8 times tables.
Use of Jottings	Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.	Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot. Solve problems involving multiplication and division, Using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems using real life situations.	Use place value, known and developd facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers Recognise and use factor pairs and commutativity in mental calculations.
Developing written methods.	 We have 6 cakes put 2 on each plate. 3 plates, two cakes on each plate. 	Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs. There are four apples in each box. How many boxes are needed? 	Write and calculate mathematical statements for ÷ using the x tables they know progressing to formal written methods. Continue with informal methods – eg. Partitioning 

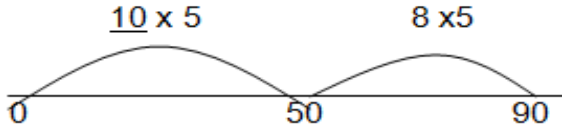
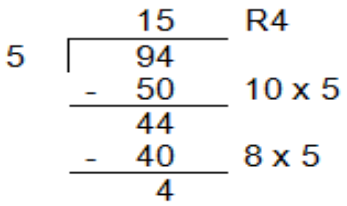
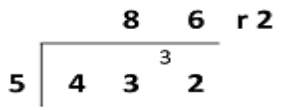
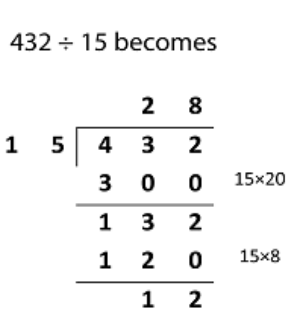
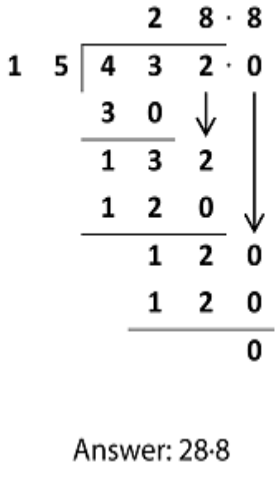
Guide to written methods for multiplication

Year	4	5	6
Key and mental skills	Recall x and ÷ facts for x tables up to 12 x 12.	Recall prime numbers up to 19, know and use the vocabulary of prime numbers, prime factors and composite (non---prime) numbers Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})	Use knowledge and skills form previous year groups and apply to given problems.
Use of Jottings	Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers Recognise and use factor pairs and commutativity in mental calculations	Multiply and divide numbers mentally drawing upon known facts Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers establish whether a number up to 100 is prime	Perform mental calculations, including with mixed operations and large numbers.
Developing written methods.	Multiply two-digit and three-digit numbers by a one-digit number using formal written layout. Continue to use expanded method until confident for a more compact method. 38 x 7 = 266 346 x 9 = 3114 (45)	Multiply numbers up to 4 digits by a one-or two-digit number using a formal written method, including long multiplication for two- digit numbers. 56 x 27 42 (7x6) 350 (7x50) 120 (20x6) 1000 (20x50) 1512 1	Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication. 2741 × 6 becomes 2741 x 6 = 16446 (42) Answer: 16 446 124 x 26 + 7424 (6x124) 2480 (20x124) 3224 11

Guide to written methods for division

Year	1	2	3
Key and mental skills	Count on and back in multiples of twos, fives and tens. Halve multiples of 10. Halves of numbers to 10.	Recall and use x and ÷ facts for the 2, 5 and 10 x tables, including recognising odd and even numbers. Halves numbers to 20.	Recall and use x and ÷ facts for the 3, 4 and 8 times tables. Halve 2-digit numbers.
Use of Jottings	Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher	Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two---digit numbers times one---digit numbers, using mental methods
Developing written methods.		Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs  	Write and calculate mathematical statements for ÷ using the x tables they know progressing to formal written methods. Use numbers to count in chunks of the number you are dividing by e.g.5. 

Guide to written methods for division

Year	4	5	6
Key and mental skills	Recall x and ÷ facts for x tables up to 12 x 12. Halve larger numbers and decimals. Divide by 10 and 100.	Recall prime numbers up to 19 know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. Divide by 10, 100 and 1000.	Interpret remainders as whole number remainders, fractions or by rounding.
Use of Jottings	Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers Recognise and use factor pairs and commutativity in mental calculations	Multiply and divide numbers mentally drawing upon known facts Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	Perform mental calculations, including with mixed operations and large numbers
Developing written methods.	Develop a more efficient method of using a numberline by using larger multiples of number you are dividing by e.g. X2, X5 or x10 90 ÷ 5 = 18  Progress to short division (bus stop) no remainders up to 3 digits divided by 1. 45÷3= 291÷3= 	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 94 ÷ 5 = 18 r 4  Short division 432 ÷ 5 becomes 	Continue developing formal written methods, including long division 432 ÷ 15 becomes