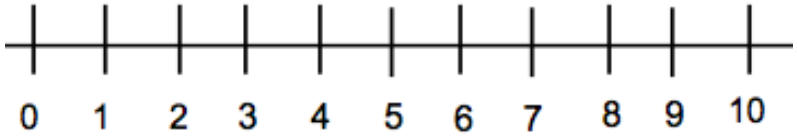
Eastway Primary School

Whole School Written Calculation Policy
Pencil and paper procedures
Key Stages 1 and 2

Updated June 2014

PROGRESSION OF NUMBERLINES

Y1 Progression		**Number track**	Has the numbers inside the sections, rather than on the divisions	
		Calibrated, numbered numberline	Equal divisions marked on the numberline and each division is numbered	
	Y2 Progression	**Calibrated, unnumbered numberline**	Equal divisions are marked, but left unnumbered for children to add relevant numbers to	
		Blank numberline	No divisions or numbers marked for the children	

ADDITIONAL INFORMATION

At every stage, children should be able to solve missing number problems that match the calculation method they are working towards

e.g. As part of Y1 subtraction, children should be taught to solve:

- = signs and missing numbers

7 - 3 = □	□ = 7 - 3
7 - □ = 4	4 = □ - 3
□ - 3 = 4	4 = 7 - □
□ - ∇ = 4	4 = □ - ∇

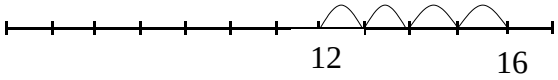
KS1 Addition

Year 1

NC14: add one-digit and two-digit numbers to 20, including zero

Children learn to add two numbers that are less than 20, using a number line and counting in ones

12 + 4 = 16



Children go up in 1s

How to do this method:

1. Put the biggest number you are adding on the left hand side of the number line
2. Count up in 1s the amount you are adding on
3. The number you end on is the answer

Progression:

1. Adding one more
2. Adding units that don't cross ten
3. Adding units that cross ten
4. Adding teen numbers

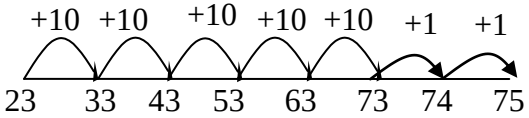
Important mental maths skills for success:

- Knowing which number is bigger out of two single digit numbers
- Being able to count up in ones from any starting point below 20.

Year 2 emerging

NC14: add and subtract numbers using concrete objects, pictorial representations, and mentally, including two two-digit numbers

23 + 52 = 75



How to do this method:

1. Put the biggest number you are adding on the left hand side of the number line
2. Split the amount you adding on into tens and units
3. Add on the tens, one at a time. Jump up a ten each time on your number line.
4. Add on the units, one at a time. Jump up a one each time on your number line
5. The number you end on is the answer

Progression

1. Adding a ten in one jump
2. Adding a multiple of ten in jumps of ten
3. Adding a two-digit number ending in one
4. Adding any two-digit number

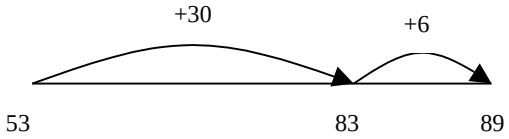
Important mental maths skills for success:

- Being able to split a number into its tens and units. This is called partitioning
- Being able to count up in tens from any two-digit number
- Being able to count up in ones from any two-digit number

Year 2 secure

NC14: add and subtract numbers using concrete objects, pictorial representations, and mentally, including two two-digit numbers

53 + 36 = 89



How to do this method:

1. Put the biggest number you are adding on the left hand side of the number line
2. Split the amount you adding on into tens and units
3. Add on all the tens in one go. Put this jump on your number line
4. Add on the units in one go. Put this jump on your number line (If crossing a ten, children may bridge to the ten using number bonds then add on the extra).
5. The number you end on is the answer.

Progression

1. Adding a multiple of ten in one jump
2. Adding a two-digit number that doesn't cross the tens in one tens jump and one units jump
3. Adding a two-digit number that crosses the ten, doing the units as two jumps to bond up to the ten if that helps

Important mental maths skills for success:

- Being able to add tens on to any number
- Being able to add a one digit number on to any two-digit number

KS2 Addition

Year 3

NC14: add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction

Use extended column method:

358 + 73 = 431

```
  358
+  73
   11
  120
  300
  431
```

NB vocab: use 40 + 80, not 4+8
It is important that children always start with units to prepare for the efficient written method

Progression

1. Add two two-digit numbers with no crossing of tens or hundreds
2. Add two two-digit numbers with units that add to more than ten
3. Add two two-digit numbers where units and tens cross
4. Add two three-digit numbers
5. Add mixed number of digits eg three-digits and two-digits, but no more than three digits

How to do this method:

1. Write the numbers you are adding one on top of the other. Make sure that units are on top of units, tens are on top or tens, hundreds on top of hundreds etc
2. Draw a line to show tat you are stating to work it out
3. Start with unit (this is really important that you start here ready for the next method) and add them together
4. Jot the unit total underneath, lining up units, tens etc
5. Add up the tens and jot the tens total underneath, lining up units, tens etc
6. Add up the hundreds and jot the tens total underneath, lining up units, tens etc
7. Draw a line to show that you are working out the final answer
8. Add together all of your mini totals to find the final answer. Write it underneath the line

Important mental maths skills for success:

- Know which digit in a number is the hundreds, which is tens, which is units
- Be able to add one digit numbers
- Be able to add tens
- Be able to add hundreds

Year 4

NC14: Add numbers with up to 4 digits using the formal written methods of columnar addition where appropriate

Use column method to add up to 4 digits:

5092 + 651

```
 5092
+ 651
 5643
  1
```

NB Turn lined books on their side to create columns to line up digits in their place value columns

Progression

1. Add two 4 digit numbers where no numbers carry over to next place value column
2. Add two 4 digit numbers where numbers carry over to next place value column
3. Add mixed numbers of digits with numbers carrying over to next place value column

How to do this method:

1. Write the numbers one on top of the other, with units on top of units, tens on top of tens etc
2. Draw a line to show you are figuring out the answer
3. Starting from the right add the digits that are stacked on top of each other. Put the unit of the answer underneath the stack. If you've made a ten, put it under the next stack to the left.
4. Add the next stack to the left, making sure you add in any extra tens you've made along the way

Important mental maths skills for success:

- Know the place value of each digit
- Adding single digit numbers accurately

Year 5

NC 14: add whole numbers with more than 4 digits, including using formal written methods
They practise adding decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1 (for example, 0.83 + 0.17 = 1)

Add numbers with up to two decimal places, including with mixed number of decimal places, using column method

```
 358.76
+ 67.58
 426.34
 1 1 1  1
```

NB Turn lined books on their side to create columns to line up digits in their place value columns

Add in a zero to keep the place value

Progression

1. Mental skill – adding and counting in tenths, with total less than 1 whole
2. Mental skill – adding and counting in tenths, crossing units
3. Add numbers with 1 dp using column method
4. Mental skill – adding and counting in hundredths, with total less than one tenth
5. Mental skill – adding and counting in hundredth, crossing tenths
6. Add numbers with 2dp using column method
7. Adding mixed number of decimal places by adding a 0 in column method

How to do this method:

5. Write the first number down
6. Put in the decimal place for the second number you going to add and the answer now. It feels odd, but really helps to get the numbers in the right places!
7. Paying attention to where the decimal place is, write in the second number to add, making sure tenths, units, tens etc line up
8. Draw a line to show you are figuring out the answer
9. Starting from the right add the digits that are stacked on top of each other. Put the unit of the answer underneath the stack. If you've made a ten, put it under the next stack to the left.
10. Add the next stack to the left, making sure you add in any extra tens you've made along the way

Important mental maths skills for success:

- Adding single digit numbers
- Know the place value of each digit
- Know that ten tenths make one unit and ten hundredths make a tenth

Year 6

Continue with Y5 method

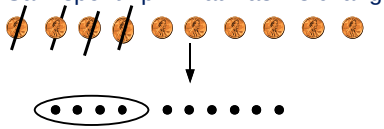
KS1 Subtraction

Year 1

NC14: add and subtract one-digit and two-digit numbers to 20, including zero

Start with pictures / marks

Sam spent 4p. What was his change from 10p?

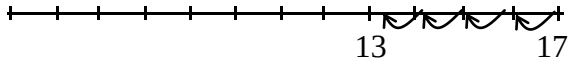


Extend to using a calibrated numberline

Children count back in ones.

Children count back going underneath the numberline

17 – 4 = 13



Progression

1. Finding one less
2. Subtracting a one digit from a one digit
3. Subtracting a one digit from a teen number, with an answer greater than ten
4. Subtracting a one digit from a teen number with an answer less than ten.
5. Subtracting a teen from a teen

How to do this method

1. Put the biggest number on the right
2. Jump back the same number of jumps as you are taking away
3. Count back one for each jump you've made
4. The number you end on is the answer

Important mental maths skills for success:

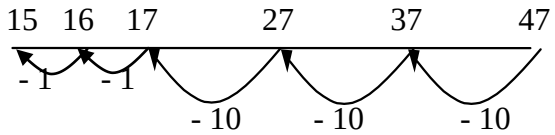
- Counting backwards in ones

Year 2 emerging

Subtract numbers using concrete objects, pictorial representations, and mentally, including two two-digit numbers

Counting back in jumps of 10 or 1 on a numberline (partition second number only)

47 – 32 = 15



Progression

1. Subtracting ten in one jump
2. Subtracting multiples of ten in one jump
3. Subtracting 2-digit numbers ending in 1
4. Subtracting two digit numbers that don't cross over a ten
5. Subtract two digit numbers

How to do this method

1. Put the biggest number on the right
2. Partition the number you are taking away into tens and ones
3. Take away the tens first by jumping back in 10s, recording each number you jump on above the number line
4. Take away the ones by jumping back in ones, recording each number you land on above the number line
5. The number you end on is the answer

Important mental maths skills for success:

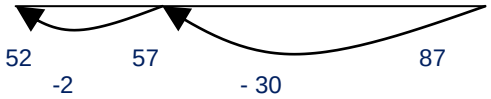
- Counting backwards in ones
- Counting backwards in tens from any number

Year 2 secure

Subtract numbers using concrete objects, pictorial representations, and mentally, including two two-digit numbers

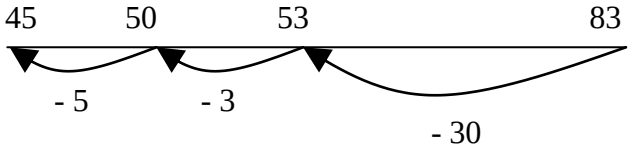
Partitioning on a number line (partition second number only, Children make one jump of tens and one of units)

87 – 32 = 55



When crossing a ten, children may make two jumps of unit to jump to the ten, eg

83 – 38 = 55



Progression

1. Subtracting a 2digit number, grouping tens into one jump
2. Subtracting a 2-digti number that doesn't cross the ten in one jump of tens and one jump of ones/units
3. Subtracting a 2-digti number that does cross the ten in one jump of tens and two jumps of ones/units (to bridge the ten)

How to do this method

1. Put the biggest number on the right
2. Partition the number you are taking away into tens and ones
3. Take away the tens in one jump, recording each number you jump on above the number line
4. Take away the ones in one jump, recording each number you land on above the number line. Or, if it's easier, take way enough to go down to the next ten than take off what's left.
5. The number you end on is the answer

Important mental maths skills for success:

- Subtracting multiples of ten from a 2digit number
- Subtracting single digit numbers from 2digit numbers

KS2 Subtraction

Year 3

NC14: Subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction

Use extended method to subtract up to 3 digit numbers

692 – 238 = 454

600 + 90 + 2 → 600 + 80 + 12
- 200 - 30 + 8 - 200 -30 + 8
400 + 50 + 4 = 454

Progression

1. Subtract two 2digit numbers, with no need to rearrange to steal a ten
2. Subtract two 2 digit numbers, rearranging to steal a ten
3. Subtract two three digit numbers, rearranging to steal a ten
4. Subtract two three digit numbers, rearranging to steal a ten or hundred
5. Subtract mixed number of digits, rearranging to steal a ten / hundred
6. Subtract up to three digit numbers, where children have to 'double steal' – from hundreds to units. NB children should steal a hundred into the tens, then a ten into the ones e.g. 700 – 634

How to do this method

1. Partition each number and write them one on top of the other, with ones on top or ones, tens on top of tens and hundreds on top of hundreds. Check that the number you are taking away is on the bottom
2. Draw a line to show you are doing your working out
3. Start from the units on the right and notice whether you can take the bottom from the top. If you can do it and put the answer underneath. If not, re-partition it and write the new calculation out, with ten stolen from the tens and moved onto the ones.
4. Now check the tens, if you can do it, do and write the answer underneath. If not, re-partition, stealing a hundreds from the hundreds and putting it in the tens column.
5. Subtract hundreds from hundreds
6. Recombine the answers underneath to make the final answer

Important mental maths skills for success

- Partitioning 3 digits numbers
- Subtracting units from units
- Subtracting tens from tens
- Subtracting hundreds from hundreds

Year 4

NC14: Subtract numbers with up to 4 digits using the formal written methods of columnar subtraction where appropriate

Short columnar subtraction to subtract up to 4digti numbers

9025 – 383 = 8662

8 9
~~9~~ ~~0~~ ^{1}2 5
- 3 8 3
8 6 6 2

NB Turn lined books on their side to create columns to line up digits in their place value columns

Progression

1. Subtract two 3 digit numbers, with no 'stealing' using efficient method
2. Subtract two 3 digit numbers with 'stealing'
3. Subtract two 4 digit numbers with 'stealing'
4. Subtract mixed number of digits with 'stealing'
5. Subtract up to 4 digit numbers with 'double steals' e.g. from hundreds to tens. NB children should steal from the hundreds to the tens, then the tens to the units, not in one go

How to do this method

1. Write the number you are taking away underneath, taking care to line up HTU
2. Draw a line to show you are starting your working out
3. Start from the units on the right and notice whether you can take the bottom from the top. If you can, do it. If not, steal a ten. and put the answer underneath the units
4. Now check the tens. If you can, do it. If not, steal a hundreds from the hundreds. Put the answer underneath the tens.
5. Continue working in this way to until you've done every column in order
6. The number under the line is your final answer

Important mental maths skills for success

- Subtracting single digits

Year 5

NC 14: subtract whole numbers with more than 4 digits, including using formal written methods

They practise subtracting decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1 (e.g. 0.83 + 0.17 = 1)

Subtract numbers that do not have the same number of decimal places. Use 0 as a place holder

Use decomposition
302.63 – 178.124 = 124.506

2 9 2
~~3~~ ~~0~~ ^{1}2 . ~~6~~ 3 ^{1}0
- 1 7 8 . 1 2 4
1 2 4 . 5 0 6

NB Turn lined books on their side to create columns to line up digits in their place value columns

Progression

1. Mental skill subtracting tenths, less than one
2. Use columnar method to subtract a number with 1dp, no stealing for tenths
3. Mental skill counting up and down through whole numbers in tenths – knowledge ten tenths make a whole
4. Subtracting tenths from 1.9 to 0.1, cross unit
5. Use columnar method to subtract numbers with 1dp with stealing
6. Mental skills: counting up and down in hundredths – knowledge: ten hundredths make a tenth
7. Use columnar method to subtract numbers with 2dp with stealing
8. Use columnar method to subtract numbers with mixed number of decimal places, using 0 to fill in the 'gaps'

How to do this method

1. Write the first number out clearly and well-spaced
2. Do two more decimal points in a column underneath the first one, ready for the next number and the answer
3. Write in the number you are taking away, using the decimal point you've already written to guide where the digits go
4. Where any place value column have only one digit in it, fill it in with a 0
5. As before, work from the right taking bottom from top and stealing if needed
6. The number under the line is your final answer

Important mental maths skills for success

- Subtracting single digits
- Counting up and down in tenths
- Counting up and down in hundredths

Year 6

Continue with Y5 methods

Multiplication

Year 1

NC14: solve one-step problems involving multiplication by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher

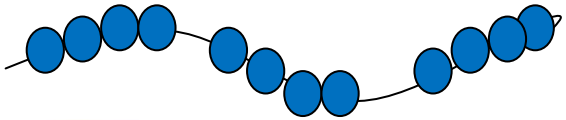
Pictures and symbols

There are 3 sweets in one bag.
How many sweets are there in 5 bags?

(Recording on a number line modelled by the teacher when solving problems)

Use of bead strings and Numicon to model groups of.

Each free has three apples on it. How many apples are there on 4 trees?



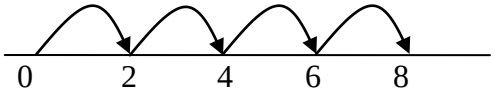
Year 2

NC14: calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs

show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot

Repeated addition on a numberline:

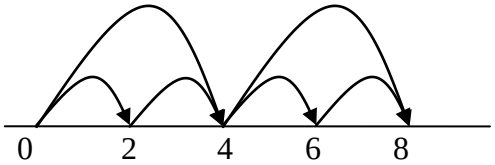
4 X 2 = 8
(2 + 2 + 2 + 2)



Use arrays to show multiplication is commutative:

4 x 2

2 x 4



Progression

- 2 jumps of 2
- Up to 4 jumps of 2
- Up to 4 jumps of 10
- Up to 4 jumps of 5
- Up to 10 jumps of 2, 5 or 10

How to do this method

1. Read 4 X 2 as '4 jumps of 2'
2. Put 0 on the left
3. Draw the number of jumps the question ask for
4. When each jumps lands on the line, count up in the 'jumps of' number
5. The last number you land on is answer

Multiplication

Year 3

NC14: write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods

Use extended method to multiply 2 digit numbers by 2, 3, 4, 5, 8

65 x 4

```
  65
 x  4
 ---
  20
 240
 ---
 260
```

NB ensure that children multiply and add units first and work to left, to support transition to efficient method in Y4

Progression

1. Mental skill multiplying a multiple of ten
2. Extended method multiplying two digit by one digit

How to do this method

1. Write the numbers one on top of the other, with units number units
2. Draw a line to show you are working
3. Multiply the units, writing the answer in the place value columns under the line
4. Multiply the tens, writing the answer below the units answer in the place value columns
5. Draw a line to show you are finding the answer
6. Add up the total answer

Important mental skills for success:

- Times tables (2, 3, 4, 5, 8)
- Multiplying a multiple of ten

Year 4

NC14: multiply two-digit and three-digit numbers by a one-digit number using formal written layout

Use efficient / formal written method to multiply 2 and 3digit numbers by one digit

384 x 7 = 2688

```
  384
 x   7
 ----
 2688
   52
```

Progression

1. 2 digit X 1 digit with no carrying ten over using short method
2. 2digit X 1 digit with carrying using short method
3. 3digit X 1 digit with carrying using short method

How to do this method

1. Write the numbers one on top of the other, with units number units
2. Draw a line to show you are working out
3. Multiply the units, writing the answer with units and any tens written underneath he tens column
4. Multiply the tens, and add any extra tens from the units multiplication. Write the units of the answer under the tens column and any ten underneath he hundreds column
5. Continue working left doing each column in this way.
6. The number under the line is the final answer

Important mental skills for success:

- Times tables

Multiplication

Year 5

NC14: 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

Multiply up to 4digit numbers by up to 2digit numbers using long multiplication

5209 X 97

```
   5209
X    97
 36463
   1 6
468810
 1  8
505273
1 1 1
```

Progression

1. 3digit X 2digit
2. 4digit X 2digit

How to do this method

1. Write the numbers one on top of the other, lining up numbers in place value columns
2. Draw a line to show you are working out
3. Multiply the units first, working from right to left and carrying tens as needed
4. Underneath, write a zero in the units column and then multiply by the tens digit, working right to left and carrying tens as needed. Each answer will be recorded in the next column to the left
5. Draw a line to show you're working out the final answer
6. Add up the numbers to find the final answer

Important mental skills for success:

- Times tables

Year 6:

NC14: multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication

multiply one-digit numbers with up to two decimal places by whole numbers

Pupils multiply and divide numbers with up to two decimal places by one-digit and two-digit whole numbers. Pupils multiply decimals by whole numbers, starting with the simplest cases, such as 0.4 × 2 = 0.8, and in practical contexts, such as measures and money

Multiply decimal numbers (up to 2dp) by 2 digit numbers using long multiplication

78.56 x 24

```
  78.56
x 24
------
 314.24
   3 2 2
1571.20
 1 1 1
------
1885.24
```

Progression

1. Mental skill: multiplying tenths by units
2. Short multiplication of up to 4 digit number with 1dp X 1digit
3. Mental skill: multiplying tenths by multiple of ten
4. Long multiplication of up to 4 digit with 1dp by 2 digit
5. Mental skill: multiplying hundredths by units
6. Short multiplication of up to 4 digit number with 2dp X 1digit
7. Mental skill: multiplying hundredths by multiple of ten
8. Long multiplication of up to 4 digit with 2dp by 2 digit

How to do this method

1. Write the numbers one on top of the other, using the decimal point to line up numbers in place value columns.
2. Add decimal points to the decimal points column, ready for the answers
3. Draw a line to show you are working out
4. Multiply by the units first, working from right to left and carrying tens as needed
5. Underneath, write a zero in the column furthest to the right and then multiply by the tens digit, working right to left and carrying tens as needed. Each answer will be recorded in the next column to the left
6. Draw a line to show you're working out the final answer
7. Add up the numbers to find the final answer

Important mental skills for success:

- Times tables
- Multiplying tenths and hundredths by a 1digit
- Multiplying tenths and hundredths by a 2digit

Division

Year 1

solve one-step problems involving division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher

Pictures / marks

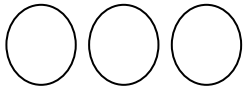
12 children get into teams of 4 to play a game. How many teams are there?

Clarify need for groups to be equal

Pencil and paper methods

12 ÷3

Set up groups to share into:



Share out in 1s into groups

Count up how many in one group

= 4

Year 2

NC14: calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs
solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

Pencil and paper methods

16 ÷ 2

(8)	( )	Used up
5	5	10
2	2	~~4~~ 14
1	1	~~2~~ 16

Progression

1. Questions with an even number as the answer, so children can practice giving away two at a time
2. Question with an odd number less than 15, so that children can practice giving 2s and then a final 1
3. Questions that have a solution of 18, so that children share into groups ot 10, then 5, then 2 then 1
4. Answers of 28, 38, or 48 so that take away multiple tens (in several steps)
5. Any answer

How to do this method

1. Read 24 ÷ 2 as 24 shared between 2
2. Draw the number of circles you are sharing between
3. Think how many you could give each group. Do the biggest you could out of 10, 5, 2 or 1.
4. Write how many you've given each group under its circle
5. Workout how many are left
6. Keep repeating steps 3 to 5 until there is nothing left to give away
7. Add up how many you have given to one group and write it in the circle
8. The number in the circle is the answer

Important mental skills for success

- Counting in 2s, 5s and 10s
- Subtracting 1 and 3 digit numbers mentally

Division

Level 3 secure

NC14: write and calculate mathematical statements for division using the multiplication tables that they know, using mental and progressing to formal written methods

including for two-digit numbers times one-digit numbers,

Use short division bus stop method to divide 2 digit by 1 digit using bus stop method for tables they know

86 ÷ 4 = 21 r2

Progression:

1. 2digit divided by one digit, where every digit of the dividend is a multiple of the divisor
2. 2digit divided by one digit, where tens digit of dividend is a multiple of the divisor, but not the unit digit so that children learn to calculate remainders
3. 2 digit divided by one digit, where digits of dividend may or may not be multiples of divisor, so that children learn to carry reminders over as part of the calculation

How to do this method

1. Put the dividend under the bus stop and the divisor outside, to the left
2. Starting with the furthest left digit of dividend, work out how many of the divisor goes into that digit. If it doesn't fit exactly, find the largest number it does go into that is smaller than that digit
3. Write than answer directly above that digit, above the bus stop
4. If there's a remainder, write it as if its a ten of the next digit to the right
5. Keep moving right, column by column, repeating steps 2 to 4 for each column
6. If there is a remainder for the final column, write it as r and then the remainder above the line
7. The number on top of the bus stop is the answer

Important mental skills for success

- Division facts from times tables

Year 4

Use short division bus stop method to divide a 3digit number by a one digit number – all tables

309 ÷ 7 = 44 r2

Progression:

1. 2digit by any times table
2. 3digt by any times table

How to do this method

1. Put the dividend under the bus stop and the divisor outside, to the left
2. Starting with the furthest left digit of dividend, work out how many of the divisor goes into that digit. If it doesn't fit exactly, find the largest number it does go into that is smaller than that digit
3. Write than answer directly above that digit, above the bus stop
4. If there's a remainder, write it as if its a ten of the next digit to the right
5. Keep moving right, column by column, repeating steps 2 to 4 for each column
6. If there is a remainder for the final column, write it as r and then the remainder above the line
7. The number on top of the bus stop is the answer

Important mental skills for success

- Division facts from times tables

Division

Year 5

NC14: 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

Use short division bus stop method to divide 4 digit by 1 digit using bus stop method

5692 ÷ 8 = 711 r4

```
    0  7  1  1   r4
  ┌──────────────
8 │ 5 ⁵6  9  ¹2
```

Progression

1. 4 digit numbers with no decimal place
2. 4 digit numbers with decimal points

How to do this method

1. Put the dividend under the bus stop and the divisor outside, to the left
2. If the dividend has a decimal point, put a decimal point directly above it, ready for the answer
3. Starting with the furthest left digit of dividend, work out how many of the divisor goes into that digit. If it doesn't fit exactly, find the largest number it does go into that is smaller than that digit
4. Write than answer directly above that digit, above the bus stop
5. If there's a remainder, write it as if its a ten of the next digit to the right
6. Keep moving right, column by column, repeating steps 2 to 4 for each column
7. If there is a remainder for the final column, write it as r and then the remainder above the line
8. The number on top of the bus stop is the answer

Important mental skills for success

- Division facts from times tables

Year 6

NC14: 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
Use written division methods in cases where the answer has up to two decimal places.
Pupils divide numbers with up to two decimal places by one-digit and two-digit whole numbers.

Use long division bus stop method to divide 4 digit by 1 or 2 digit using bus stop method, including dividing numbers with up to 2dp
Remainders expressed as remainders, fractions and decimals

977 ÷ 36 = 27 r5 or $27\ ^{5}/_{36}$

```
      0  2  7   r5  or  5/36
   ┌──────────
3 6│ 9  7  7
   │ 0
   ├──────
   │ 9  7
   │-7  2
   ├──────
   │ 2  5  7
   │-2  5  2
   ├──────────
   │       5
```

977 ÷ 36 = 27.1388

```
      0  2  7  .  1  3  8  8     Margin:
   ┌──────────────────────────
3 6│ 9  7  7  .  0  0  0  0        36
   │ 0                             +36
   ├──────                        ---
   │ 9  7                          7 12
   │-7  2                          +3 6
   ├──────                        ---
   │ 2  5  7                       108
   │-2  5  2                       +36
   ├──────────                    ---
   │      ⁴5  .  ¹0                14 14
   │       3  .  6                 +3 6
   │      ---------                ---
   │       1  .  ³4  ¹0            18 10
   │       1  .  0   8
   │      ---------
   │       0  .  ²3  ¹¹2  ¹0
   │             2  8   8
   │            ---------
   │             3  2   0
```

Progression

1. Expressing remainders as fractions
2. Dividend with decimal places, divided by single digit integer
3. Expressing remainders as decimals
4. Long division – dividing 4digit integers by 2 digit integers
5. Long division – dividing 4 digit numbers with up to 2dp by 2 digit integers

How to do this method

1. Put the dividend under the bus stop and the divisor outside, to the left
2. If the dividend has a decimal point, put a decimal point directly above it, ready for the answer
3. In your margin, add the divisor 5 times, to find up to 5 X that number. If you need more, add them as you go
4. Starting with the two furthest left digit of dividend, work out how many of the divisor goes into that 2digit number. If it doesn't fit exactly, find the largest number it does go into that is smaller than that digit
5. Write the number you divided below the dividend, lined up in place value column. Write the answer above the line
6. Subtract the number you actually divided from the starting number to find the remainder
7. Move the next digit of dividend down (to the remainder you just worked out) to make a new number.
8. Repeat steps 4-7 until there are no digits left
9. If there is a remainder for the final column, write it as r and then the remainder above the line
10. The number on top of the bus stop is the answer

Important mental skills for success

- Mental subtraction of 1 digit numbers