Highwood Primary School

"Preparing today's children
for tomorrow's world"

Progression in the 4 Rules of Number

December 2013

Addition and Subtraction (Statutory Requirements)

Year One

Read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs.

Represent and use number bonds and related subtraction facts within 20.

Add and subtract one-digit and two-digit numbers to 20, including zero.

Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = □ – 9.

Year Two

Solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures ***and applying their increasing knowledge of mental and written methods.***

Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100.

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.

Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.

Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

Year Three

Add and subtract numbers mentally, including:

- a three-digit number and ones
- a three-digit number and tens
- a three-digit number and hundreds.

Add and subtract numbers with up to three digits, ***using formal written methods of columnar addition and subtraction.***

Estimate the answer to a calculation and use inverse operations to check answers

Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.

Year Four

Add and subtract numbers with up to 4 digits using the ***formal written methods of columnar addition and subtraction where appropriate.***

Estimate and use inverse operations to check answers to a calculation.

Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.

Year Five

Add and subtract whole numbers with more than 4 digits, including ***using formal written methods (columnar addition and subtraction).***

Add and subtract numbers mentally with increasingly large numbers.

Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.

Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.

Year Six

Perform mental calculations, including with mixed operations and large numbers.

Use their knowledge of the order of operations to carry out calculations involving the four operations.

Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.

Addition

Children are encouraged to develop mental strategies 'in their heads' as well as using various written methods.

MENTAL CALCULATIONS

These are a **selection** of mental calculation strategies. Children will continue to use and adapt them; they are NOT replaced by written methods.

- Counting forwards or backwards in repeated steps of 1, 10, 100, 1000
- Counting forwards or backwards in repeated steps from any number e.g. 17, 27, 37,47
- Counting forwards or backwards in repeated steps of 2, 5, 10
- Mental recall of number bonds in numbers up to 10 and then 20

  e.g. 3 + 2 = 5 so □ + 2 = 5

  6 + 4 = 10 so □ + 4 = 10

  15 + 5 = 20 so 15 + □ = 20
- Using the relationship between addition and subtraction

  36 + 19 = 55 19 + 36 = 55

  55 – 19 = 36 55 – 36 = 19
- Using doubles and near doubles

  6 + 6 = 12 so 6 + 7 = double 6 + 1 = 13
- Add the nearest multiple of 10, 100 and 1000 and adjust

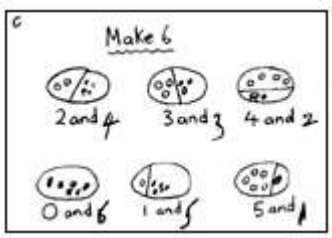
  24 + 19 = 24 + 20 – 1 = 43

  458 + 71 = 458 + 70 + 1 = 529
- Putting the biggest number first and adding on the smaller number

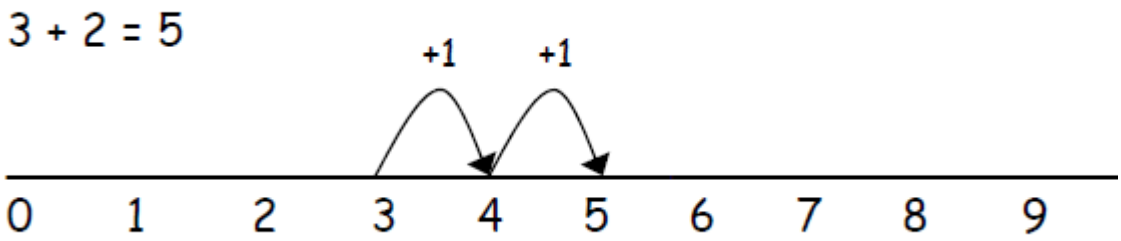
WRITTEN CALCULATION STRATEGIES

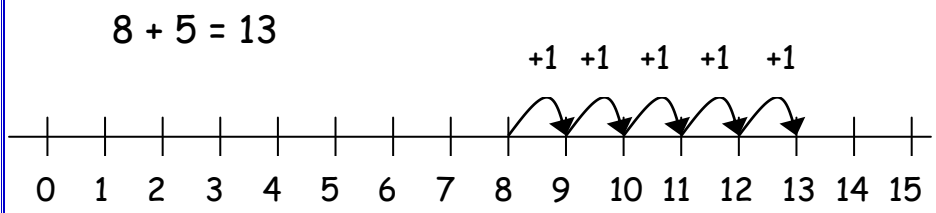
Early Stages

- Children are encouraged to develop a mental picture of the number system in their heads to use for calculation. They develop ways of recording calculations using pictures, etc.



- Children will find it easier to add numbers if they have something physical to count with.
- They can put the larger number in their heads, make it out of practical items or find it on a number line and then count on.
- They use the vocabulary associated with addition: adding, total, altogether, sum of.
- Children then begin to use number lines to support their own calculations using a numbered line to count on in ones.





- They are presented with 'real life' situations (e.g. money) in order to apply their skills
- They are presented with word problems: I have 3 sweets, can you find me 2 more? How many have I got now?
- Children use number squares or grids to count on and to look for patterns

e.g. 25 + 10
35 + 2

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

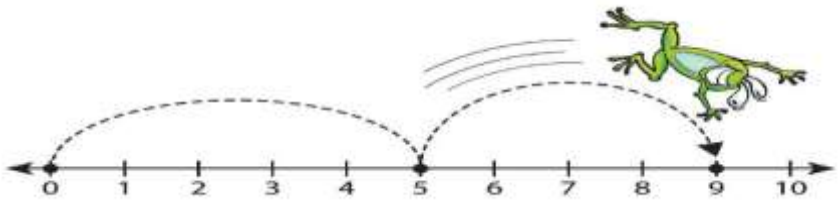
Key Stage One and Lower Key Stage Two

Children continue to work with the above methods, they gradually adapt them to larger numbers. They are also taught to:

- Explore patterns developed from basic bonds

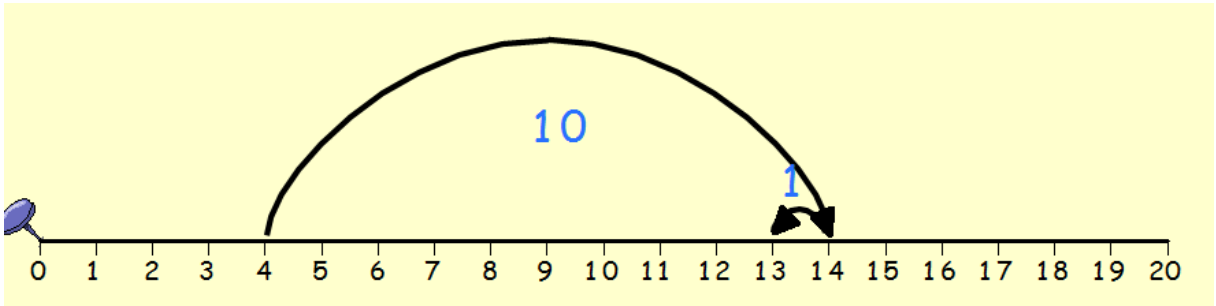
e.g. 2 + 3 = 5 so 20 + 30 = 50
7 + 3 = 10 so 17 + 3 = 20

- Use larger jumps on a number line

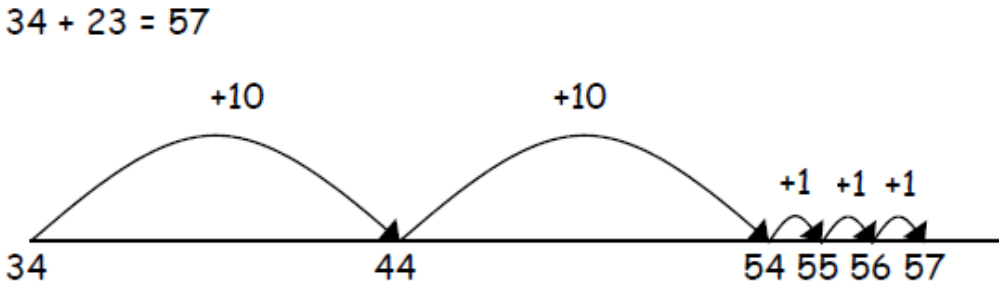


- Use adjusting on a number line or grid

e.g. 4 + 9 = 13
4 + 10 = 14 14 – 1 = 13



- Children will begin to use '**empty number lines'** starting with the larger number and counting on.

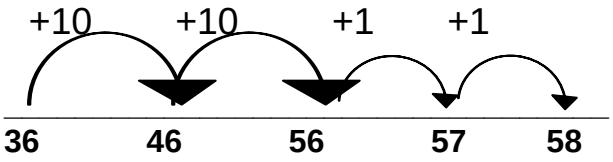


- **Partitioning:** Children need to understand what each of the digits represents to partition successfully

e.g. 36 = 30 (3 tens) & 6 (6 units)

Children can use number lines to help them add the partitioned amounts starting with the larger number: **36 + 22 =**

36 +10, **46** +10, **56** +1, **57** +1 = **58**



36 +

T	U
2	2

At **level 3c/3b** Children then begin to use informal jottings without number lines:

T	U
6	2

+

T	U
3	1

= 93

60 + 30 = 90
2 + 1 = 3
90 + 3 = 93

The partitioning method can then be adapted to include jottings such as:

67 + 24
(60 + 20) + (7 + 4) =
80 + 11 = 91

Key Stage Two

At **level 3a+** Children continue to work with the above methods; they gradually adapt them to larger numbers. They are also taught to:

- Use the 'column method'

T	U	
4	8	
2	3	
1	1	(8 + 3 =11)
6	0	(40 + 20)
7	1	(60 + 11)

H	T	U	
3	4	2	
2	5	6	
		8	(2 + 6 = 8)
	9	0	(40 + 50 = 90)
5	0	0	(300 + 200 = 500)
5	9	8	

Next, **at level 4c+** the children will learn to 'carry' below the line;

	T	U
	3	7
+	4	5
	8	2
	1	

	H	T	U
	3	8	7
+	2	5	4
	6	4	1
	1	1	

Upper Key Stage Two

Children will apply the methods they have learnt to solve problems involving larger numbers and more complex calculations

Using similar methods, children will;

- add several numbers with different numbers of digits;
- begin to add two or more **decimal** fractions with up to four digits and either one or two decimal places;
- **know that decimal points should line up under each other, particularly when adding mixed amounts** e.g. 401.2 + 26.85 + 0.71.

H	T	U	.	t	h
4	0	1	.	2	***0**
	2	6	.	8	5
		0	.	7	1

- ***0** inserted to hold place; this also links to money

Subtraction

MENTAL CALCULATIONS

These are a **selection** of mental calculation strategies for subtraction:

- Counting forwards and backwards
- Mental recall of addition and subtraction facts

  10 – 6 = 4 10 - □= 2

  20 - 17 = 3 17 - □= 11
- Find a small difference by counting up

  82 – 79 = 3 (80, 81, 82 = 3 steps)

- Counting on or back in repeated steps of 1, 10, 100, 1000

  86 - 32 = 54 (by counting back in tens and then in ones)

  86-10 =76, 76-10 = 66, 66 -10= 56, 56 -1 = 55, 55-1= 54

  460 - 300 = 160 (by counting back in hundreds)

  460 – 100 = 360, 360 – 100 =260, 260 – 100 = 160

- Subtract the nearest multiple of 10, 100 and 1000 and adjust

  24 - 19 = 24 - 20 + 1 = 5

  458 - 71 = 458 - 70 - 1 = 387

- Use the relationship between addition and subtraction

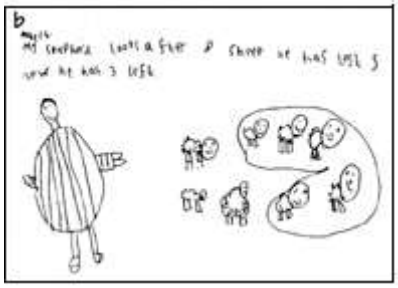
  36 + 19 = 55 19 + 36 = 55

  55 – 19 = 36 55 – 36 = 19

WRITTEN CALCULATIONS

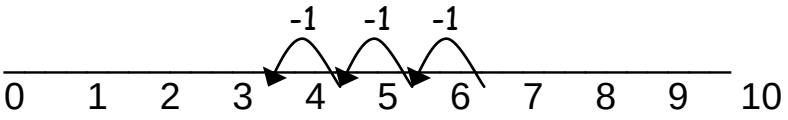
Early Stages

- Children find it easier to calculate subtraction sums with physical resources- they need to spend time on practical activities taking away objects
- They can put the larger number in their heads, make it out of practical items, or find it on a number line or grid and then count backwards from this point.
- Use vocabulary associated with subtraction: take away, less than, minus and subtract.

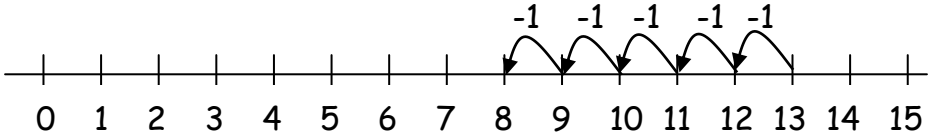


- Number rhymes; counting forwards and backwards e.g. 5 speckled frogs
- Children then begin to use numbered lines to support their own calculations - using a numbered line to count back in ones.

6 – 3 = 3



13 – 5 = 8

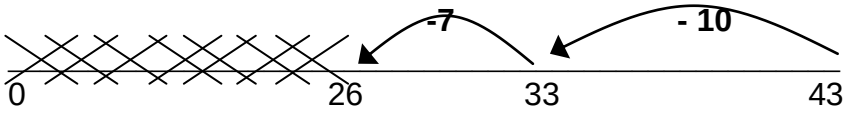


Key Stage One and Lower Key Stage Two

Children will continue to use empty number lines to support calculations and will count on or back in larger steps.
NB: Number Lines are always written from left to right

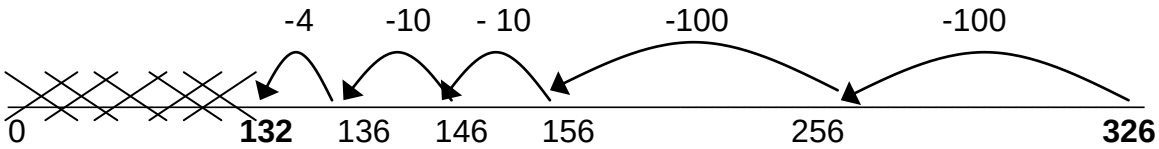
- **Counting back**

43 – 17 =

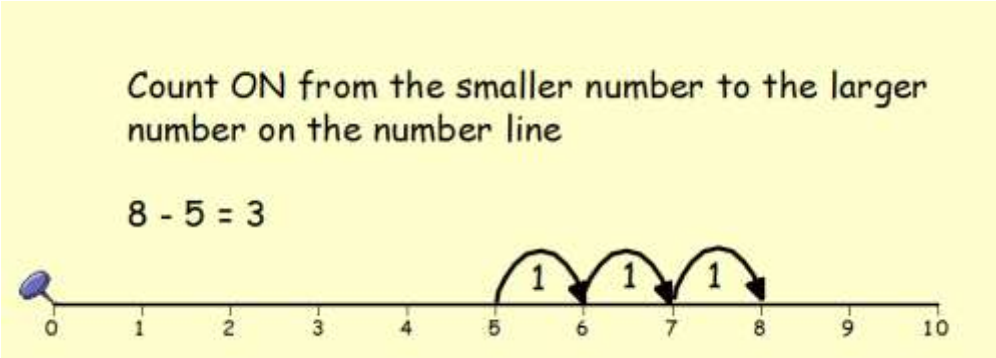


Jumps are made in multiples of 10 and then units:

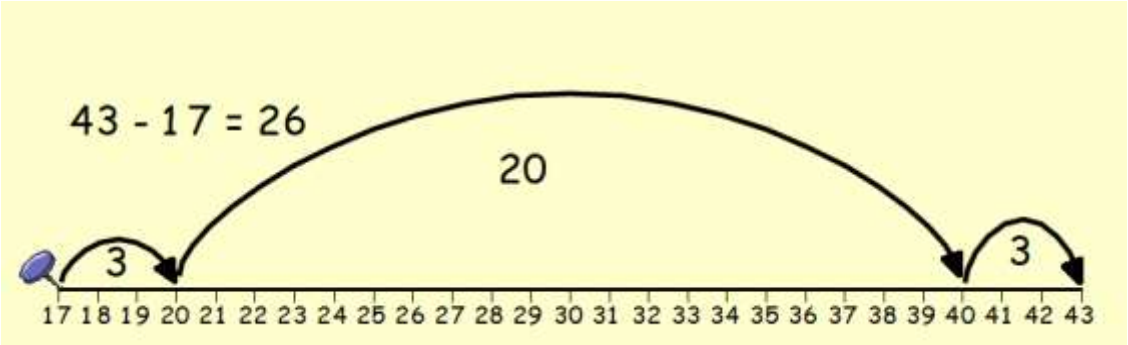
326 – 224 = 132



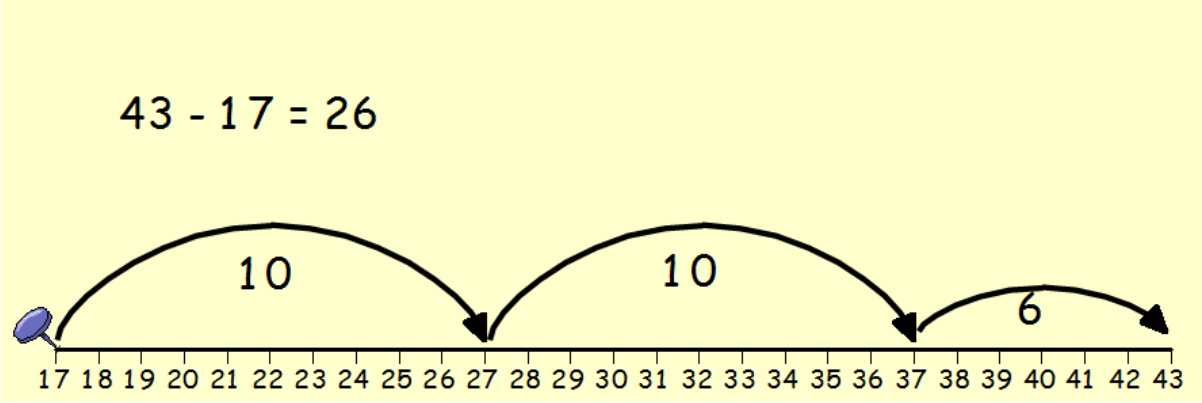
- **Finding the difference** by counting on; this is a much more efficient method once children understand that they are taking away (e.g. 99 – 91 would take a long time to complete by jumping backwards!)



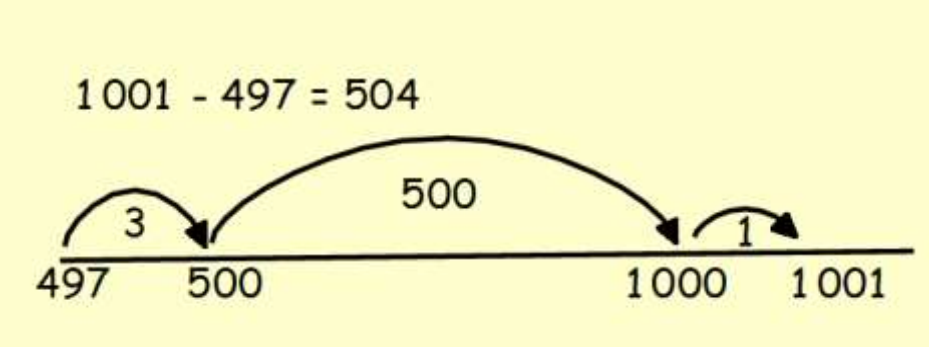
Count on- jump to the nearest multiple of 10, jump in tens, jump in units



Count on- jump in tens, jump in units



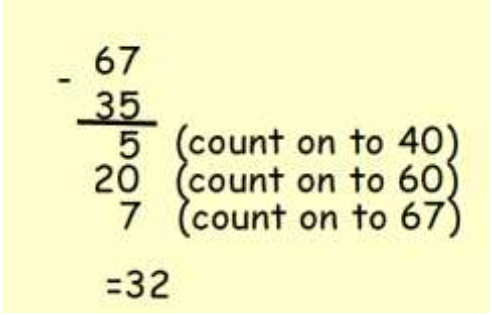
Count on- jump to the nearest multiple of 100, jump in hundreds, jump in units



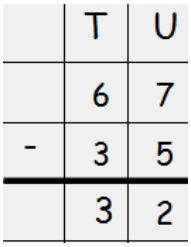
Upper Key Stage Two

- Children continue to use counting back or counting on to find the difference but may prefer to jot down working rather than drawing number lines

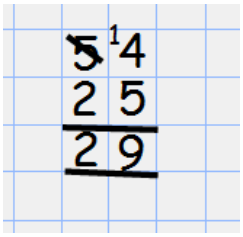
e.g. 67 – 35
35 + 5 = 40
40 + 20 = 60
60 + 7 = 67
5 + 20 + 7 = 32
or
67 – 35
35 + 30 = 65
65 + 2 = 67
30 + 2 = 32



- **Columns and Decomposition**



	T	U
	6	7
-	3	5
	3	2



Example: 784 – 235 =

Each number is partitioned into hundreds, tens and ones and set out in this way:

784	=	700	80	4
-235		- 200	30	5

Starting with the ones, take 5 away from 4. There aren't enough; we need to exchange one ten. The tens column becomes ten less and the ones column becomes ten more:

700	**70**	**14**
-200	30	5

We can now take 5 away from 14:

700	70	**14**
- 200	30	**5**
		9

Move to the tens column, take thirty from seventy.

700	**70**	14
- 200	**30**	5
	40	9

Move to the hundreds column, take two hundreds from seven hundreds.

700	70	14
- 200	30	5
500	40	9

The numbers are put back together (recombined) to give the answer.

784 – 235 = 549

This method leads to the formal decomposition method :

5 6 3	**4 1 5**
- 2 7 8	**5 6 1 3**
	- 2 7 8
	2 8 5

Multiplication and Division

Year One

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.

Year Two

Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.

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.

Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

Year Three

Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.

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 and ***progressing to formal written methods.***

Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.

Year Four

Recall multiplication and division facts for multiplication tables up to 12 × 12.

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 two-digit and three-digit numbers by a one-digit number ***using formal written layout.***

Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.

Year Five

Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.

Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.

Establish whether a number up to 100 is prime and recall prime numbers up to 19.

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 and divide numbers mentally drawing upon known facts.

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.

Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.

Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})

Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes.

Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.

Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.

Year Six

Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the ***formal written method of long multiplication.***

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.

Divide numbers up to 4 digits by a two-digit number using the ***formal written method of short division*** where appropriate, interpreting remainders according to the context.

Perform mental calculations, including with mixed operations and large numbers.

Identify common factors, common multiples and prime numbers.

Use their knowledge of the order of operations to carry out calculations involving the four operations.

Multiplication

MENTAL CALCULATIONS

These are a **selection** of mental calculation strategies:

- Counting in 2s, 10s, 5s etc.
- Doubling and halving
- Applying the knowledge of doubles and halves to known facts.
  e.g. 8 x 4 is double 4 x 4
- Learning multiplication and division facts
  Year 2: x2, x5, x10
  Year 3: x2, x5, x10, x3, x4, x8,
  Year 4 Derive and recall all multiplication and division facts up to 12 x 12
- Using and applying multiplication facts
- Children should be able to utilise their tables knowledge to derive other facts.
  e.g. If I know 3 x 7 = 21, what else do I know?
  30 x 7 = 210, 300 x 7 = 2100, 3000 x 7 = 21 000, 0.3 x 7 = 2.1 etc
- Use closely related facts already known
  13 x 11 = (13 x 10) + (13 x 1)
  = 130 + 13
  = 143
- Multiplying by 10 or 100
  Knowing that the effect of multiplying by 10 is a **shift in the digits** one place to the left.
  Knowing that the effect of multiplying by 100 is a **shift in the digits** two places to the left
- Partitioning
  23 x 4 = (20 x 4) + (3 x 4)
  = 80 + 12
  = 102
  Use of factors : e.g. 8 x 12 = 8 x 4 x 3

Early Stages

- Use vocabulary associated with multiplication; times, multiply, groups of, lots of
- Practical problem solving involving equal sets or groups
- Practise counting forwards and backwards in2s, 5s and 10s from different starting points— the use of physical objects helps with this
- Finding patterns on a number grid ; e.g. colouring in every 2^{nd}, 5^{th} or 10^{th} square
- Practical activities counting in 'lots of'
- Repeated addition: 3 x 2 = 2 + 2 + 2

Key Stage One and Lower Key Stage Two

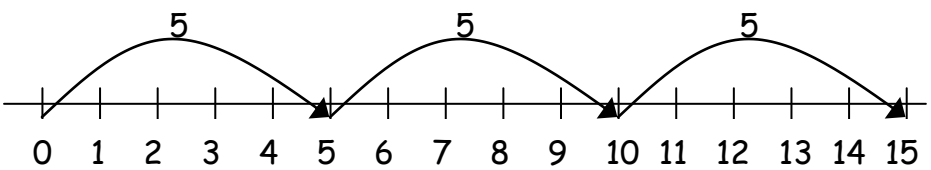
Children will develop their understanding of multiplication and use jottings to support calculation:

Repeated addition

3 times 5 is 5 + 5 + 5 = 15 or 3 lots of 5 or 5 x 3

Repeated addition can be shown easily on a number line:

5 x 3 = 5 + 5 + 5



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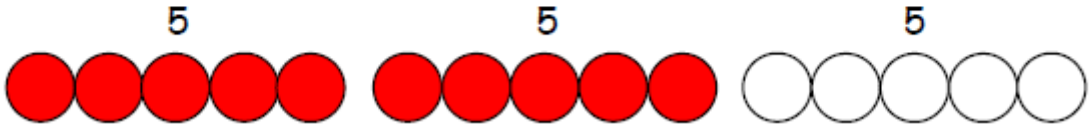
and on a bead bar:

3 x 5 = 5 + 5 + 5



- Children also need to develop an understanding of;

✓ **Scaling**

e.g. Find a ribbon that is 4 times as long as the blue ribbon

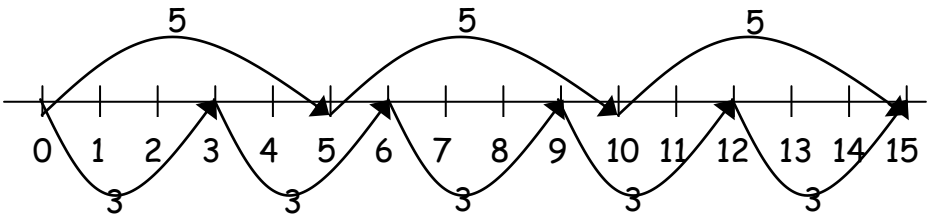
✓ **Using symbols to stand for unknown numbers to complete equations using inverse operations**

□ x 5 = 20 3 x △ = 18 □ x ○ = 32

Commutativity

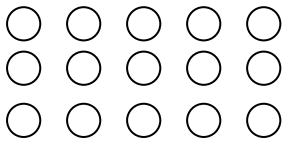
Children should know that 3 x 5 has the same answer as 5 x 3. This can also be shown on the number line.

NB: Children do not need to be able to record answers in this way but should have an understanding of it.



Arrays

Children should be able to model a multiplication calculation using an array. This knowledge will support with the development of the grid method.



3 x 5 = 15

5 x 3 = 15

Children will continue to use arrays where appropriate leading into the grid method of multiplication.

Grid method

TU x U
(Short multiplication – multiplication by a single digit)

23 x 8

Children will approximate first
23 x 8 is approximately 25 x 8 = 200

x	20	3
8	160	24

160 + 24 = 184

Upper Key Stage Two

HTU x U
(Short multiplication – multiplication by a single digit)

346 x 9

Children will approximate first
346 x 9 is approximately 350 x 10 = 3500

x	300	40	6
9	2700	360	54

2700 + 360 + 54 = 3114

TU x TU
(Long multiplication – multiplication by more than a single digit)

72 x 38

Children will approximate first
72 x 38 is approximately 70 x 40 = 2800

x	70	2
30	2100	60
8	560	16

2100 + 60 + 560 + 16 = 2736

Using similar methods, they will be able to multiply decimals with one decimal place by a single digit number, approximating first. They should know that the decimal points line up under each other.
e.g. 4.9 x 3

Children will approximate first
4.9 x 3 is approximately 5 x 3 = 15

×	4	0.9
3	12	2.7

$$\begin{array}{r} 12 \\ +\ 2.7 \\ \hline 14.7 \end{array}$$

Column Method

$$\begin{array}{r} 48 \\ \times\ 7 \\ \hline 336 \\ {\scriptstyle 5} \end{array}$$

$$\begin{array}{r} 56 \\ \times\ 31 \\ \hline 56 \\ 1680 \\ {\scriptstyle 1} \\ +\ 1736 \\ \hline {\scriptstyle 1} \end{array}$$

Short Multiplication methods (National Curriculum Appendix)

24 × 6 becomes

$$\begin{array}{r} 24 \\ \times\ 6 \\ \hline 144 \\ {\scriptstyle 2} \end{array}$$

Answer: 144

342 × 7 becomes

$$\begin{array}{r} 342 \\ \times\ 7 \\ \hline 2394 \\ {\scriptstyle 2\ 1} \end{array}$$

Answer: 2394

2741 × 6 becomes

$$\begin{array}{r} 2741 \\ \times\ 6 \\ \hline 16446 \\ {\scriptstyle 4\ 2} \end{array}$$

Answer: 16 446

Long Multiplication methods (National Curriculum Appendix)

24 × 16 becomes

$$\begin{array}{r} {\scriptstyle 2} \\ 24 \\ \times\ 16 \\ \hline 240 \\ 144 \\ \hline 384 \end{array}$$

Answer: 384

124 × 26 becomes

$$\begin{array}{r} {\scriptstyle 1\ 2} \\ 124 \\ \times\ 26 \\ \hline 2480 \\ 744 \\ \hline 3224 \\ {\scriptstyle 1\ 1} \end{array}$$

Answer: 3224

124 × 26 becomes

$$\begin{array}{r} {\scriptstyle 1\ 2} \\ 124 \\ \times\ 26 \\ \hline 744 \\ 2480 \\ \hline 3224 \\ {\scriptstyle 1\ 1} \end{array}$$

Answer: 3224

Division

MENTAL CALCULATIONS

These are a **selection** of mental calculation strategies:

- Deriving and recalling division facts: Tables learnt as Division Facts alongside multiplication and not as a poor relation

  e.g. 3 x 5 = 15 so 15 ÷ 5 = 3
- Doubling and halving

  e.g. Knowing that halving is dividing by 2
- Counting in 2's, 5's 10's etc.
- Using and applying division facts

  e.g. Children should be able to utilise their tables knowledge to derive other facts.

  e.g. If I know 3 x 7 = 21, what else do I know?

  30 x 7 = 210 21÷7=3 210÷7=30 21÷3=7 210÷30=7
- Dividing by 10 or 100

Knowing that the effect of dividing by 10 is a **shift in the digits** one place to the right.
Knowing that the effect of dividing by 100 is a **shift in the digits** two places to the right.
Key point to emphasise is that the decimal point stays where it is

- Use of factors

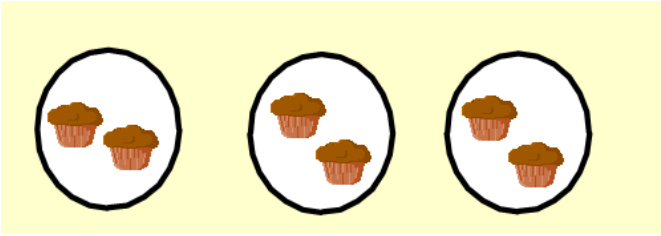
  e.g.378 ÷ 21 378 ÷ 3 = 126 378 ÷ 21 = 18 126 ÷ 7 = 18

WRITTEN METHODS FOR DIVISION

Early Stages

- Children will understand equal groups and share items out in play and problem solving.
- They will count in 2s and 10s and later in 5s.
- "sharing" and "chunking" taught from first steps

e.g. 6÷2 read as "How many groups of 2 are in 6?"
AND at the same time
"How many twos in 6?" "2,4,6 = 3"

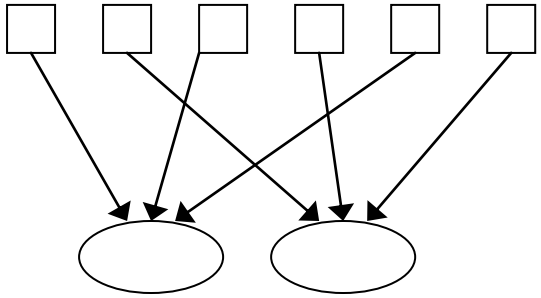


Key Stage One and Lower Key Stage Two

The emphasis is increasingly on **grouping** rather than sharing (sharing ceases to be useful once numbers increase).

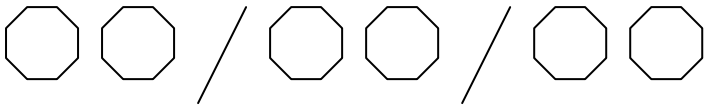
Sharing equally

6 sweets shared between 2 people, how many do they each get?



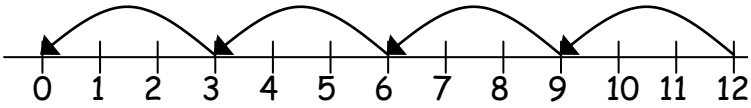
Grouping or repeated subtraction

There are 6 sweets, how many people can have 2 sweets each?



Repeated subtraction using a number line

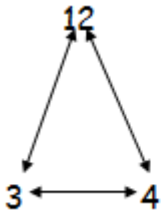
12 ÷ 3 = 4



Using symbols to stand for unknown numbers to complete equations using inverse operations

☐ ÷ 2 = 4 20 ÷ △ = 4 ☐ ÷ △ = 4

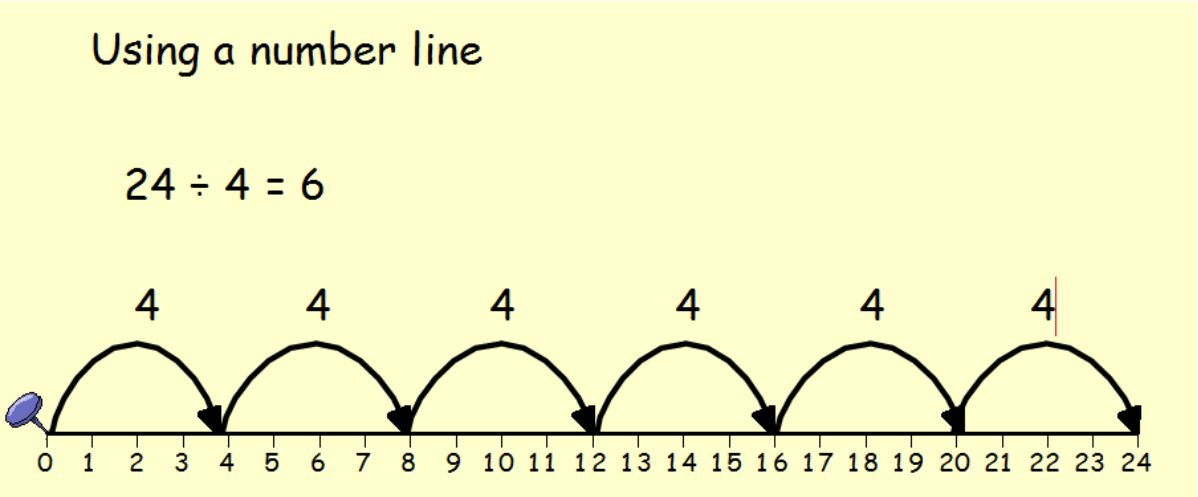
Using known multiplication facts



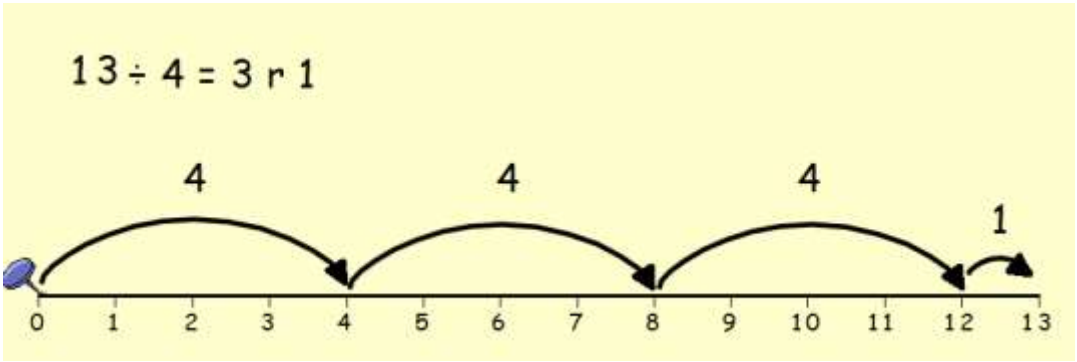
generates 3x4=12
4x3=12
12÷4=3
12÷3=4

Y2 and Lower Key Stage Two

Division is taught in Y3/4 as **grouping.**



- **Remainders** are also introduced



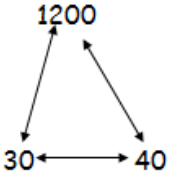
✓ **Using symbols to stand for unknown numbers to complete equations using inverse operations**

1. 26 ÷ 2 = □ 2. 24 ÷ △ = 12 3. □ ÷ 10 = 8

- Using known **multiplication facts**:

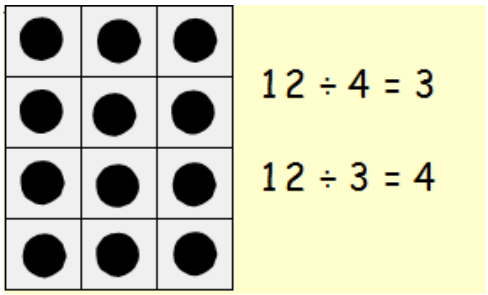
generates 3x4=12
4x3=12
12÷4=3
12÷3=4

Leading on to



30x40=1200
40x30=1200
1200÷40=30
1200÷30=40

- **Arrays** can be a helpful model



- **Chunking** (using known facts and subtracting) :

```
      1  2
   ____
4 | 4  8
  | 4  0   (10 x 4)
  |    8   (2 x 4)   so 10 + 2 = 12
```

Upper Key Stage Two

- **'Chunking'** method is further developed from the method already introduced; using known facts and subtracting. Chunks are chosen by the individual and any correct chunks are allowable although the children are encouraged to look for helpful and sensible chunks (e.g. the divisor x10)

e.g: 73 ÷ 6 =

```
   12r1
  ____
6/ 73
   60 (10x6)
  ____
   13
   12 (2x6)
  ____
    1
```

e.g: 458 ÷ 23 =

```
    19 r 21
  ____
23/458
   230 (10x23)
   228
   115 (5x23)
   113
    46 (2x23)
    67
    46 (2x23)
    21
```

- Children can be encouraged to underline the 'chunk' e.g. 10 x 23

- **Short Division (‘Bus Stop’)** method- link to tables facts

6/24 read as “how many 6s in 24?” Either (preferably) recalled as 4
Or “6,12,18,24=4”

Short Division Methods (National Curriculum Appendix)

98 ÷ 7 becomes

$$\begin{array}{r} 1\ 4 \\ 7\overline{)\,9\ 8} \end{array}$$

Answer: 14

432 ÷ 5 becomes

$$\begin{array}{r} 8\ 6\ r2 \\ 5\overline{)\,4\ 3\ 2} \end{array}$$

Answer: 86 remainder 2

496 ÷ 11 becomes

$$\begin{array}{r} 4\ 5\ r1 \\ 11\overline{)\,4\ 9\ 6} \end{array}$$

Answer: $45\frac{1}{11}$

More able children will also be introduced to **long division**.

972 ÷ 36

```
   27          How many groups of 36 are in 9?  You can't do this.
36)  972       So how many lots of 36 there are in 97? 2 (36 x 2 = 72).
   - 72        Take away 72 from 97 = 25. Bring down the 2 from 97 2 as you cannot divide
    252        36 by 25.
  - 252        How many groups of 36 are in 252? 7 (36 x 7 = 252)
     0         Finally take away 252 from 252 which leaves 0
```

Long Division Methods (National Curriculum Appendix)

432 ÷ 15 becomes

$$\begin{array}{r} 2\ 8\ r12 \\ 15\overline{)\,4\ 3\ 2} \\ 3\ 0\ 0 \\ \hline 1\ 3\ 2 \\ 1\ 2\ 0 \\ \hline 1\ 2 \end{array}$$

Answer: 28 remainder 12

432 ÷ 15 becomes

$$\begin{array}{r} 2\ 8 \\ 15\overline{)\,4\ 3\ 2} \\ 3\ 0\ 0 \quad 15\times20 \\ \hline 1\ 3\ 2 \\ 1\ 2\ 0 \quad 15\times8 \\ \hline 1\ 2 \end{array}$$

$\frac{12}{15} = \frac{4}{5}$

Answer: $28\frac{4}{5}$

432 ÷ 15 becomes

$$\begin{array}{r} 2\ 8\cdot8 \\ 15\overline{)\,4\ 3\ 2\cdot0} \\ 3\ 0\ \downarrow \\ \hline 1\ 3\ 2 \\ 1\ 2\ 0\ \downarrow \\ \hline 1\ 2\ 0 \\ 1\ 2\ 0 \\ \hline 0 \end{array}$$

Answer: 28·8