

East Boldon Junior School Calculation Policy 2015



Progression in Addition

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Y3

Mental Addition

- Know pairs with each total to 20
- Know pairs of multiples of 10 with a total of 100
- Add any two 2-digit numbers by counting on in 10s and 1s or by using partitioning
- Add multiples and near multiples of 10 and 100
- Perform place value additions without a struggle. (E.g. $300 + 8 + 50 = 358$)
- Use place value and number facts to add a 1-digit or 2-digit number to a 3-digit number. (E.g. $104 + 56$ is 160 since $104+50=154$ and $6+4=10$ and $676 + 8$ is 684 since $8=4+4$ and $76+4+4=84$)
- Add pairs of 'friendly' 3-digit numbers, e.g. $320 + 450$
- Begin to add amounts of money using partitioning.

Written Addition

- Use expanded column addition to add two or three 3-digit numbers or three 2-digit numbers.
- Begin to use compact column addition to add numbers with three digits.
- Begin to add like fractions. (E.g. $\frac{3}{8} + \frac{1}{8} + \frac{1}{8}$)
- Recognise fractions that add to 1. (E.g. $\frac{1}{4} + \frac{3}{4}$ or $\frac{3}{5} + \frac{2}{5}$)

• Build on partitioning to develop expanded column addition with two 3-digit numbers

$$\begin{array}{r} 400 \quad 60 \quad 6 \\ + 300 \quad 50 \quad 8 \\ \hline 700 + 110 + 14 = 824 \end{array}$$

- Compact column addition with 3-digit and 4 digit numbers

$$\begin{array}{r}
 347 \\
 + 286 \\
 \hline
 495 \\
 \hline
 1128 \\
 121
 \end{array}$$

- Recognise fractions which add to 1, e.g. $\frac{1}{4} + \frac{3}{4}$ or $\frac{2}{5} + \frac{3}{5}$

Y4

Mental Addition

- Add any two 2-digit numbers by partitioning or counting on
- Know by heart/quickly derive number bonds to 100 and to £1
- Add to the next hundred, pound and whole number. (E.g. $234 + 66 = 300$, $3.4 + 0.6 = 4$)
- Perform place value additions without a struggle. (E.g. $300 + 8 + 50 + 4000 = 4358$)
- Add multiples and near multiples of 10, 100 and 1000.
- Add £1, 10p, 1p to amounts of money
- Use place value and number facts to add 1-, 2-, 3- and 4-digit numbers where a mental calculation is appropriate'. (E.g. $4004 + 156$ by knowing that $6+4=10$ and that $4004+150=4154$ so total is 4160)

Written Addition

- Column addition for 3-digit and 4-digit numbers
- Add like fractions, e.g. $\frac{3}{5} + \frac{4}{5} = \frac{7}{5} = 1\frac{2}{5}$.
- Be confident with fractions that add to 1 and fraction complements to 1. (E.g. $\frac{2}{3} + ? = 1$)

$$\begin{array}{r}
 347 \\
 + 286 \\
 \hline
 495 \\
 \hline
 1128 \\
 121
 \end{array}$$

$$\begin{array}{r}
 3587 \\
 + \underline{675} \\
 \hline
 4262 \\
 111
 \end{array}$$

$$\begin{array}{r}
 733.59 \\
 + \underline{247.80} \\
 \hline
 981.39 \\
 11
 \end{array}$$

Y5

Mental Addition

- Know numbers bonds to 1 and to the next whole number
- Add to the next 10 from a decimal number, *e.g.* $13.6 + 6.4 = 20$
- Add numbers with two significant digits only, using mental strategies. (E.g. $3.4 + 4.8$ or $23,000 + 47,000$)
- Add one or two-digit multiples of 10, 100, 1000, 10,000 and 100,000. (E.g. $8000 + 7000$ or $600,000 + 700,000$)
- Add near multiples of 10, 100, 1000, 10,000 and 100,000 to other numbers. (E.g. $82,472 + 30,004$)
- Add decimal numbers which are near multiples of 1 or 10, including money. (E.g. $6.34 + 1.99$ or $£34.59 + £19.95$)
- Use place value and number facts to add two or more friendly numbers including money and decimals. (E.g. $3 + 8 + 6 + 4 + 7$, $0.6 + 0.7 + 0.4$, or $2,056 + 44$)

Written Addition

- Use column addition to add two or three whole numbers with up to 5 digits
- Use column addition to add any pair of two-place decimal numbers including amounts of money.
- Begin to add related fractions using equivalences. (E.g. $\frac{1}{2} + \frac{1}{6} = \frac{3}{6} + \frac{1}{6}$)
- Choose the most efficient method in any given situation

$$\begin{array}{r} 347 \\ + 286 \\ \hline 495 \\ \hline 1128 \\ \hline \end{array}$$

	£ 14.64
+	£ 28.78
	£ 12.26
	£ 55.68
	11.1

- Add fractions with unlike denominators, *e.g.* $\frac{3}{4} + \frac{1}{3} = 1 \frac{1}{12}$ or $\frac{13}{12}$

$$2 \frac{1}{4} + 1 \frac{1}{3} = 3 \frac{7}{12}$$

Y6

Mental Addition

- Know by heart number bonds to 100 and use these to derive related facts. (E.g. $3.46 + 0.54 = 4$)
- Derive quickly and without difficulty, number bonds to 1000
- Add small and large whole numbers where the use of place value or number facts makes the calculation do-able 'in our heads'. (E.g. $34,000 + 8000$.)
- Add multiples of powers of ten and near multiples of the same. (E.g. $6345 + 199$.)
- Add negative numbers in a context such as temperature where the numbers make sense.
- Add two 1-place decimal numbers or two 2-place decimal numbers less than 1 (E.g. $4.5 + 6.3$ or $0.74 + 0.33$)
- Add positive numbers to negative numbers, e.g. calculate a rise in temperature, or continue a sequence beginning with a negative number

Written Addition

- Use column addition to add numbers with up to 5 digits.
- Use column addition to add decimal numbers with up to 3-digits

$$\begin{array}{r} 7648 \\ + 1486 \\ \hline 9134 \\ 111 \end{array}$$

$$\begin{array}{r} 6584 \\ + 5848 \\ \hline 12432 \\ 111 \end{array}$$

$$\begin{array}{r} 42 \\ 6432 \\ 786 \\ 3 \\ + 4681 \\ \hline 11944 \\ 121 \end{array}$$

$\begin{array}{r} \text{£ } 14.64 \\ + \text{£ } 28.78 \\ \hline \text{£ } 12.26 \\ \hline \text{£ } 55.68 \\ 111 \end{array}$
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- Add mixed numbers and fractions with different denominators.

e.g. $\frac{3}{4} + \frac{1}{3} = 1 \frac{1}{12}$ or $\frac{13}{12}$
 $2 \frac{1}{4} + 1 \frac{1}{3} = 3 \frac{7}{12}$

Progression in Subtraction



Y3

Mental Subtraction

By the end of the year the majority of children should be able to:-

- Know pairs with each total to 20
- Subtract any two 2-digit numbers
- Perform place value subtractions without a struggle. (E.g. $536 - 30 = 506$, etc.)
- Subtract 2-digit numbers from numbers >100 by counting up. (E.g. $143 - 76$ is done by starting at 76, add 4 (80) then add 20 (100) then add 43 making the difference a total of 67)
- Subtract multiples and near multiples of 10 and 100
- Subtract, when appropriate, by counting back or taking away, using place value and number facts.
- Find change from £1, £5 and £10.

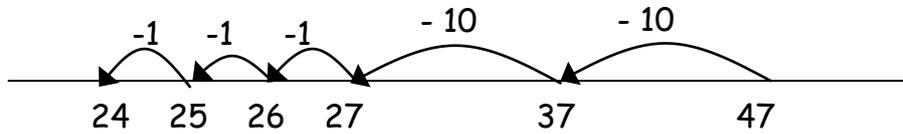
Written Calculation

- Children will begin to use empty number lines to support calculations.

- **Counting back**

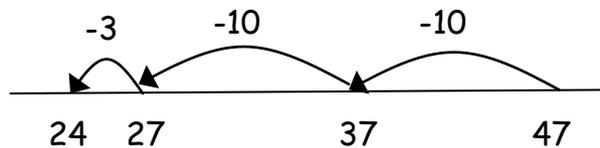
- First counting back in tens and ones.

$$47 - 23 = 24$$



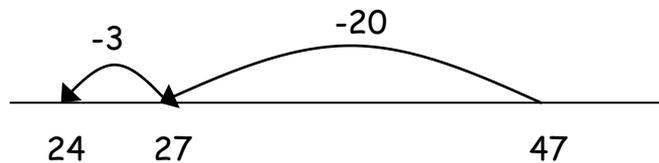
- Then helping children to become more efficient by subtracting the units in one jump (by using the known fact $7 - 3 = 4$).

$$47 - 23 = 24$$



- Subtracting the tens in one jump and the units in one jump.

$$47 - 23 = 24$$

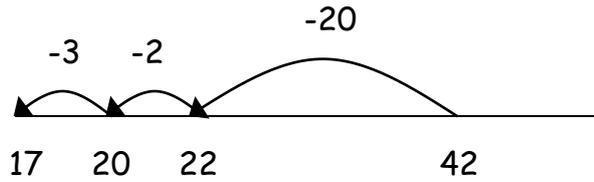


This may be accompanied with informal jottings;

$$47 - 20 = 27 - 3 = 24$$

Bridging through ten can help children become more efficient.

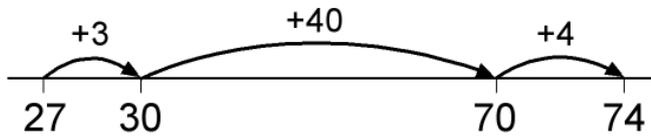
$$42 - 25 = 17$$



Counting up Method

If the numbers involved in the calculation are close together or near to multiples of 10, 100 etc, it can be more efficient to count on.

$$74 - 27 =$$



Begin to subtract like fractions. (E.g. $\frac{7}{8} - \frac{3}{8}$)

Y4

Mental subtraction

By the end of the year the majority of children should be able to:-

- Subtract any two 2-digit numbers
- Know by heart/quickly derive number bonds to 100
- Perform place value subtractions without a struggle. (E.g. $4736 - 706 = 4030$, etc.)
- Subtract multiples and near multiples of 10, 100 and 100
- Subtract by counting up. (E.g. $503 - 368$ is done by adding: $368 + 2 + 30 + 100 + 3$ so we added 135)
- Subtract, when appropriate, by counting back or taking away, using place value and number facts.
- Subtract £1, 10p, 1p from amounts of money
- Find change from £10, £20 and £50.

Written subtraction

Use expanded column subtraction for 3-digit and 4-digit numbers

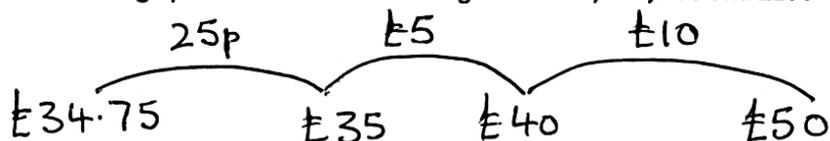
Expanded column subtraction

$$\begin{array}{r} 600 \quad 110 \quad 16 \\ \cancel{700} \quad \cancel{20} \quad \cancel{8} \\ - 300 \quad 50 \quad 8 \\ \hline 300 \quad 60 \quad 8 \end{array}$$

Begin to use compact column subtraction

$$\begin{array}{r} 6 \quad 11 \quad 16 \\ \cancel{7} \quad \cancel{2} \quad \cancel{8} \\ - 3 \quad 5 \quad 8 \\ \hline 3 \quad 6 \quad 8 \end{array}$$

Use counting up subtraction to find change from £10, £20, £50 and £100



Children should:

- be able to subtract numbers with different numbers of digits;
- using this method, children should also begin to find the difference between two three-digit sums of money, with or without 'adjustment' from the pence to the pounds;
- know that decimal points should line up under each other.

For example:

$$\begin{array}{r} 8.85 \\ - 4.38 \\ \hline 4.47 \end{array}$$

- Use complementary addition to subtract amounts of money, and for subtractions where the larger number is a near multiple of 1000 or 100

E.g. 2002 - 1865 is

$$\begin{array}{ccccccc} & +5 & & +30 & & +102 & = 137 \\ \hline 1865 & 1870 & & 1900 & & & 2002 \end{array}$$

- Subtract like fractions, e.g. $\frac{1}{4} + \frac{1}{8} = \frac{3}{8}$
- Use fractions that add to 1 to find fraction complements to 1, e.g. $1 - \frac{2}{3} = \frac{1}{3}$

Y5

Mental Subtraction

By the end of the year the majority of children should be able to:-

- Subtract numbers with two significant digits only, using mental strategies. (E.g. $6.2 - 4.5$ or $72,000 - 47,000$)
- Subtract one or two-digit multiples of 100, 1000, 10,000 and 100,000. (E.g. $8000 - 3000$ or $600,000 - 200,000$)
- Subtract one or two digit near multiples of 100, 1000, 10,000 and 100,000 from other numbers. (E.g. $82,472 - 30,004$)
- Subtract decimal numbers which are near multiples of 1 or 10, including money. (E.g. $6.34 - 1.99$ or $£34.59 - £19.95$)
- Use counting up subtraction, with knowledge of number bonds to 10/100 or £1, as a strategy to perform mental subtraction. (E.g. $£10 - £3.45$ or $1000 - 782$]
- Recognise fraction complements to 1 and to the next whole number. (E.g. $1 \frac{2}{5} + \frac{3}{5} = 2$) $4 - 5$

Written Subtraction

- Use compact or expanded column subtraction to subtract numbers with up to 5 digits.
- Use complementary addition for subtractions where the larger number is a multiple or near multiple of 1000.
- Use complementary addition for subtractions of decimals with up to two places incl. amounts of money
- Begin to subtract related fractions using equivalences. (E.g. $\frac{1}{2} - \frac{1}{6} = \frac{2}{6}$)
- Choose the most efficient method in any given situation

$$\begin{array}{r} 0 \ 15 \ 13 \ 1 \ 14 \\ \cancel{1} \ \cancel{0} \ \cancel{3} \ \cancel{1} \ \cancel{4} \\ - \quad 8 \ 5 \ 1 \ 6 \\ \hline 7 \ 8 \ 0 \ 8 \end{array}$$

Y6

Mental Subtraction

By the end of the year the majority of children should be able to:-

- Use number bonds to 100 to perform mental subtraction of any pair of integers by complementary addition. (E.g. $1000 - 654$ as $46 + 300$ in our heads)
- Use number bonds to 1 and 10 to perform mental subtraction of any pair of one-place or two-place decimal numbers using complementary addition and including money. (E.g. $10 - 3.65$ as $0.35 + 6$, $£50 - £34.29$ as $71p + £15$)
- Use number facts and place value to perform mental subtraction of large numbers or decimal numbers with up to two places. (E.g. $467,900 - 3,005$ or $4.63 - 1.02$)
- Subtract multiples of powers of ten and near multiples of the same.
- Subtract negative numbers in a context such as temperature where the numbers make sense.

Written Subtraction

- Use column subtraction to subtract numbers with up to 6 digits.
- Use complementary addition for subtractions where the larger number is a multiple or near multiple of 1000 or 10,000.
- Use complementary addition for subtractions of decimal numbers with up to three places including money.
- Subtract mixed numbers and fractions with different denominators.

$$\begin{array}{r} 214 \quad 715 \\ \cancel{2} \quad \cancel{1} \quad 6 \quad \cancel{7} \quad \cancel{1} \\ - 164 \quad 58 \\ \hline 182 \quad 27 \end{array}$$

Subtracting fractions with unlike denominators, e.g. $1\frac{1}{4} - \frac{2}{3}$ as $1\frac{3}{12} - \frac{8}{12}$
or $\frac{15}{12} - \frac{8}{12} = \frac{7}{12}$

Children should be encouraged to approximate their answers before calculating. Children should be encouraged to check their answers after calculation using an appropriate strategy.

Children should be encouraged to consider if a mental calculation would be appropriate before using written methods.

+ - + - + - + - + - +

Progression in Multiplication

x

Y3

Mental Multiplication

By the end of the year the majority of children should be able to:-

- Know by heart all the multiplication facts in the 2x, 3x, 4x, 5x, 8x and 10x tables
- Multiply whole numbers by 10 and 100
- Recognise that multiplication is commutative
- Use place value and number facts in mental multiplication. (E.g. 30×5 is 15×10)
- Partition teen numbers to multiply by a single-digit number. (E.g. 3×14 as 3×10 and 3×4)
- Double numbers up to 50
- **Scaling**

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



5 cm



20 cm

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

$$\square \times 5 = 20$$

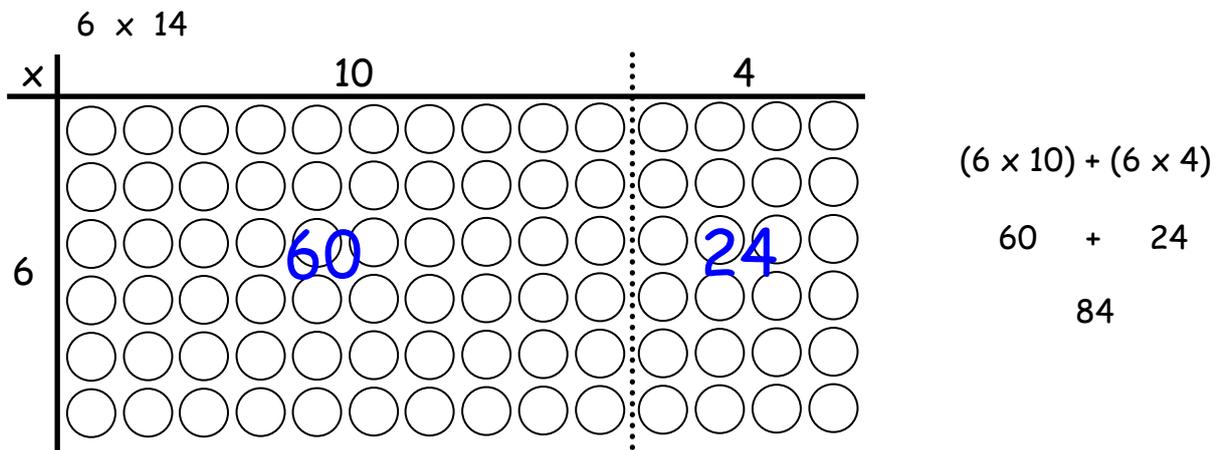
$$3 \times \triangle = 18$$

$$\square \times 8 = 32$$

Written Multiplication

- Children will progress from using arrays and partitioning leading to the grid method of multiplication.

This can be used as a model by teachers:



Grid method

$$23 \times 8$$

Children should be encouraged to approximate first

23 x 8 is approximately 25 x 8 = 200

$$\begin{array}{r} \times \quad 20 \quad 3 \\ 8 \quad \boxed{160} \quad \boxed{24} = \underline{184} \end{array}$$

Y4

Mental Multiplication

By the end of the year the majority of children should be able to:-

- Know by heart all the multiplication facts up to 12×12 .
- Recognise factors up to 12 of two-digit numbers.
- Multiply whole numbers and one-place decimals by 10, 100, 1000
- Multiply multiples of 10, 100, 1000 by single digit numbers. (E.g. 300×6 or 4000×8)
- Use understanding of place value and number facts in mental multiplication. (E.g. 36×5 is half of 36×10 and $50 \times 60 = 3000$)
- Partition 2-digit numbers to multiply by a single-digit number mentally. (E.g. 4×24 as 4×20 and 4×4)
- Multiply near multiples using rounding. (E.g. 33×19 as $33 \times 20 - 33$)
- Find doubles to double 100 and beyond using partitioning
- Begin to double amounts of money. (E.g. $\pounds 35.60$ doubled = $\pounds 71.20$.)

Written Multiplication

- Use a vertical written method to multiply a one-digit by a 3-digit number (ladder)
- Use vertical written algorithm to multiply 3- digit numbers by 1-digit numbers.

$$\begin{array}{r} 253 \\ \times 6 \\ \hline 1518 \end{array}$$

- Use an efficient written method to multiply a 2-digit number by a number between 10 and 20 by partitioning (grid method)

$$72 \times 38$$

Children will approximate first

72×38 is approximately $70 \times 40 = 2800$

$$\begin{array}{r} \times \quad 70 \quad 2 \\ 30 \quad \boxed{2100} \quad \boxed{60} \quad 2160 \\ 8 \quad \boxed{560} \quad \boxed{16} \quad \underline{576} \\ \underline{2736} \\ 1 \end{array}$$

Y5

Mental Multiplication

By the end of the year the majority of children should be able to:-

- Know by heart all the multiplication facts up to 12×12 .
- Multiply whole numbers and one-and two-place decimals by 10, 100, 1000, 10,000
- Use knowledge of factors and multiples in multiplication. (E.g. 43×6 is double 43×3 , and 28×50 is $\frac{1}{2}$ of $28 \times 100 = 1400$)
- Use knowledge of place value and rounding in mental multiplication. (E.g. 67×199 as $67 \times 200 - 67$)
- Use doubling and halving as a strategy in mental multiplication. (E.g. $58 \times 5 =$ half of 58×10 , and 34×4 is 34 doubled twice)
- Partition 2-digit numbers, including decimals, to multiply by a single-digit number mentally. (E.g. 6×27 as 6×20 (120) plus 6×7 (42) making 162 or 6.3×7 as 6×7 plus 0.3×7)
- Double amounts of money by partitioning. (E.g. £37.45 doubled = £37 doubled (£74) plus 45p doubled (90p) £74.90)

Written Multiplication

- Use short multiplication to multiply a 1-digit number by a number with up to 4 digits

$$\begin{array}{r} 253 \\ \times 6 \\ \hline 1518 \end{array}$$

- Long multiplication of 2-digit, 3-digit and 4-digit numbers by a number between 11 and 20

$$\begin{array}{r} 56 \\ \times 27 \\ \hline 392 \\ 1120 \\ \hline 1512 \end{array}$$

- Also multiplication of numbers with up to 2 decimal places by single digit numbers using the grid method.
- Choose the most efficient method in any given situation
- Find simple percentages of amounts e.g. 10%, 5%, 20%, 155 and 50%)
- Begin to multiply fractions and mixed numbers by whole numbers ≤ 10 , e.g. $4 \times \frac{2}{3} = \frac{8}{3} = 2\frac{2}{3}$.

N.B. Grid multiplication provides a default method for ALL children.

Y6

Mental Multiplication

By the end of the year the majority of children should be able to:-

- Know by heart all the multiplication facts up to 12×12 .
- Multiply whole numbers and decimals with up to three places by 10, 100 or 1000, e.g. $234 \times 1000 = 234,000$ and $0.23 \times 1000 = 230$
- Identify common factors, common multiples and prime numbers and use factors in mental multiplication. (E.g. 326×6 is 652×3 which is 1956)
- Use place value and number facts in mental multiplication. (E.g. $40,000 \times 6 = 240,000$ and $0.03 \times 6 = 0.18$)
- Use doubling and halving as mental multiplication strategies, including to multiply by 2, 4, 8, 5, 20, 50 and 25 (E.g. 28×25 is $\frac{1}{4}$ of $28 \times 100 = 700$)
- Use rounding in mental multiplication. (34×19 as $(20 \times 34) - 34$)
- Multiply one and two-place decimals by numbers up to and including 10 using place value and partitioning. (E.g. 3.6×4 is $12 + 2.4$ or 2.53×3 is $6 + 1.5 + 0.09$)
- Double decimal numbers with up to 2 places using partitioning
- e.g. *36.73 doubled is double 36 (72) plus double 0.73 (1.46)*

Written Multiplication

- Use short multiplication to multiply a 1-digit number by a number with up to 4 digits
- Use long multiplication to multiply a 2-digit by a number with up to 4 digits

286×29 is approximately $300 \times 30 = 9000$.

$$\begin{array}{r} 286 \\ \times 29 \\ \hline 2574 \\ 5720 \\ \hline 8294 \\ 1 \end{array}$$

- Use short multiplication to multiply a 1-digit number by a number with one or two decimal places, including amounts of money.
- Multiply fractions and mixed numbers by whole numbers.
- Multiply fractions by proper fractions.
- Use percentages for comparison and calculate simple percentages.

Progression in Division



YR 3

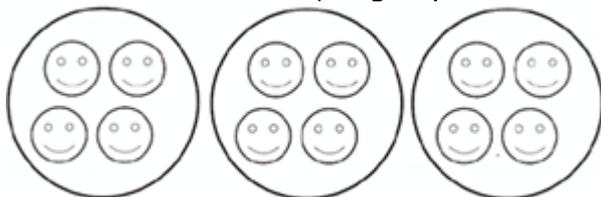
Mental Division

- Know by heart all the division facts derived from the 2x, 3x, 4x, 5x, 8x and 10x tables.
- Divide whole numbers by 10 or 100 to give whole number answers
- Recognise that division is not commutative.
- Use place value and number facts in mental division. (E.g. $84 \div 4$ is half of 42)
- Divide larger numbers mentally by subtracting the tenth multiple, including those with remainders. (E.g. $57 \div 3$ is $10 + 9$ as $10 \times 3 = 30$ and $9 \times 3 = 27$)
- Halve even numbers to 100, halve odd numbers to 20

Written Division

- Perform divisions just above the 10th multiple using the written layout and understanding how to give a remainder as a whole number.
- Find unit fractions of quantities and begin to find non-unit fractions of quantities

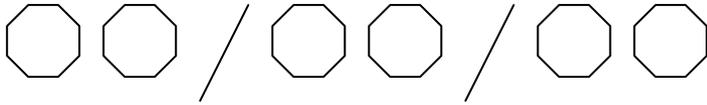
Children understand equal groups and share items out in problem solving.



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

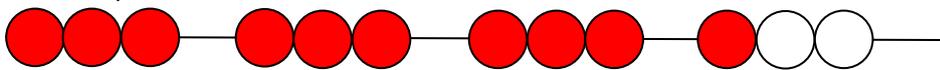
✓ **Grouping or repeated subtraction**

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



✓ **Repeated subtraction using a bead bar**

The bead bar will help children with interpreting division calculations such as $12 \div 3$ as 'how many 3s make 12?'

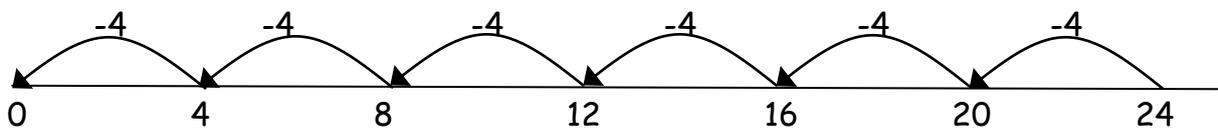


Ensure that the emphasis in Y3 is on grouping rather than sharing.

✓ **Repeated subtraction using a number line**

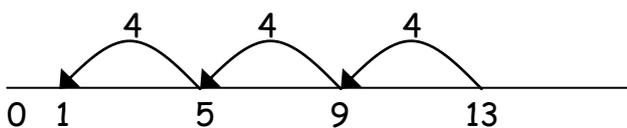
Children will use an empty number line to support their calculation.

$$24 \div 4 = 6$$



Children should also move onto calculations involving remainders.

$$13 \div 4 = 3 \text{ r } 1$$



- Perform divisions just above the 10th *multiple using the written layout and understanding how to give a remainder as a whole number.*
- Find unit fractions of quantities and begin to find non-unit fractions of quantities
- Using symbols to stand for unknown numbers to complete equations using inverse operations

$$26 \div 2 = \square$$

$$24 \div \triangle = 12$$

$$\square \div 10 = 8$$

Y4

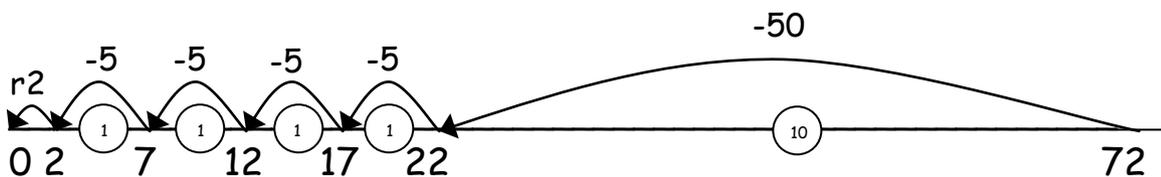
Mental Division

By the end of the year the majority of children should be able to:-

- Know by heart all the division facts up to $144 \div 12$.
- Divide whole numbers by 10, 100 to give whole number answers or answers with one decimal place
- Divide multiples of 100 by 1-digit numbers using division facts. (E.g. $3200 \div 8 = 400$)
- Use place value and number facts in mental division. (E.g. $245 \div 20$ is double $245 \div 10$)
- Divide larger numbers mentally by subtracting the 10th or 20th multiple as appropriate. (E.g. $156 \div 6$ is $20 + 6$ as $20 \times 6 = 120$ and $6 \times 6 = 36$)
- Find halves of even numbers to 200 and beyond using partitioning
- Begin to halve amounts of money. (E.g. Half of $\pounds 52.40 = \pounds 26.20$)

Written Division

- Use a written method to divide a 2-digit or a 3-digit number by a single-digit number.
- Give remainders as whole numbers.
- Children will continue to develop their use of repeated subtraction to be able to subtract multiples of the divisor. Initially, these should be multiples of 10s, 5s, 2s and 1s - numbers with which the children are more familiar.



Children will then progress to 'the Chunking Method'.

e.g. $196 \div 6 =$

$$\begin{array}{r} 6 \overline{)196} \\ - 180 \quad 6 \times 30 \\ \hline 16 \\ - 12 \quad 6 \times 2 \\ \hline 4 \quad 32 \\ \text{Answer:} \quad 32 \text{ R}4 \end{array}$$

- Introduction to compact for those who have understanding

$$\begin{array}{r} 1264 \\ 6 \overline{) 7153824} \end{array}$$

N.B. Chunking division provides a default method for ALL children.

- Begin to reduce fractions to their simplest forms.
- Find unit and non-unit fractions of larger amounts.

Y5

Mental Division

- Know by heart all the division facts up to $144 \div 12$.
- Divide whole numbers by 10, 100, 1000, 10,000 to give whole number answers or answers with 1, 2 or 3 decimal places
- Use doubling and halving as mental division strategies. (E.g. $34 \div 5$ is $(34 \div 10) \times 2$)
- Use knowledge of multiples and factors, also tests for divisibility, in mental division. (E.g. $246 \div 6$ is $123 \div 3$ and we know that 525 divides by 25 and by 3)
- Halve amounts of money by partitioning. (E.g. Half of £75.40 = half of £75 (37.50) plus half of 40p (20p) which is £37.70)
- Divide larger numbers mentally by subtracting the 10th or 100th multiple as appropriate. (E.g. $96 \div 6$ is $10 + 6$, as $10 \times 6 = 60$ and $6 \times 6 = 36$; $312 \div 3$ is $100 + 4$ as $100 \times 3 = 300$ and $4 \times 3 = 12$)
- Reduce fractions to their simplest form.

Written Division

- Use short division to divide a number with up to 4 digits by a number ≤ 12 .
- Give remainders as whole numbers or as fractions.
- Find non-unit fractions of large amounts.
- Turn improper fractions into mixed numbers and vice versa.
- Choose the most efficient method in any given situation

Chunking method:

$$196 \div 6 =$$

$$\begin{array}{r} 6 \overline{)196} \\ -180 \quad 6 \times 30 \\ \hline 16 \\ -12 \quad 6 \times 2 \\ \hline 4 \quad 32 \\ \text{Answer:} \quad 32 \text{ R}4 \end{array}$$

Short division of 3-digit numbers by single-digit numbers.

$$\begin{array}{r} 1 \ 2 \ 6 \ 4 \\ 6 \overline{)7 \ 15 \ 38 \ 24} \end{array}$$

N.B. Chunking division provides a default method for ALL children.

- Short division with decimals

$$\begin{array}{r} 07.8 \\ 5 \overline{)39.40} \end{array}$$

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Mental Division

- Know by heart all the division facts up to $144 \div 12$.
- Divide whole numbers by powers of 10 to give whole number answers or answers with up to three decimal places.
- Identify common factors, common multiples and prime numbers and use factors in mental division. (E.g. $438 \div 6$ is $219 \div 3$ which is 73)
- Use tests for divisibility to aid mental calculation.
- Use doubling and halving as mental division strategies, e.g. to divide by 2, 4, 8, 5, 20 and 25. (E.g. $628 \div 8$ is halved three times: 314, 157, 78.5)
- Divide one and two place decimals by numbers up to and including 10 using place value. (E.g. $2.4 \div 6 = 0.4$ or $0.65 \div 5 = 0.13$, $\pounds 6.33 \div 3 = \pounds 2.11$)
- Halve decimal numbers with up to 2 places using partitioning
- e.g. Half of 36.86 is half of 36 (18) plus half of 0.86 (0.43)
- Know and use equivalence between simple fractions, decimals and percentages, including in different contexts.
- Recognise a given ratio and reduce a given ratio to its lowest terms.

Written Division

- Use short division to divide a number with up to 4 digits by a 1-digit or a 2-digit number
- Use long division to divide 3-digit and 4-digit numbers by 'friendly' 2-digit numbers.
- Give remainders as whole numbers or as fractions or as decimals
- Divide a one-place or a two-place decimal number by a number ≤ 12 using multiples of the divisors.
- Divide proper fractions by whole numbers.

Long division HTU \div TU

$$\begin{array}{r} 23 \\ 24 \overline{) 560} \\ \underline{-48} \\ 80 \\ \underline{-72} \\ 8 \end{array} \quad \text{Ans} = \underline{23 \text{ r}8}$$

Extend to decimals with up to two decimal places. Children should know that decimal points line up under each other.

$$87.5 \div 7$$

$$\begin{array}{r} 12.5 \\ 7 \overline{) 87.5} \end{array}$$

$$\text{Answer} = \underline{12.5}$$

N.B. Chunking division provides a default method for ALL children.

Children should be encouraged to approximate their answers before calculating. Children should be encouraged to check their answers after calculation using an appropriate strategy.

Children should be encouraged to consider if a mental calculation would be appropriate before using written methods.

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