Policy for progression in calculation for each of the four rules

Rationale and aims

This policy is intended to aid all staff in understanding of the four rules and to support progression in mental strategies and informal recording. It builds upon the approach given in the Numeracy Strategy and should be read in conjunction with the school's Numeracy Policy and the Numeracy strands of the Primary framework.

The content of this policy is to give guidance regarding progression that the majority of the pupils will experience. **It is expected that while the progressions in addition and subtraction, multiplication and division are identified in separate sections, they will in fact be taught alongside each other so that pupils can see and use the relationships between them. The age guidelines used are for guidance and will apply to most children, but they are not intended to be, nor should they be treated as rigid rules-Special needs children may take longer, Higher ability children may move more quickly, and indeed be able to skip stages as is appropriate to their progression.**

The addition and subtraction policy strands start with the mental skills and knowledge that a child needs before moving on to the more informal and then formal progression of written skills. For multiplication and division the mental and written skills for each section are recorded alongside each other.

At each stage for every operation it is important that previous knowledge is reinforced.

The aim of the policy is to produce pupils who, by the end of Key Stage 2 are competent and confident with calculations for all operations.

Addition

Teaching strategies for mental calculations

Mental arithmetic is about rapid recall of number facts
Mental calculation is about challenging children to figure out an answer rather than recall it from a bank of number facts that are committed to memory but which they are able to work out in their heads.

There are three aspects to developing a range of mental strategies
- Raising children's awareness that there are a range of strategies
- Working on children's confidence and fluency with a range of strategies
- Developing efficient methods

Children should also be encouraged to estimate an answer using the most significant numbers first.

Mental calculations can be supported using pencil and paper through jottings, through images and recording for another audience. This will then lead into more formal methods.

RED (FOUNDATION-YEAR 1)

Begin to record in the context of play or practical activities and problems e.g. recording using objects, marks, stamps, etc writing shopping lists, recording how many children walk to school. Begin to write number sentences.
- Add Units to Units by counting on.

ORANGE STAGE (YEARS 1-3)

Mental strategies
- Count on in ones
- Reorder numbers in a calculation
- Begin to bridge through 10 and later 20, when adding a single digit number
- Use known number facts and place value to add pairs of single digit numbers
- Add 9 to single digit numbers by adding 10 then subtracting 1
- Identify near doubles, using doubles already known
- Use patterns of similar calculations
- Counting in tens forwards

Children should also be able to rapidly recall
- All pairs of numbers with a total of 10
- Addition facts for all numbers to at least 5
- Addition doubles of all numbers to at least 5

YELLOW STAGE (YEARS 2-4)

Mental strategies

- Count on in tens or ones
- Add three small numbers by putting the largest number first and/or find a pair totalling 10
- Partition additions into tens and units then recombine
- Bridge through 10 or 20
- Use known number facts and place value to add pairs of numbers
- Partition into 5 and a bit when adding 6,7,8 or 9, then recombine
- Add 9,19,11 or 21 by rounding and compensating
- Identify near doubles
- Use patterns of similar calculations
- Use the relationship between addition and subtraction

Children should also be able to rapidly recall

- Addition facts for all numbers to at least 10
- All pairs of number with a total of 20
- All pairs of multiples of 10 with a total of 100

GREEN STAGE (YEARS 3-5):

Mental strategies

- Add three or four small numbers by putting the largest number first and/or find pairs totalling 9,10 or 11
- Partition additions into tens and units then recombine
- Bridge through a multiple of 10, then adjust
- Add a 'near multiple of 10' e.g. 9,19,11 or 21 by rounding and compensating
- Use the relationship between addition and subtraction

Children should also be able to rapidly recall

- Addition facts for all numbers to 20
- All pairs of multiples of 100 with a total of 1000
- All pairs of multiples of 5 with a total of 100

BLUE STAGE (YEARS 4-6)

- Count on in repeated steps of 1,10 and 100
- Count up through the next multiple of 10,100 or 1000
- Add three two-digit multiples of 10
- Partition into tens and units, adding the tens first
- Bridge through a multiple of 100
- Use known number facts and place value to add pairs of two-digit numbers
- Add a 'near multiple of 10' e.g. 9,19,29,11,21 or 31 by rounding and compensating
- Add the nearest multiple of 10 then adjust
- Identify near doubles
- Double any two-digit number by doubling the tens first

INDIGO STAGE (YEARS 5-6)

- Count up through the next multiple of 10,100 or 1000
- Partition into hundreds, tens and units, adding the most significant digit first
- Use known number facts and place value to add pairs of three-digit multiples of 10 and two-digit numbers with one decimal place
- Add the nearest multiple of 10 or 100, then adjust
- Add several numbers

VIOLET STAGE (YEAR 6)

Mental strategies

- Use known number facts and place value to add pairs of three-digit multiples of 10 and two-digit numbers with one decimal place
- Add the nearest multiple of 10, 100 or 1000, then adjust
- Continue to develop the relationship between addition and subtraction

Teaching written addition strategies

There are a variety of different ways in which written addition can be taught. This policy develops the empty number line, but recognises that pupils will need to progress to more efficient written compact methods linked to the earlier empty number line, later in their primary career.

- At the ORANGE STAGE (YEARS 1-3); when addition is taught the children's experience will be a mixture of words, pictures and symbols. When recording simple mental calculations in a number sentence they are always set out horizontally. The children may also use number lines to record their work informally.

Example:

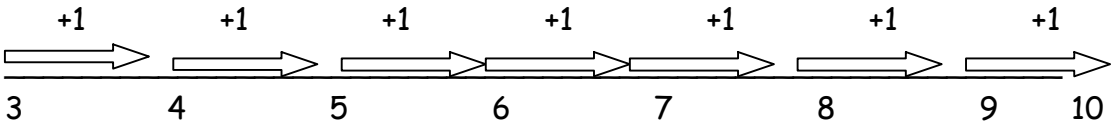
12 + 3 = 15

Step One

Counting forwards orally

Step Two

Using an empty number line to count forward or backwards in single digit numbers



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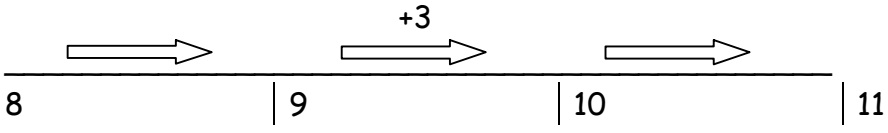

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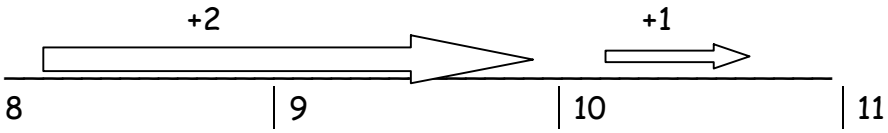


ORANGE

- 2 digits+ 1 digit not over the tens barrier
- 2 digits + 2 digits not over the tens barrier e.g. 22+35

YELLOW (YEARS 2-4)

The children record their mental calculations horizontally. The children will also use number lines to record their work informally. The empty number line can be used to model calculations and mathematical thinking and also help children record their own thinking.

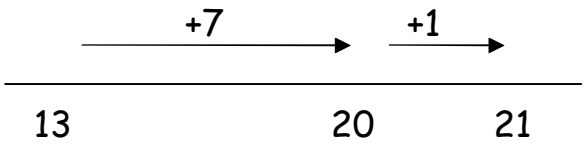
Examples:

20 + 5 = 25

Some children may use an empty number line to support their mental strategies.

Examples:

There are 13 boys and 8 girls in the room. How many children are there altogether?



YELLOW

- 2 digit numbers + 2 digit numbers not over the tens barrier
- 2 digit numbers + 2 digit numbers bridging the tens barrier

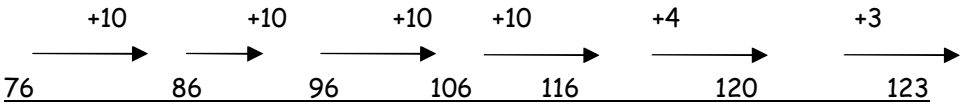
GREEN (YEARS 3-5) –STEP1 (NNS pg43 B)

Children build on these mental strategies by learning different strategies. This includes adding by starting with the **largest or most significant** number first.

Example: 47+76 = (40+70) + (7+6)
= 110 + 13
= 110+10+3
=120+3
= 123

Or

47+76 = (76+40) + 7



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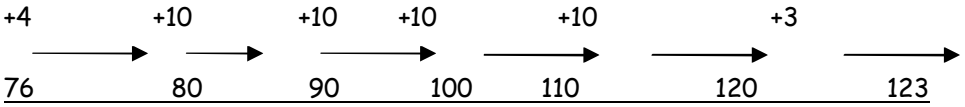
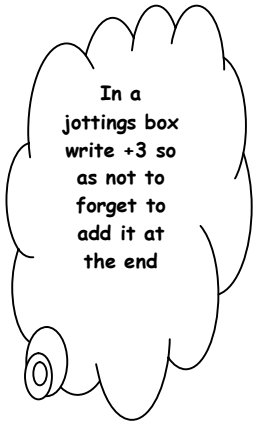




Pupils may feel confident in using the empty number line method in the following step three. (When they are able to use this method to solve subtraction problems, the number of steps they use may begin to be reduced.)

GREEN (YEARS 3-5) –STEP2 (NNS- pg43B -2digit numbers+ 2digit numbers bridging the 100)

Expanded vertical layout of a calculation, showing the addition of the tens and the addition of the units (ones) separately. **The most significant digit will be added first.**

Example:

47
+76
110
13
123

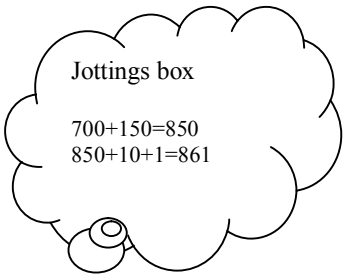
	4	7
+	7	6
	4	0
		7
	7	0
		6
	4	0
	7	0
		7
		6
1	1	0
	1	3
1	2	3

BLUE (YEARS 4-6) -STEP1 (NNS pg48 A)

An extension of step two using bigger numbers. Pupils may be encouraged to use checking methods such as the inverse operation.

Example: 368+493=

493
+ 368
700
150
11
861



BLUE (YEARS 4-6) -STEP2 (NNS pg 48 C)

Use of the compact layout alongside the previous layout and then use of the compact layout without the previous layout along side.

Example:
(1 carry)

47
+26
73
1

Example:
(2 carry)

47
+76
123
11

INDIGO (YEARS 5-6)

Extending step four with larger numbers and decimal numbers. Pupils may need to initially revert to a more expanded layout before being confident and independent with the compact layout when adding larger numbers and decimals.
Children will be expected to add together several numbers with a different number of digits.

Subtraction

Teaching strategies for mental calculations

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Mental calculation is about challenging children to figure out an answer rather than recall it from a bank of number facts that are committed to memory but which they are able to work out in their heads.

There are three aspects to developing a range of mental strategies

- Raising children's awareness that there are a range of strategies
- Working on children's confidence and fluency with a range of strategies
- Developing efficient methods

Children should also be encouraged to estimate an answer using the most significant numbers first.

Mental calculations can be supported using pencil and paper through jottings, through images and recording for another audience. This will then lead into more formal methods

RED STAGE (FOUNDATION-YEAR1)

Begin to record in the context of play or practical activities and problems e.g. recording using objects, marks, stamps, etc writing shopping lists, recording how many children walk to school. Begin to write number sentences.

- Subtract Units from Units by counting on and by counting back.

ORANGE STAGE (YEARS 1-3)

Mental strategies

- Count back in ones
- Reorder numbers in a calculation
- Use known number facts and place value to subtract pairs of single digit numbers
- Use patterns of similar calculations
- Counting in tens backwards

Children should also be able to rapidly recall

- Subtraction facts for all numbers to at least 5

YELLOW STAGE (YEARS 2-4)

Mental strategies

- Count back in tens or ones
- Find a small difference by counting up from the smaller to the larger number
- Use known number facts and place value to subtract pairs of numbers
- Subtract 9,19,11 or 21 by rounding and compensating
- Use patterns of similar calculations
- Use the relationship between addition and subtraction

Children should also be able to rapidly recall

- Subtraction facts for all numbers to at least 10

GREEN STAGE (YEARS 3-5)

Mental strategies

- Say or write a subtraction statement corresponding to a given addition statement
- Use the relationship between addition and subtraction

Children should also be able to rapidly recall

- Subtraction facts for all numbers to 20

BLUE STAGE (YEARS 4-6)

- Count back in repeated steps of 1,10 and 100
- Use known number facts and place value to subtract pairs of two-digit numbers
- Subtract a 'near multiple of 10' e.g. 9,19,29,11,21 or 31 by rounding and compensating
- Subtract the nearest multiple of 10 then adjust

INDIGO STAGE (YEARS 5-6)

- Use known number facts and place value to subtract pairs of three-digit multiples of 10 and two-digit numbers with one decimal place
- Subtract the nearest multiple of 10 or 100, then adjust
- Add several numbers

VIOLET STAGE (YEAR6)

Mental strategies

- Consolidate all strategies from previous years
- Use known number facts and place value to subtract pairs of three-digit multiples of 10 and two-digit numbers with one decimal place
- Subtract the nearest multiple of 10, 100 or 1000, then adjust
- Continue to develop the relationship between addition and subtraction

Teaching written subtraction strategies

There are a variety of different ways in which addition and subtraction can be taught. This policy develops the empty number line, but recognises that pupils will need to progress to more efficient written compact methods linked to the earlier empty number line, later in their primary career.

At the **ORANGE STAGE (YEARS 1-3)**, when subtraction is taught the children's experience of these operations will be a mixture of words, pictures and symbols. When recording simple mental calculations in a number sentence they are always set out horizontally. The children may also use number lines to record their work informally.

Examples:

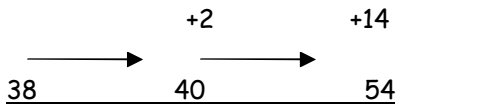
4 – 3 = 1

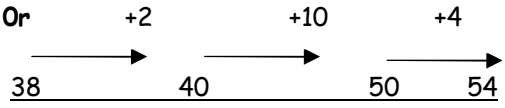
Step One

Counting backwards orally

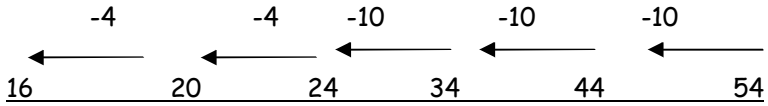
- When pupils feel confident with the empty number line method they are able to use this method
- To solve a range of subtraction problems, the number of steps they use may begin to reduce.
- Build on the mental methods the children already have. Use empty number lines to count on to the nearest ten, then hundred if needed.

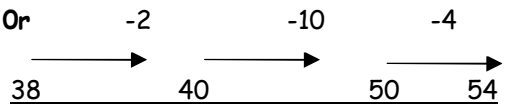
Example 1: 54 – 38 = 16





Example 2: 54-38=16





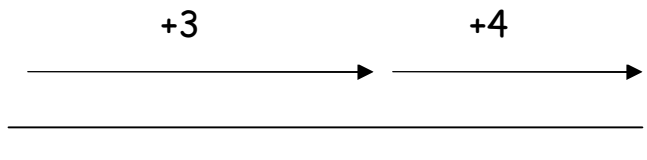
YELLOW (YEARS 2-4)

The children record their mental calculations horizontally. The children will also use number lines to record their work informally. The empty number line can be used to model calculations and mathematical thinking and also help children record their own thinking.

Examples:

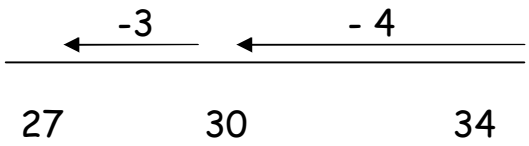
(Some children may use an empty number line to support their mental strategies.)

There are 34 children in the classroom. 27 go into the hall. How many children are left behind?



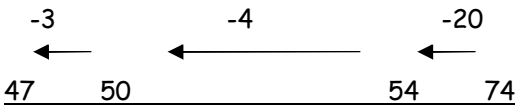
(NNS pg 33 Partition and recombine)

Or



Pupils can set out calculations vertically, that they can already do mentally. It may be helpful to link each step of the vertical calculations to those taken on an empty number line when the calculation is done mentally.

Example: 74 – 27 = 47

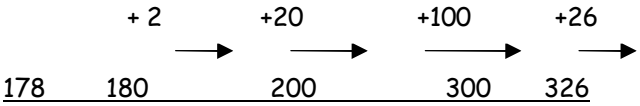


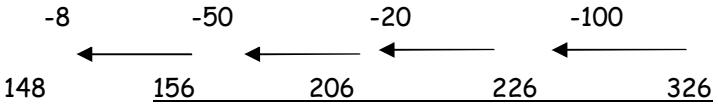
Or 74-27>
74-20=54
54-4=50
50-3=47 so 74-27=47

GREEN STAGE (YEARS 3-5) (NNS pg45 A)

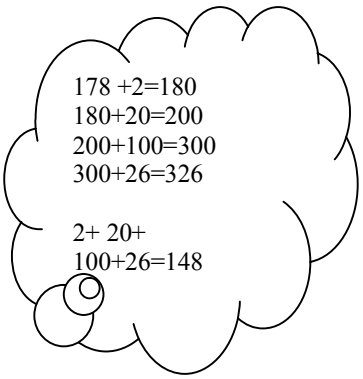
The layout for stage two is used for larger numbers and the number of steps may begin to be reduced. If using the vertical method it may still be helpful for pupils to use a number line during this point in their progression.

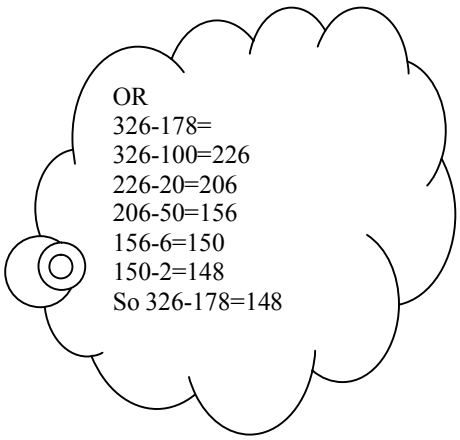
Example: 326 – 178 = 148





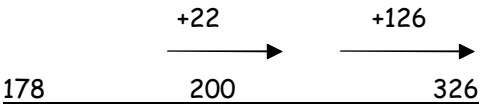
So 326-178=148





BLUE STAGE (YEARS4-6) (NNS pg50 A) By pupils using their knowledge of pairs that total 100 they should reduce the number of stages further. Once again, pupils may use a number line to see the stages in their subtraction calculations.

Example: 326 – 178 = 148



INDIGO STAGE (YEARS 5-6) (NNS pg51 C)

Like the final step for addition pupils now progress to using this for larger numbers and decimals.

When pupils are secure at step four they can be shown decomposition. Pupils need to have a sound understanding of place value. Experiencing the expanded method can help pupils to understand the process of decomposition so too can using practical apparatus such as Denes to demonstrate.

Example: 663 – 378

600 + 60 + 3
- 300 + 70 + 8

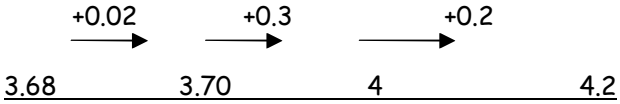
150
500 50 13
~~600~~ + ~~60~~ + ~~3~~
- 300 + 70 + 8
200 + 80 + 5

Leading to: 5 15 13
~~663~~
- 378
285

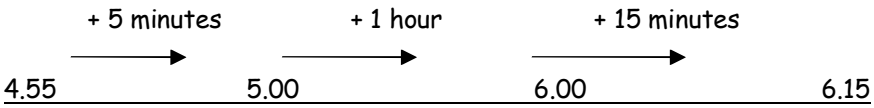
VIOLET STAGE (YEAR 6) -Decimals

The empty number line remains useful at any stage of development for the following areas:

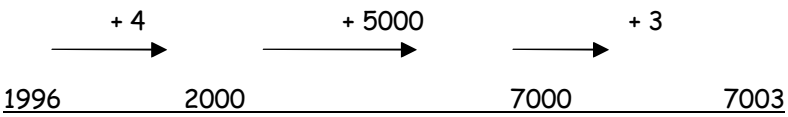
Decimals e.g. 4.2 – 3.68 =



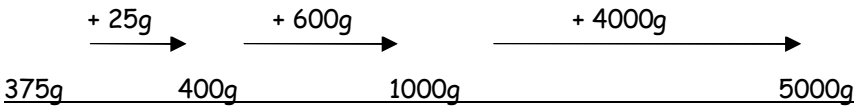
Elapsed time e.g. finds the difference between 04.55 and 06.15



Numbers containing zeros e.g. 7003 – 1996 =



Conversion in measure – capacity, length etc. E.g. 5kg – 375 g =



Multiplication

Teaching strategies for mental calculations

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Mental calculation is about challenging children to figure out an answer rather than recall it from a bank of number facts that are committed to memory but which they are able to work out in their heads.

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- Raising children's awareness that there are a range of strategies
- Working on children's confidence and fluency with a range of strategies
- Developing efficient methods

Children should also be encouraged to estimate an answer using the most significant numbers first.

Mental calculations can be supported using pencil and paper through jottings, through images and recording for another audience. This will then lead into more formal methods

YELLOW STAGE (YEARS 2-4)

Mental strategies
- Use knowledge of number facts and place value to multiply by 2,5 or 10
- Use doubles

Children should also be able to rapidly recall
- Multiplication facts for the 2 and 10 times-tables.
- Doubles of all numbers to 10.
- Multiplication facts up to 5X5

YELLOW STAGE (NNS pg 47)

Repeated addition-

6X3=
6 multiplied by 3
3 lots of 6=
6+6+6=
18

Arrays

6 columns of 3

•	•	•	•	•	•	3
•	•	•	•	•	•	rows
•	•	•	•	•	•	of 6

GREEN STAGE (YEARS 3-5):

Mental strategies

- Use patterns of similar calculations
- To multiply a number by 10/100, shift its digits one/two places to the left
- Use knowledge of number facts and place value to multiply by 2,5,10 or 100
- Use doubles

Children should also be able to rapidly recall

- Multiplication facts for the 2, 5 and 10 times-tables.

GREEN STAGE

Mental method, using partitioning.

Example: 38 x 5 = (30 x 5) + (8 x 5)
=150 + 40 = 190

Coin method to help with multiplications

1p, 2p, 5p, 10p, 50p

15X17>

X	10	5	2
10	100	50	20
5	50	25	10
	150	75	30

150+75+30=255

BLUE STAGE (YEARS 4-6)

- Use knowledge of number facts and place value to multiply including multiplying and by 10 first then 100
- Use closely related facts to carry out multiplication
- Use the relationship between multiplication and division to solve problems.
- **Children should also be able to rapidly recall multiplication facts for 2,3,4,5 and 10 times-tables.**

BLUE STAGE (NNS pg66)

Grid layout, with expanded working. Estimating of answers should be encouraged.

Example:

x	30	8	
5	150	40	190

38X5=190

INDIGO STAGE YEARS (5-6)

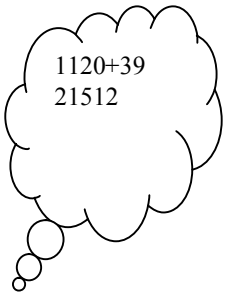
- Use factors
- Partition to carry out multiplication
- Use knowledge of number facts and place value to multiply.
- **Children should also be able to rapidly recall multiplication facts to 10X10.**

INDIGO STAGE 1 (NNS pg67)

The grid layout extended to larger numbers. Estimating and checking of answers should be encouraged.

Example: 56X27=

X	50	6	
20	1000	120	1120
7	350	42	392 +
			1512



56 x 27 = (50 + 6) x (20 + 7) so 56X27=1512

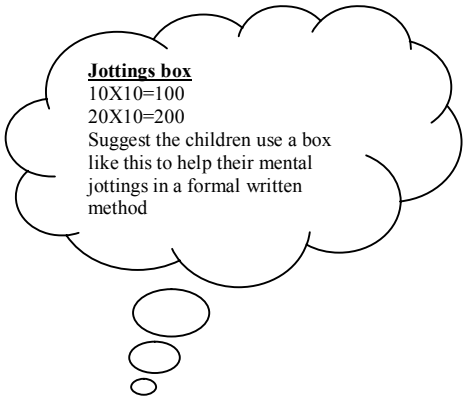
INDIGO STAGE 2

Extend use of the grid to multiplication of bigger numbers and decimals. Estimating and checking of answers should be encouraged.

Example:

x	20	3	0.5		
10	200	30	5	235	235
2	40	6	1	47	47+
				282	282

23.5 x 12 = (20 + 3 + 0.5) x (10 + 2)



Children may find it helpful to remove a decimal point during a calculation and then put it back in at the end.

INDIGO STAGE3 (NNS 6 pg67 B)

This step makes the link between the mental (grid) layout and the vertical format. The two formats may be used along side each other to aid understanding by pupils.

Example:

38
X 7
210 (30x 7 = 210)
56 (8 x 7 = 56)
266

266

x	30	8
7	210	56

Example: 27 x 56 = 1512

X	50	6		
20	1000	120	1120	1120
7	350	42	392	392+
				1512

VIOLET STAGE (YEAR6):

Mental strategies

- Consolidate all strategies from previous years
- Use closely related facts to carry out multiplication
- Use the relationship between multiplication and division to solve problems.
- **Children should also be able to rapidly recall squares of all integers from 1 to 10**

VIOLET STAGE 1 (NNS pg67 B)

This final step involves pupils using the vertical format with compact working. When pupils begin to attempt 'long multiplication' sums (example two) it may be useful for the link to be made to the grid method, and for pupils to use informal jottings to support their calculations.

Example:

```
  38
X  7
 266
  5
```

Example:

```
  56
X 27
 392      (56 x 7)
1120      (56 x 20)
1512
```

Division

Teaching strategies for mental calculations

Mental arithmetic is about rapid recall of number facts
Mental calculation is about challenging children to figure out an answer rather than recall it from a bank of number facts that are committed to memory but which they are able to work out in their heads.

There are three aspects to developing a range of mental strategies
- Raising children's awareness that there are a range of strategies
- Working on children's confidence and fluency with a range of strategies
- Developing efficient methods

Children should also be encouraged to estimate an answer using the most significant numbers first.

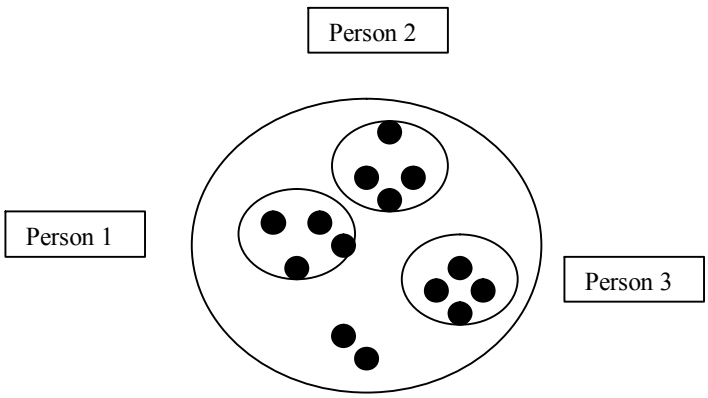
Mental calculations can be supported using pencil and paper through jottings, through images and recording for another audience. This will then lead into more formal methods

ORANGE STAGE (YEARS 1-3) (NNS pg 49)

Children are first introduced to the concept of division as **sharing.** This is a totally appropriate model for division but it is not the complete picture. If children are to develop a real understanding of division and develop effective mental and written methods, it is vital that they are introduced to division as grouping as well as sharing.

Sharing

We have 14 sweets to share equally between 3 people. Each person has 4 sweets with 2 left over.



So the answer is that each person has 4 sweets with 2 left over because they could not be shared equally.

YELLOW STAGE (YEARS 2-4)

Mental strategies

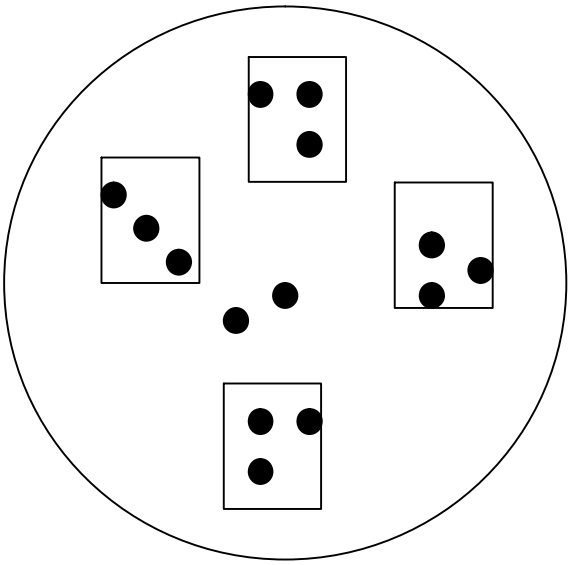
- Use knowledge of number facts and place value to divide by 2,5 or 10
- Use halves and halving as the inverse of doubling

Children should also be able to rapidly recall

- Division facts for the 2 and 10 times-tables
- Halves of all even numbers to 20

The children should now be dividing by grouping. We still have 14 sweets but we want to make up small bags, each containing 3 sweets. How many bags will we need?

This shows that the sweets are grouped into groups of 3, representing the 3 sweets in each bag. The answer in this case is not the number of sweets in each bag, but the number of groups of 3 that we can make. So 14 ÷ 3 =4 r2 can be represented by grouping as 14 sweets arranged in groups of 3.There are 4 groups with 2 sweets left over because they cannot make up another group of 3



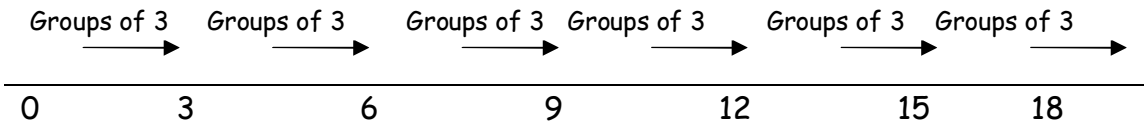
GREEN STAGE (YEARS 3-5):

Mental strategies

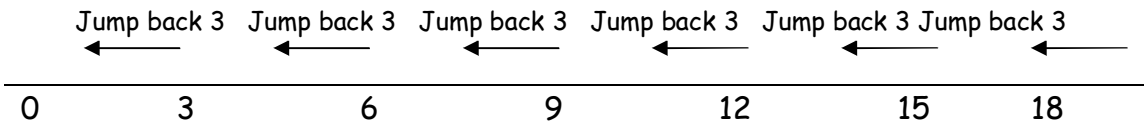
- Use patterns of similar calculations
- Use knowledge of number facts and place value to divide by 2,5,10 or 100
- Use halves and halving as the inverse of doubling
- Say or write a division statement corresponding to a given multiplication statement.
- **Children should also be able to rapidly recall division facts for the 2, 5 and 10 times-tables.**

Another way of looking at division is repeated subtraction.
How many times can I subtract 3 from 18?
Division as grouping or repeated subtraction can be shown using an empty number line:

Calculate 18 ÷3 by counting how many groups of 3 are needed on a number line to reach 18 by counting up from 0. How many groups of 3 can I make from 18?



Or go backwards- This line shows repeated jumps of 3 back along the number line from 18. 18÷3=6 6 jumps of 3



Remainders first appear in the NNS on page 51 as the objective "Begin to find remainders after simple division". This continues into year 4 and then in years 5 & 6 this objective is then extended into "rounding up or down after division, depending on the context"

So 14 ÷ 3 could equal 4 2/3 or the remainder as a decimal could equal 4.66

BLUE STAGE (YEARS 4-6)

- Use knowledge of number facts and place value to divide including dividing by 10 first then 100
- Use closely related facts to carry out division
- Use the relationship between multiplication and division to solve problems.
- **Children should also be able to rapidly recall division facts corresponding to 2,3,4,5 and 10 times-tables**

Written methods for division first appear n the NNS in year 4 (prior to this children use the empty number line) and develop into the "chunking" method. The chunking method is based upon an understanding of division as grouping, which can be performed as repeated subtraction.

Begin with calculations that the pupils can already do mentally (chunking). Encourage the pupils to estimate first.

We know from our understanding of division as grouping that we can solve this by saying "How many times can I subtract 9 from 97?"

Example: 97 ÷9 = 10 R7

97
-90 (**10** x 9) ⇦ Circle the number of lots to count at the end. Saves confusion
7

INDIGO STAGE (YEARS 5-6)

- Use closely related facts to carry out division
- Use knowledge of number facts and place value to divide.
- **Children should also be able to rapidly recall division facts corresponding to tables up to 10X10**

INDIGO STAGE1 (NNS pg68 A)

Use the above method with larger numbers. →

TU-year 4
HTU-year 5

Jottings box

Use another jottings box to draw a blank number line to aid calculation

Jottings box
Multiples of 10
10X6=60
20X6=120
40X6=240

Example: 196 ÷ 6 = 32 R 4

196
60 (**10** x 6) ⇦ we have subtracted 10 lots of 6, we will now subtract another 10 lots of 6
136
- 60 (**10** x 6) ⇦ we have subtracted another 10 lots of 6, we will now subtract another 10 lots of 6
76
- 60 (**10** x 6) ⇦ we have subtracted another 10 lots of 6, we will now subtract another 10 lots of 6. We are left with 16 so we must decide which multiple of 6 to subtract.
16
- 12 (**2** x 6) ⇦ we will try 2 lots of six, leaving us with 4, which is our remainder
4

We subtracted 32 lots of 6 and were left with 4 so 196 ÷ 6 = 32 r4

INDIGO STAGE 2 (NNS pg69 A)

As children practise the chunking method they should be taught to refine their choices of multiple of the divisor in order to make calculation more efficient by reducing the number of steps

For example, 30 x 6 instead of 10 x 6 three times.

Example: 196 ÷ 6 = 32 R 4

196
- 180 (30 x 6)

16
- 12 (2 x 6)
4

So 196 ÷ 6 =32 r4

VIOLET STAGE (YEAR 6)

Mental strategies

- Consolidate all strategies from previous years
- Use closely related facts to carry out division
- Use the relationship between multiplication and division to solve problems.
- Use knowledge of number facts and place value to divide.

VIOLET STAGE 1 (NNS pg69 B)

Using the same method pupils divide larger numbers and decimals.

Example: 87.5 ÷ 7=

```
7 | 8 7 . 5
- 7 0 . 0        1 0 X 7
  1 7 . 5
  1 4 . 0          2 X 7
    3 . 5
    3 . 5        0 . 5 X 7
    0 . 0
```

Answer 1 2 . 5

VIOLET STAGE 2 (NNS pg69 B)

Some children may move onto **short** standard written methods of division for HTU U.

Example: 196 ÷ 6 = 32 R 4

```
   32  R 4
6)196
  18
  16
  12
   4
```

VIOLET STAGE 3 (NNS pg69 B)

Some children may move onto **long** standard written methods of division for HTU TU.

Example:

972 ÷ 36 =

```
    27
36) 972
– 720
  252
– 252
    0
```

Jottings box
1X36=36
2X36=72
4X36=144
8X36=288
288-36=252
7X36=252

Times Table Understanding

Year	Must	Should	Could
Found.	**There is no times table expectation in foundation.**		
Year 1		Count on or back in ones, twos, fives and tens. Use this knowledge to derive the multiples of 2, 5 and 10 to the tenth multiple	Derive and **recall** multiplication facts for the 2, 5 and 10 times-tables **and the related division facts**. Recognise multiples of 2, 5 and 10
Year 2	Count on or back in ones, twos, fives and tens and use this knowledge to **derive** the multiples of 2, 5 and 10 to the tenth multiple	Derive and **recall** multiplication facts for the 2, 5 and 10 times-tables. **Derive the related division facts.** Recognise multiples of 2, 5 and 10	Derive and **recall** multiplication facts for the 2, 3, 4, 5, 6 and 10 times-tables. **Recall the corresponding division facts.**
Year 3	Derive and **recall** multiplication facts for the 2, 5 and 10 times-tables. **Derive the related division facts.** Recognise multiples of 2, 5 and 10.	Derive and **recall** multiplication facts for the 2, 3, 4, 5, 6 and 10 times-tables. **Derive the corresponding division facts.** Recognise Multiples of 2, 5 or 10.	Derive and **recall** multiplication facts for all tables up to 10 × 10. **Derive the corresponding division facts**. Recognise multiples of numbers To 10 up to the tenth multiple.
Year 4	Derive and **recall** multiplication facts for the 2, 3, 4, 5, 6 and 10 times-tables. **Derive the corresponding division facts.** Recognise Multiples of 2, 5 or 10.	Derive and **recall** multiplication facts up to 12 × 12. **Derive the corresponding division facts** and multiples of numbers to 10 up to the tenth multiple	**Recall quickly** multiplication facts up to 12 × 12. **Derive quickly corresponding division facts**
Year 5	Derive and **recall** multiplication facts up to 12 × 12. **Derive the corresponding division facts** and multiples of numbers to 10 up to the tenth multiple	**Recall quickly** multiplication facts up to 12 × 12. **Derive quickly corresponding division facts**	**Use knowledge** of place value and multiplication facts to 12 × 12 to **derive** related multiplication and division facts involving decimals (e.g. 0.8 × 7, 4.8 ÷ 6)
Year 6	**Recall quickly** multiplication facts up to 12 × 12. **Derive quickly** corresponding division facts	**Use knowledge** of place value and multiplication facts to 12 × 12 **to derive** related multiplication **and division facts** involving decimals (e.g. 0.8 × 7, 4.8 ÷ 6)	Consolidate **rapid recall** of number facts, including multiplication facts to 12 × 12. **Recall the associated division facts.**