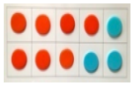
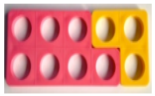
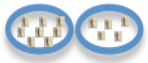
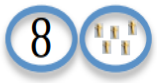
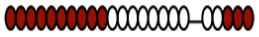
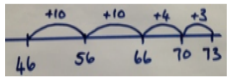
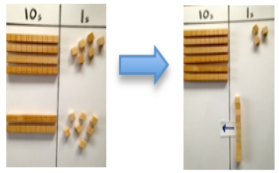
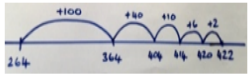
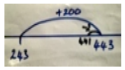
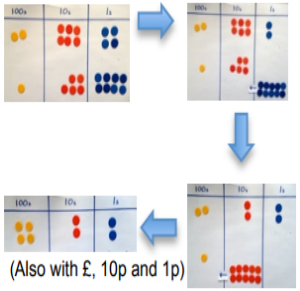
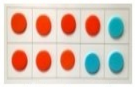
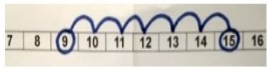
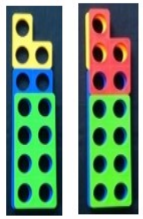
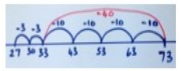
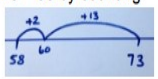
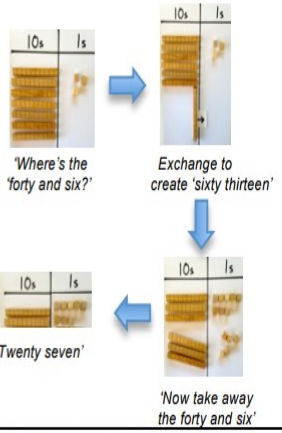
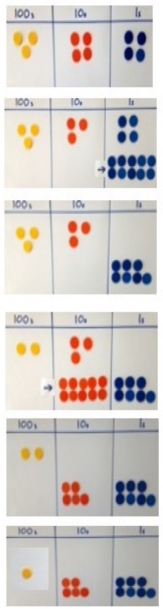
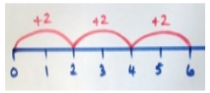
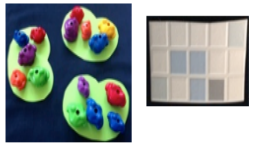
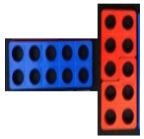
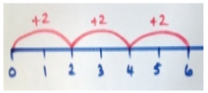
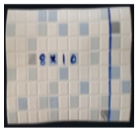
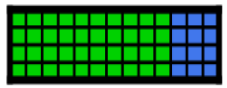
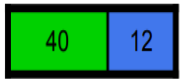
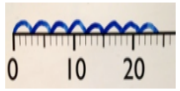
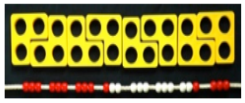
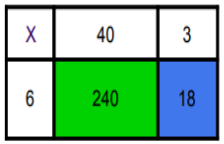
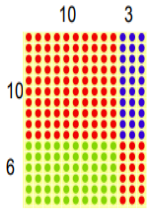
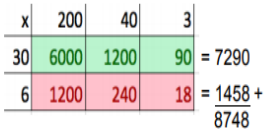
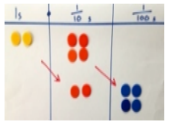
Addition

Written Methods	Read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs		Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction 4 2 3 + 8 8 5 1 1	Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition where appropriate 2 4 5 8 + 5 9 6 3 0 5 4	Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) 2 3 4 5 4 + 5 9 6 2 4 0 5 0	Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
Developing conceptual understanding	Number bonds   (Ten frame) Numicon Use bonds of 10 to calculate bonds of 20  Count all  Count on  Count on, on number track, in 1s 	Number track / Number line – jumps of 1 then efficient jumps using number bonds 18 + 5 = 23  46 + 27 = 73 Count in tens then bridge.  25 + 29 by + 30 then -1 (Round and adjust)  Partition and recombine 46 + 27 = 60 + 13 = 73  24 +10 +10 +10 = 54 	Number line: 264 + 158 efficient jumps  40 + 80 = 120 using 4 + 8 = 12 So 400 + 800 = 1200 243 + 198 by +200 then -2 (Round and adjust)  Pairs that make 100 23 + 77  Place value counters, 100s, 10s, 1s 264 + 158  (Also with £, 10p and 1p)			
With jottings **… or in your head**	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	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

Subtraction

Written Methods	Read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs		Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction 2 3 1 3 4 4 - 1 8 7 1 5 7	Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition where appropriate 1 2 3 1 2 3 4 4 - 1 8 7 2 1 5 7	Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) 1 2 3 1 5 2 3 4 4 - 1 1 8 7 5 1 1 5 7	Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
Developing conceptual understanding	Number bonds  (Ten frame)  Difference between 7 and 10 6 less than 10 is 4  Count out, then count how many are left. 7 – 4 = 3  Count back on a number track, then number line. 15 – 6 = 9  Difference between 13 and 8 13 – 8 = _ 8 + _ = 13 	Number track / Number line – jumps of 1 then efficient jumps using number bonds 23 – 5 = 18  Using a number line, 73 – 46 = 26  Difference between 73 – 58 by counting up, 58 + _ = 73  Taking away and exchanging, 73 – 46  'Where's the 'forty and six?' Exchange to create 'sixty thirteen' 'Twenty seven' 'Now take away the forty and six'	Taking away and exchanging, 344 – 187 Place value counters *'Where's the one hundred and eighty and seven?'* *Exchange to create three hundred and thirty and fourteen. Now take away the 'seven'* *Exchange to create two hundred, thirteen tens and seven Now take away the 'eighty'* *Now take away the 'one hundred* 			
With jottings **… or in your head**	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	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

Multiplication

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.	Multiply two-digit and three-digit numbers by a one-digit number using formal written layout 243 x 6 1458 1	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 243 x 36 1458 7290 8748 1	Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication 5172 x 38 41376 + 155160 196536 1 2 151 5172 x 38 41376 + 155160 196536 1 5172 x 38 41376 151 + 155160 2 196536 1
Developing conceptual understanding	2 frogs on each lily pad.     	5 frogs on each lily pad 5 x 3 = 15   5 x 2 = 2 x 5  Build tables on counting stick  Link to repeated addition 	If I know 10 x 8 = 80 then …  So 13 x 4 = 10 x 4 + 3 x 4   Build tables on counting stick   	43 x 6 by partitioning   40 x 6 = 240 3 x 6 = 18 43 x 6 = 258 If I know 4 x 6 = 24 then 40 x 6 is ten times bigger, 40 x 60 is one hundred times bigger. 13 x 16 by partitioning  100 + 30 + 60 + 18 = 208 Build tables on counting stick 	Grid method linked to formal written method  = 7290 = 1458 + 8748 If I know 4 x 6 then 0.4 x 6 is ten times smaller 0.4 x 0.6 is ten times smaller again. 	
With jottings **… or in your head ….**	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	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

Division

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.		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 194 ÷ 6 3 2 6) 1 9 1 2 192 ÷ 6 = 32	Divide numbers up to 4-digits by a two-digit whole number using the formal written method of short division where appropriate for the context 564 ÷ 13 4 3 r 5 13) 5 6 4 Using known multiplication facts 564 ÷ 13 = 43 r 5 = $43\frac{5}{13}$ = 43.38... 4 3 . 3 8 ... 13) 5 6 4 . 0 0 Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context 564 ÷ 13 4 3 . 3 8 ... 13) 5 6 4 . 0 0 ... = 43 r 5 = $43\frac{5}{13}$ = 43.4 (to 1dp)
Developing conceptual understanding	6 ÷2 = 3 by sharing into 2 groups and by grabbing groups of 2 How many 2s?	15 ÷ 3 = 5 in each group (sharing) Link to fractions 15 ÷ 3 = 5 groups of 3 (grouping) 10 ÷2 = 5 Use language of division linked to tables How many 2s?	Grouping using partitioning 43 ÷ 3 If I know 10 x 3 … Use language of division linked to tables How many 3s?	Grouping using partitioning 196 ÷ 6 If I know 3 x 6 … then 30 x 6… 'Chunking up' on a number line 196 ÷ 6 = 32 r 4 Use language of division linked to tables.	192 ÷ 6 using place value counters to support written method Exchange 100 for ten 10s 19 tens into groups of 6 3 groups so that is 30 x 6, exchange remaining 10 for ten 1s So 192 ÷ 6 = 32	
With jottings **… or in your head ….**	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	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

Compact vertical

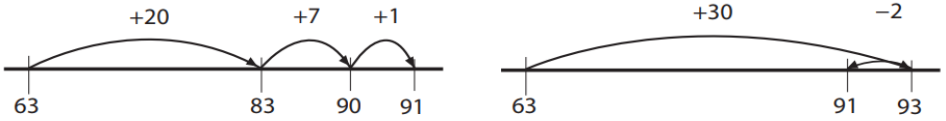
23454 + 596

```
  2 3 4 5 4
+   5 9 6
  2 4 0 5 0
```

23.7 + 48.56

```
  2 3 . 7 0
+ 4 8 . 5 6
  7 2 . 2 6
```

Using a number line: 63 + 28 = 91



Decomposition

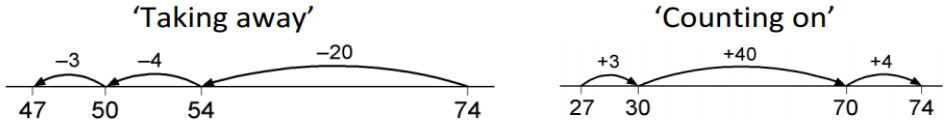
2748 – 364

```
  2 7 4 8
-   3 6 4
  2 3 8 4
```

72.5 – 45.73

```
  7 2 . 5 0
- 4 5 . 7 3
  2 6 . 7 7
```

Using a number line: 74 - 27 = 47



LOOK AT THE NUMBERS – can you solve it in your head, with jottings or using written method?

Long multiplication

5172 x 38

```
   5172
  x  38
  41376
+ 155160
 196536
```

Using known multiplication facts:

43 x 6 = (40 x 6) + (3 x 6) = 258

Division

559 ÷ 13

```
    4 3
13 | 5 5 9
```

562 ÷ 13

```
    4 3 . 2 3
13 | 5 6 2 . 0 0
```

562 ÷ 13

= 43 r 2 = $43\frac{2}{13}$

= 43.2 (to 1dp)

Using known multiplication facts

1	13
2	26
4	52
5	65
8	104
10	130
20	260

Using a number line:

72 ÷ 5 = 14r2