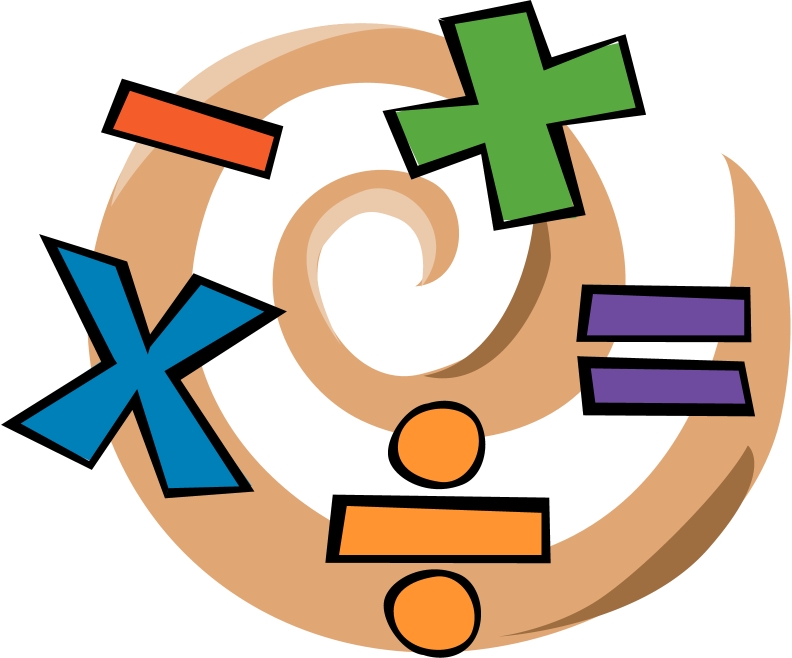
**Written Calculation Policy**

**Bournebrook C of E Primary School**



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**INTRODUCTION**

This calculation policy has been written in line with the programmes of study taken from the revised **National Curriculum for Mathematics (2014).** It provides guidance on appropriate calculation methods and progression and is set out in year groups.

Children will use mental methods as their first port of call when appropriate, but for calculations that they cannot do in their heads, they will need to use an efficient written method accurately and with confidence.

**AIMS OF THE POLICY**

* To ensure consistency and progression in our approach to calculation.
* To ensure that children develop an efficient, reliable, formal written method of calculation for all four operations.
* To ensure that children can use these methods accurately with confidence and understanding.

**HOW TO USE THIS POLICY**

* Use the policy as the basis of your planning but ensure you use previous or following year’s guidance to allow for personalised learning.
* Always use Assessment for Learning to identify suitable next steps in calculation for groups of children.
* Always use suitable resources, models and images to support children’s understanding of calculation and place value, as appropriate.
* Encourage children to make sensible choices about the methods they use when solving problems.

**ADDITION – EYFS**

Children will engage in a wide variety of songs and rhymes, games and activities. They will begin to relate addition to **combining two groups of objects,** first by **counting all** and then by **counting on** from the largest number.

They will find **one more** than a given number.

In practical activities and through discussion they will begin to use the vocabulary involved in addition.

‘You have five apples and I have three apples. How many apples altogether?’

**SUBTRACTION – EYFS**

Children will engage in a variety of counting songs and rhymes and practical activities.

In practical activities and through discussion they will begin to use the vocabulary associated with subtraction.

They will find one less than a given number.

They will begin to relate subtraction to ‘taking away’ **using objects** to count ‘how many are left’ after some have been taken away.



**6 – 2 = 4**

‘Take two apples away. How many are left?’

Children will begin to count back from a given number.

**MULTIPLICATION – EYFS**

Children will engage in a wide variety of songs, rhymes, games and activities. In practical activities and through discussion they will begin to solve problems involving doubling.



‘Three apples for you and three apples for me. How many apples altogether?’

**DIVISION – EYFS**

Children will engage in a wide variety of songs and rhymes, games and activities. In practical activities and through discussion they will begin to solve problems involving halving and sharing.



Share the apples between two people.

‘Half of the apples for you and half of the apples for me’.

**ADDITION – YEAR ONE**

Children will continue to practise counting on from any number e.g. ‘Put five in your head and count on four.’

Initially use **concrete objects** to count on for addition, counting on from the largest number. Then introduce a **number track.**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |

**5 + 4 =9**

‘Put your finger on number five. Count/jump on (count forwards) four.’

Then progress to a **marked number line:**

**6 + 6 = 12**

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

‘Put your finger on number six and count/jump on six.’

**8 + 7 = 15** ‘Put your finger on number eight and count/jump on seven.’

+1 +1 +1 +1 +1 +1 +1

8 9 10 11 12 13 14 15

**SUBTRACTION – YEAR ONE**

Children will continue to practise counting back from a given number.

Initially use **concrete objects** to count back for subtraction and then introduce a **number track**:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |

**9 – 5 = 4**

‘Put your finger on number nine. Count back five.’

Then progress to a **marked number line:**

**12 – 6 = 6**

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

‘Put your finger on number twelve and count/jump back six.’

**14 – 5 = 9**

9 10 11 12 13 14

‘Put your finger on number fourteen and count/jump back five.’

Continue to practise counting back for subtraction with numbers with 20.

**Counting on to find a small difference.**

**Count up** from the smallest number to the largest to **find the difference** using resources, e.g. cubes, beads, number tracks/lines:

**11 – 2 = 9**

**MULTIPLICATION – YEAR ONE**

[](http://www.google.co.uk/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0CAcQjRw&url=http://www.littlesunflowers.com/accessories-socks-tights-belts-socks.html&ei=jHzvVNScMqLW7AbohYG4DA&psig=AFQjCNG0n9_8VC5CVdI1gRb9Bo8OcEC3ZA&ust=1425067267522722)Children will count repeated groups of the same size in practical contexts and will use the associated vocabulary. They will solve **practical problems** that involve combining groups of 2, 5 or 10. E.g. socks, fingers and cubes.

[](http://www.google.co.uk/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0CAcQjRw&url=http://www.littlesunflowers.com/accessories-socks-tights-belts-socks.html&ei=jHzvVNScMqLW7AbohYG4DA&psig=AFQjCNG0n9_8VC5CVdI1gRb9Bo8OcEC3ZA&ust=1425067267522722)

‘Six pairs of socks. How many socks altogether? 2, 4 6, 8, 10, 12’

[](http://www.google.co.uk/imgres?imgurl=https://img0.etsystatic.com/021/0/7634699/il_570xN.491664856_kwg7.jpg&imgrefurl=https://www.etsy.com/listing/159984978/back-to-school-crayons-clip-art-school&h=570&w=570&tbnid=mnJyb-7RjICLTM:&zoom=1&docid=knRcPKUelT7_aM&hl=en&ei=Qn7vVIvcOdCS7Aafi4GIBQ&tbm=isch&ved=0CFAQMygmMCY)

‘Three pots of ten crayons. How many crayons altogether? 10, 20, 30’

Use **arrays** to support early multiplication.



‘Five groups of two faces. How many faces altogether? 2, 4, 6, 8, 10’

Two groups of five faces. How many faces altogether? 5, 10’

‘2 groups of 5’

‘How many altogether?’

‘5 + 5 = 10’

Double five is ten.

**DIVISION – YEAR ONE**

Children will start with practical **sharing.** They will share objects into **equal groups** in a variety of situations. They will begin to use the vocabulary associated with division in practical contexts.

‘Share these eight apples equally between two children. How many apples will each child have?’





Children will move from **sharing** to **grouping** in a practical way.

‘Share 20 crayons between 2 pots.’

‘How many crayons are in each pot?’

[](http://www.google.co.uk/imgres?imgurl=https://img0.etsystatic.com/021/0/7634699/il_570xN.491664856_kwg7.jpg&imgrefurl=https://www.etsy.com/listing/159984978/back-to-school-crayons-clip-art-school&h=570&w=570&tbnid=mnJyb-7RjICLTM:&zoom=1&docid=knRcPKUelT7_aM&hl=en&ei=Qn7vVIvcOdCS7Aafi4GIBQ&tbm=isch&ved=0CFAQMygmMCY)

‘Put 20 crayons into groups of 10.

How many pots do we need?’

Use **arrays** to support early division:

‘How many faces altogether?

How many groups of two?’

**‘Five groups of two.’**





‘How many groups of 5?

10 Shared equally between 2 people.’

**‘Half of ten is five.’**

Continue to solve problems in **practical contexts** throughout year one, and develop the language of early division, with appropriate resources.

**ADDITION - YEAR TWO**

**28 + 6 = 34**

+1 +1 +1 +1 +1 +1

28 29 30 31 32 33 34

…and in tens **28 + 30 = 58**

+ 10

+ 10

+ 10

28 38 48 58

**48 + 36 = 84** ‘Put the biggest number first (48) and then partition the smaller number (36 = 30 + 6) and count on: 48 + 30 + 6.’

+ 10 + 10 + 10 +1 +1 +1 +1 +1 +1

48 58 68 78 79 80 81 82 83 84

If children are confident, use more efficient jumps…

+ 30 + 2 + 4

Also use the **Partitioning method** to add two two-digit numbers.

**43 + 25 = 68**

**40 + 20 = 60**

**3 + 5 = 8**

**60 + 8 = 68**

‘Partition the numbers into tens and one/units. Add the tens together and then the ones/units together. Recombine to give the answer’.

**SUBTRACTION – YEAR TWO**

Counting back using an **empty number line** within 100, in ones …

**34 – 6 = 28**

-1 -1 -1 -1 -1 -1

28 29 30 31 32 33 34

and in tens…

**58 – 30 = 28**

-10 -10 -10

28 38 48 58

**Subtraction using partitioning, on an empty number line:**

**76 – 45 = 31**

-1 -1 -1 -1 -1 -10 -10 -10 -10

31 32 33 34 35 36 46 56 66 76

If children are confident, use more efficient jumps:

**76 – 45 = 31**

- 5 - 40

31 36 76

Also use the **Partitioning method** to subtract two two-digit numbers.

**75 – 23 = 52**

**75 – 20 = 55**

**55 – 3 = 52**

**Count up** from the smallest number to the largest to **find the difference.**

**12 – 8 = 4**

+ 1 + 1 + 1 + 1

8 9 10 11 12

‘The difference between 8 and 12 is 4.’

3**2 – 28 = 4**

+ 1 + 1 + 1 + 1

28 29 30 31 32

‘The difference between 28 and 32 is 4.’

**If the children are confident,** further develop this method:

**76 – 58 = 18**

+ 2 + 10 + 6

58 60 70 76

.

**MULTIPLICATION – YEAR TWO**

Children will use a range of vocabulary to describe multiplication and use practical resources, pictures, diagrams and the x sign to record.

‘3 groups of 10 crayons’

‘How many crayons altogether?’

’10 + 10 + 10 = 30’

‘3 groups of 10’ ‘3 times 10’

‘3 x 10 = 30’ ’10 x 3 = 30’

**Combining Groups (repeated addition):**[](http://www.google.co.uk/imgres?imgurl=https://img0.etsystatic.com/021/0/7634699/il_570xN.491664856_kwg7.jpg&imgrefurl=https://www.etsy.com/listing/159984978/back-to-school-crayons-clip-art-school&h=570&w=570&tbnid=mnJyb-7RjICLTM:&zoom=1&docid=knRcPKUelT7_aM&hl=en&ei=Qn7vVIvcOdCS7Aafi4GIBQ&tbm=isch&ved=0CFAQMygmMCY)

‘5 groups of 3’ ‘5 lots of 3’ ‘3 + 3 + 3 + 3 + 3 + 3 = 15’

‘5 times 3’ ‘3 multiplied by 5’ ‘5 x 3 = 15’ ‘3 x 5 = 15’

**Using arrays to support multiplication:**

**6 x 5 = 30**

‘5 + 5 + 5 + 5 + 5 + 5 = 30’

‘6 rows of 5’

‘6 groups of 5’

‘5 groups of 6’

‘5 x 6 = 30’

‘6 x 5 = 30’

**Using an empty number line: 6 x 5 = 30**

1 x 5 2x 5 3x 5 4 x 5 5 x 5 6 x 5

0 5 10 15 20 25 30

**DIVISION – YEAR TWO**

Children will use a range of vocabulary to describe division and use practical resources, pictures, diagrams and the ÷ sign to record, using multiples that they know.

’30 crayons shared equally between three pots.’ (sharing)

‘We have 30 crayons and have put ten crayons in each pot. How many pots do we need?’ (grouping)

’30 divided by 10 = 3’ **30 ÷ 10 = 3**

’30 divided by 3 = 10’ **30 ÷ 3 = 10**

**Sharing and grouping:**

[](http://www.google.co.uk/imgres?imgurl=https://img0.etsystatic.com/021/0/7634699/il_570xN.491664856_kwg7.jpg&imgrefurl=https://www.etsy.com/listing/159984978/back-to-school-crayons-clip-art-school&h=570&w=570&tbnid=mnJyb-7RjICLTM:&zoom=1&docid=knRcPKUelT7_aM&hl=en&ei=Qn7vVIvcOdCS7Aafi4GIBQ&tbm=isch&ved=0CFAQMygmMCY)

[](http://www.google.co.uk/imgres?imgurl=https://img0.etsystatic.com/021/0/7634699/il_570xN.491664856_kwg7.jpg&imgrefurl=https://www.etsy.com/listing/159984978/back-to-school-crayons-clip-art-school&h=570&w=570&tbnid=mnJyb-7RjICLTM:&zoom=1&docid=knRcPKUelT7_aM&hl=en&ei=Qn7vVIvcOdCS7Aafi4GIBQ&tbm=isch&ved=0CFAQMygmMCY)

‘How many groups of 5?’

’15 shared equally between 3 people is…?’

’15 divided by 3 = 5’ **15 ÷ 5 = 3**

’15 divided by 5 = 3’ **15 ÷ 3 = 5**

**Using arrays to support division**

**15 ÷ 5 = 3**

How many groups of 3?

How many groups of 5?

15 shared between 3 people is…?

15 shared between 5 people is…?

15 divided by 5 = 3

15 divided by 3 = 5

**15 ÷ 3 = 5**

**When children are ready, use an empty number line to count forwards:**

**30 ÷ 5 = 6**

‘How many jumps of five make thirty?’

1

jump

of 5

4 jumps

of 5

5

jumps

of 5

6 jumps

of 5

3 jumps

of 5

2 jumps

of 5

0 5 10 15 20 25 30

**Also jump back to make the link with repeated subtraction:**

**30 ÷ 5 = 6**

‘How many groups of 5?

-5 -5 -5 -5 -5 -5

0 5 10 15 20 25 25

**ADDITION – YEAR THREE**

Further develop the **partitioning method** with calculations that **bridge 100:**

**85 + 37 =**

**85 + 30 = 115**

**115 + 7 = 122**

Introduce the formal written method with the calculation presented horizontally and vertically (in columns). Initially use calculations where it has not been necessary to bridge across the tens or hundreds:

**63 + 32 = 95**

|  |  |  |
| --- | --- | --- |
|  | **6** | **3** |
| **+** | **3** | **2** |
|  | **9** | **5** |

Use the language of place value to ensure understanding:

‘3 add 2 equals 5. Write 5 in the units column. 60 add 30 equals 90. Write 9 (90) in the tens column.

If children are ready,introduce the **formal written method,** where it is necessary to ‘carry’ ten from the units to the tens column:

**68 + 24 = 92**

|  |  |  |
| --- | --- | --- |
|  | **6** | **8** |
| **+** | **2** | **4** |
|  | **9**  **1** | **2** |

Use the language of place value to ensure understanding:

‘8 add 4 equals 12. Write 2 in the units column and ‘carry’ 1 (10) across into the tens column. 60 add 20 and the ten that we ‘carried’ equals 90. Write 9 (90) in the tens column. 92 is the answer.’

If children are ready, introduce the **formal written method,** where it is necessary to ‘carry’ across the columns and bridge 100. Further develop with the addition of a three-digit number and a two-digit number.

178 + 43 = 221

Use the language of place value to ensure understanding:

‘6 add 7 equals 13. Write 3 in the units column and ‘carry’ 1 (10) across into the tens column. 70 add 40 and the ten that we ‘carried’ equals 120. Write 2 (20) in the tens column and ‘carry’ 1 (100) across into the hundreds column (100). 123 is the answer.’

|  |  |  |
| --- | --- | --- |
| **1** | **7** | **8** |
| **+** | **4** | **3** |
| **2**  **1** | **2**  **1** | **1** |

**SUBTRACTION – YEAR THREE**

Further develop the use of the **empty number line: 126 – 45 = 81**

- 5 - 40

81 86 126

... and by **counting on to find the difference:**

**231 – 198 = 33**

+ 2 + 30 + 1

198 200 230 231 ‘The difference between 198 and 231 is 33.’

Introduce the **formal written method: 78 – 23 = 55**

Use the language of place value to ensure understanding: ‘Eight subtract three, seventy subtract twenty.’

|  |  |  |
| --- | --- | --- |
|  | **7** | **8** |
| **-** | **2** | **3** |
|  | **5** | **5** |

**When children are confident,** introduce the **formal written method** involving decomposition/exchange:

**73 – 27 = 46**

6 13

|  |  |  |
| --- | --- | --- |
|  | **7** | **3** |
| **-** | **2** | **7** |
|  | **4** | **6** |

Use the language of place value to ensure understanding: ‘We can’t subtract seven from three, so we need to exchange a ten for ten ones to give us 60 + 13.’

Use **base ten materials** to support understanding.

**If children are confident,** extend the use of the **formal written method with numbers over 100.**

**235 – 127 = 108**

Use the language of place value to ensure understanding. In this example it has only been necessary to exchange from the tens column,

Use **base ten materials** to support understanding.

2 15

|  |  |  |
| --- | --- | --- |
| **2** | **3** | **5** |
| **- 1** | **2** | **7** |
| **1** | **0** | **8** |

**MULTIPLICATION – YEAR THREE**

Continue to use **number lines** and **arrays** to support multiplication: **4 x 3 = 12**

1 x 3 2 x 3 3 x 3 4 x 3

0 3 6 9 12

**Partitioning method for multiplication of a teen number:**

**13 x 5 = 65 (partition 13 into 10 + 3)**

**10 x 5 = 50 3 x 5 = 15**

**50 + 15 = 65**

**Grid Method** (teen number multiplied by a one-digit number):

**13 x 8 = 104**

‘Partition 13 into 10 + 3 then multiply each number by 8. Add the partial products (80 and 24) together.’

|  |  |  |
| --- | --- | --- |
| **X** | **10** | **3** |
| **8** | **80** | **24**  **80 + 24 = 104** |

This will lead into **the formal method of short multiplication:**

**1 3**

**X 8**

Ensure that the digit ‘carried over’ is written under the line in the correct column.

Use the language of place value to ensure understanding.

**1 0 4**

**2**

Continue to develop the formal written method of multiplication throughout year three using teen numbers multiplied by a one-digit number.

**If children are confident** progress to multiplying other two-digit numbers by a one-digit number.

**DIVISION – YEAR THREE**

Continue to use practical resources, pictures, diagrams, number lines, arrays and the ÷ sign to record, using multiples that they know, as appropriate.

**Using an empty number line to count forwards…**

**24 ÷ 3 = 8**

‘How many threes in 24?’

3

jumps

of 3

4

jumps

of 3

5

jumps

of 3

7

jumps

of 3

6

jumps

of 3

8

jumps

of 3

2

jumps

of 3

1

jump

of 3

0 3 6 9 12 15 18 21 24

**…also jump back from 24 to make the link with repeated subtraction.**

-3 -3 -3 -3 -3 -3 -3 -3

0 3 6 9 12 15 18 21 24

**Introduce the formal layout using multiplication/division facts that the children know:**

**24 ÷ 3 = 8**

This can also be recorded as…

|  |  |
| --- | --- |
|  | 8 |
| 3 | 24 |

‘Twenty four divided by three equals eight.’

**ADDITION – YEAR FOUR**

**176 + 147 = 323**

|  |  |  |
| --- | --- | --- |
| **1** | **7** | **6** |
| **+ 1** | **4** | **7** |
| **3**  **1** | **2**  **1** | **3** |

If children are confident, introduce the addition of a four-digit number and a three-digit number:

**1845 + 526 = 2371**

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

1. **1**

Continue to develop with addition of two four-digit numbers and with decimals (in the context of money and measures).

**SUBTRACTION – YEAR FOUR**

Continue to develop the **formal written method of subtraction** involving decomposition:

Use the language of place value to ensure understanding and use base ten apparatus if necessary.

In this example it has been necessary to exchange from the hundreds column.

1 15

|  |  |  |
| --- | --- | --- |
| **2** | **5** | **8** |
| **-** | **7** | **3** |
| **1** | **7** | **5** |

**When children are confident**, develop with **four digit numbers a**nd decimal numbers (in the context of money and measures).

**3625 – 1219 = 2406**

1 15

|  |  |  |  |
| --- | --- | --- | --- |
| **3** | **6** | **2** | **5** |
| **- 1** | **2** | **1** | **9** |
| **2** | **4** | **0** | **6** |

**MULTIPLICATION – YEAR FOUR**

Further develop the **grid method** for two-digit numbers multiplied by a one-digit number.

**36 x 4 = 144**

|  |  |  |
| --- | --- | --- |
| **X** | **30** | **6**  **120 + 24 = 144** (add the partial products) |
| **4** | **120** | **24** |

This leads to **short multiplication (formal method)** of a two-digit number multiplied by a one-digit number:

**36 x 4 = 144**

Use the language of place value to ensure understanding.

Ensure that the digit ‘carried over’ is written under the line in the correct column.

**3 6**

**x 4**

**1 4 4**

**2**

Continue to practise the formal method of short multiplication of a two-digit number by a one-digit number throughout year four.

**If children are confident,** develop short multiplication with three-digit numbers multiplied by a one-digit number.

Use the language of place value to ensure understanding.

Ensure that the digit ‘carried over’ is written under the line in the correct column.

1. **2 7**

**x 6**

**7 6 2**

**1 4**

**DIVISION – YEAR FOUR**

Continue to write and calculate mathematical statements for division using the multiplication tables that the children know e.g. **32 ÷ 8 = 4**

Continue using the **formal written layout** for division using multiplication tables:

|  |  |
| --- | --- |
|  | 4 |
| 8 | 24 |

Continue using the formal written layout, introducing remainders:

**25 ÷ 3 = 8 r1**

|  |  |
| --- | --- |
|  | 8 r1 |
| 3 | 25 |

**Division using partitioning** (two digits divided by one digit):

**65 ÷ 5 = 13** 65 = 50 + 15

50 ÷ 5 = 10 15 ÷ 5 = 3 10 + 3 = 13

**NB** Children will need to practise partitioning in a variety of ways.

Continue to use a **number line,** as appropriate, using multiples of the divisor:

**65 ÷ 5 = 13**

-15 (3x5) -50 (10x5)

0 15 65

**This will lead into the formal written method of short division:**

**98 ÷ 7 = 14**

Use the vocabulary of place value to ensure understanding and make the link to partitioning.

|  |  |
| --- | --- |
|  | 1 4 |
| 7 | 9²8 |

Continue to practise the formal method of short division throughout year four. **If children are confident** develop further, by dividing three-digit numbers by a one-digit number using the formal method of short division with whole number answers (no remainders).

**ADDITION – YEAR FIVE AND SIX**

Continue to develop the **formal written method for addition w**ith larger numbers (and decimal numbers) and with the addition of three or more numbers.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **2** | **1** | **8** | **4** | **8** |
|  | **+** | **1** | **5** | **2** | **3** |
|  | **2** | **3** | **3** | **7** | **1** |

**1 1**

Continue to use the language of place value to ensure understanding.

Use the **formal written method** for the addition of decimal numbers:

**£154.75 + £233.82 = £388.57**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **1** | **5** | **4.** | **7** | **5** |
|  | **+ 2** | **3** | **3.** | **8** | **2** |
|  | **3** | **8** | **8.** | **5** | **7** |

1

**SUBTRACTION – YEAR FIVE AND SIX**

Continue to develop the **formal written method for subtraction** with three and four digit numbers. **When children are confident** extend with larger numbers (and decimal numbers).

**12731 – 1367 = 11364**

In this example it has been necessary to exchange from the tens and hundreds column.

6 12 11

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **1** | **2** | **7** | **3** | **1** |
|  | **-** | **1** | **3** | **6** | **7** |
|  | **1** | **1** | **3** | **6** | **4** |

Introduce subtraction of decimals, initially in the context of money and measures. **£166.25 - £83.72 = £82.53**

16 5 12

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **1** | **6** | **6.** | **2** | **5** |
|  | **-** | **8** | **3.** | **7** | **2**  Ensure the decimal points line up. |
|  |  | **8** | **2.** | **5** | **3** |

**MULTIPLICATION – YEAR FIVE AND SIX**

**Compact long multiplication (formal method): 23 x 13 = 299**

**2 3**

**x 1 3**

**+ 6 9 (3 x 23)**

**2 3 0 (10 x 23)**

**2 9 9**

Use the language of place value to ensure understanding.

Add the partial parts.

Extend to larger two-digit numbers: **Compact long multiplication (formal method):** **56 x 27 = 1512**

**5 6**

**X 2 7**

**3 9⁴2 (7 X 56)**

Use the language of place value to ensure understanding.

In this example there are digits that have been ‘carried’ over in the partial parts.

Add the partial products.

**+1 1¹2 0 (20 X 56)**

**1 5 1 2**

**1**

**When children are confident w**ith long multiplication extend with three-digit numbers multiplied by a two-digit number.

**124 x 26 = 3224**

Use the language of place value to ensure understanding.

Add the partial products.

The prompts (in brackets) can be omitted if children no longer need them.

**1 2 4**

**X 2 6**

**7¹4²4 (6 x 124)**

**+ 2 4 8 0 (20 x 124)**

**3 2 2 4**

**1 1**

Extend with short and long multiplication of decimal numbers (initially in the context of money and measures).

**The formal written method of long multiplication: 53.2 x 24 = 1276.8**

**5 3 . 2**

**X 2 4 . 0**

**2 1¹2 . 8 (53.2 x 4)**

**1 0 6 4 . 0 (53.2 x 20)**

**1 2 7 6 . 8**

**DIVISION – YEAR FIVE AND YEAR SIX**

**Continue to practise the formal written method of short division with whole number answers…**

**184 ÷ 8 = 23**

Use the language of place value to ensure understanding.

Make the link to the partitioning method

|  |  |
| --- | --- |
|  | 23 |
| 8 | 18²4 |

**…and with remainders:**

**432 ÷ 5 = 86 r2**

|  |  |
| --- | --- |
|  | 86 r2 |
| 5 | 43³2 |

The remainder can also be expressed as a fraction, \tfrac{2}{5} (the remainder divided by the divisor): **432 ÷ 5 = 86** \tfrac{2}{5}

Continue to practise the **formal method of short division,** with and without remainders.

**496 ÷ 11 = 45 r1**

|  |  |
| --- | --- |
|  | 45 r1 |
| 11 | 496 |

The remainder can also be expressed as a fraction, 1/11 (the remainder divided by the divisor).

Dividing by a two-digit number using a **formal method of long division:**

|  |  |
| --- | --- |
|  | 45 r1  Multiples of the divisor (11) have been subtracted from the dividend (496).  ’40 (lots of 11) + 5 (lots of 11) = 45 (lots of 11)’  ‘1 is the remainder’  Answer: 45 1/11 |
| 11 | 496  -440 (40x11)  56  -55 (5x11)  1 (remainder) | |

Standard short division does not help with the following calculation. However, it can be solved using **long division** (by repeated subtraction using multiples of the divisor):

**144 ÷ 16 = 9**

|  |  |
| --- | --- |
|  | 9  Multiples of the divisor (16) have been subtracted from the dividend (144).  ’4 (lots of 16) + 4 (lots of 16) + 1 (lots of 16) = 9 (lots of 16)’  There is no remainder. |
| 16 | 144  - 64 (4x16)  80  -64 (4x16)  16  -16 (1x16)  0 | |

Children will need to select the most effective method for each calculation/problem they meet, including whether to use the standard, **formal written method of long division:**

**432 ÷ 15 = 28 r12**

|  |  |
| --- | --- |
|  | 28 r 12  Multiples of the divisor (15) have been subtracted from the dividend (432).  ’20 (lots of 15) + 8 (lots of 15) = 28  12 is the remainder. |
| 15 | 432  300 (20x15)  132  120 (8x15)  12 (remainder) | |

The remainder can also be expressed as a fraction, 12/15 (the remainder divided by the divisor) or as a decimal, **0.8.**

The answer is: 28 12/15 or 28.8