

Ashbrook Junior Calculation Policy



September 2019

Ashbrook Junior School Policy for Progression in Calculations

September 2019

Aims

When children leave our school they will:

- ◆ have secure knowledge of number facts and a good understanding of the four operations;
- ◆ be able to use the above to calculate mentally, choosing appropriate strategies and making use of jottings and diagrams to support their thinking;
- ◆ be able to use an efficient written method for each operation with confidence and understanding;
- ◆ be equipped to decide when best to use a mental, written or calculator method based on the knowledge that they are in control of this choice as they are able to carry out all three methods with confidence.

Each year group's policy is relevant to age related expectations but it is the responsibility of the class teacher to decide if children are ready to move on to the next stage in each process (meaning to consolidate what has come before, not to move past their own age group).

Some children, in particular those with Special Educational Needs, may be working at a stage below that expected for their age. There will also be children, in particular those identified as being gifted in mathematics, who are working at a stage above that expected for their age.

In all cases, it is our intention that children make progress appropriate to their ability.

Related Teaching

Calculations for all operations need to be taught alongside:

- ◆ developing a secure understanding of place value for whole numbers and decimals;
- ◆ developing knowledge and recall of number facts, especially times tables and related division facts (2, 5 and 10 in Year 2, up to 12 x 12 in Year 4);
- ◆ making reasonable estimates and checking answers;
- ◆ using and applying calculations to a range of word problems and investigations.

Written August 2019

To be reviewed August 2021

Year 3 Multiplication

Statutory requirements:

- 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.

Common mental calculation strategies:

Using doubling to connect 2, 4 and 8 multiplication tables

Develop efficiency with the commutative law

Partitioning: multiply tens first then units

Estimate before calculating

Partitioning and recombining (using distributive law) –

$$57 \times 6$$

$$50 \times 6 = 300$$

$$7 \times 6 = 42$$

$$300 + 42 = 342$$

$$57 \times 6 = 342$$

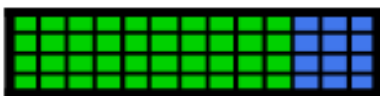
Formal written method:

Children begin to work towards the formal column method using one digit multipliers.

If I know $10 \times 8 = 80$ then ...



So $13 \times 4 = 10 \times 4 + 3 \times 4$



$$\begin{array}{r} 243 \\ \times 6 \\ \hline 1458 \\ \hline 1 \end{array}$$

Links to other strands:

- Solve problems, including missing number problems, involving multiplication, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.
- The comparison of measures includes simple scaling by integers (for example, a given quantity or measure is twice as long or five times as high).
- Pupils now use multiples of 2, 3, 4, 5, 8, 10, 50 and 100.
- Pupils understand and use simple scales in pictograms and bar charts with increasing accuracy (e.g. 2, 5, 10 units per cm).
- Recognise and show, using diagrams, equivalent fractions with small denominators.

Year 3 Division

Statutory requirements:

- 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.

Mental calculation strategy:

Continue to practise mental recall of multiplication tables, using commutative and associative laws and known facts

Distribution laws

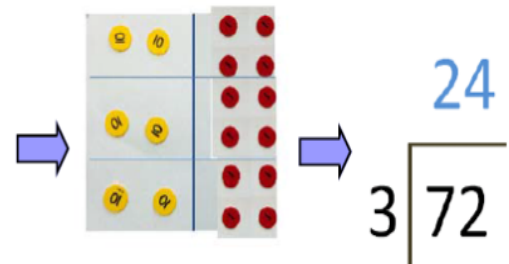
$$36 \div 3 = 12$$

$$30 \qquad 6$$

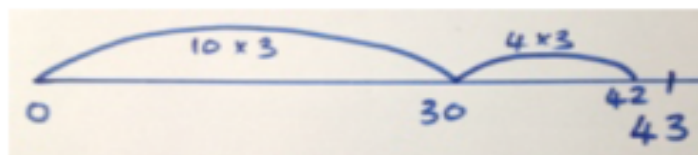
$$30 \div 3 = 10 \qquad 6 \div 3 = 2$$

"4 x 3 is 12, so
12 ÷ 3 = 4."

How could I
calculate $72 \div 3$?



Grouping using partitioning
 $43 \div 3$ If I know $10 \times 3 \dots$



Links to other strands:

- Pupils solve simple problems in contexts, including measuring and scaling contexts (e.g. four times as high etc.) and correspondence problems.
- Recognise that tenths arise from dividing an object into 10 equal parts and in dividing one digit numbers or quantities by 10.
- Recognise and show, using diagrams, equivalent fractions with small denominators.
- Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.

Year 3 Addition

Statutory requirements:

- Add and subtract numbers mentally including a three-digit number and ones, three-digit number and tens, three-digit number and hundreds.
- Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction.

Common mental calculation strategies:

Partitioning and recombining

Doubles and near doubles

Use number pairs to 10 and 100

Adding near multiples of 10 and adjusting

Using known number facts

Using patterns of similar calculations

Bridging through tens and hundreds

Add numbers mentally, including:

- a three-digit number and ones
- a three-digit number and tens
- a three digit number and hundreds
- Partition all numbers and recombine, start with TU + TU then HTU + TU
- Use straws, dienes, place value counters, empty number lines

$$\begin{array}{r} 30 + 4 \\ 20 + 5 \\ \hline 50 + 9 \end{array} \quad \longrightarrow \quad \begin{array}{r} 34 \\ +25 \\ \hline 59 \end{array}$$

$$\begin{array}{r} 200 + 30 + 4 \\ 600 + 20 + 7 \\ 700 + 60 + 1 \\ 10 \\ \hline 234 \\ + 527 \\ \hline 761 \\ 1 \end{array}$$

Formal written method:

Add to three digit numbers using physical and abstract representations.

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

$$\begin{array}{r} 423 \\ + 88 \\ \hline 511 \\ \hline 11 \end{array}$$

Links to other strands:

- Pupils should estimate the answers to a calculation and use inverse operations to check answers.
- Add amounts of money using both £ and p in practical contexts.
- Measure, compare and add lengths (m/cm/mm), mass (g/kg) and volume/ capacity (ml/l)
- Addition of fractions with the same denominator within one.

Year 3 Subtraction

Statutory requirements:

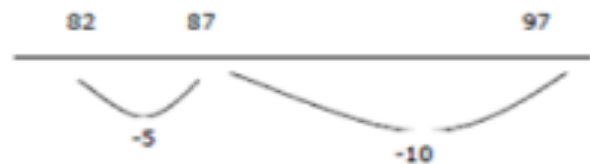
- Add and subtract numbers mentally including a three-digit number and ones, three-digit number and tens, three-digit number and hundreds.
- Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction.

Common mental calculation strategies:

Use number lines, dienes, hundred squares, two hundred squares and similar representations to support mental calculations.

Use known number facts and place value to subtract

Continue as in Year 2 but with appropriate numbers e.g. $97 - 15 = 72$

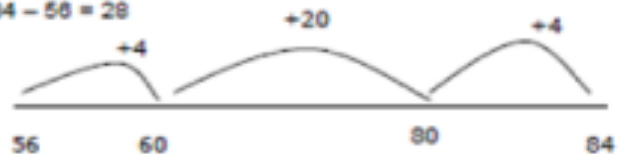


With practice, children will need to record less information and decide whether to count back or forward. It is useful to ask children whether counting up or back is the more efficient for calculations such as $57 - 12$, $86 - 77$ or $43 - 28$.

Pencil and paper procedures

Complementary addition

$$84 - 56 = 28$$



(1) Extended columnar - no exchange

Extended method, $87 - 53 =$

$$\begin{array}{r} 80 \text{ and } 7 \\ - 50 \text{ and } 3 \\ \hline 30 \text{ and } 4 = 34 \end{array}$$

(2) Extended columnar - with exchange:

$87 - 58$ becomes

$$\begin{array}{r} 70 + 17 \\ - 50 + 8 \\ \hline 20 + 9 \end{array}$$

Formal written method:

Subtract numbers with up to three digits, using formal written methods of columnar addition.

$$\begin{array}{r} 2 \quad 3 \quad 1 \\ \cancel{3} \cancel{4} \cancel{4} \\ - 187 \\ \hline 157 \end{array}$$

Links to other strands:

- Count up and down in tenths.
- Add and subtract fractions within the same denominator within one.
- Money and calculating duration of events (with number lines).

Year 4 Multiplication

Statutory requirements:

- Recall multiplication and division facts for multiplication tables up to 12×12 .
- Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.
- Solve problems involving multiplying and adding.

Common mental calculation strategies:

Recall facts up to 12×12

Use place value and known facts to multiply and divide mentally e.g. 20×30 can be derived from 2×3

Partitioning: multiply tens first then units

Estimate before calculating

Recognise and use factor pairs and commutatively

Partitioning and recombining (using distributive law) –

$$57 \times 6$$

$$50 \times 6 = 300$$

$$7 \times 6 = 42$$

$$300 + 42 = 342$$

$$57 \times 6 = 342$$

$$\begin{array}{r} 342 \\ \times \quad 7 \\ \hline 2394 \\ \\ \\ \hline 21 \end{array}$$
$$\begin{array}{r} 243 \\ \times \quad 6 \\ \hline 1458 \\ \\ \\ \hline 1 \end{array}$$

Formal written method:

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

Links to other strands:

- 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.
- Convert between different units of measurement e.g. km to m
- Relate area to arrays and multiplication.
- Understand the relation between non-unit fractions and multiplication/ division of quantities, with particular emphasis on tenths and hundredths.
- Problem solving word can involve finding all possibilities and combinations drawing on knowledge of multiplication tables facts.

Year 4 Division

Statutory requirements:

- Recall multiplication and division facts for multiplication tables up to 12 x 12.

Mental calculation strategy:

Recall multiplication and division facts for multiplication tables up to 12 x 12

Recognise and use factor pairs and commutativity in mental calculations

Distribution laws

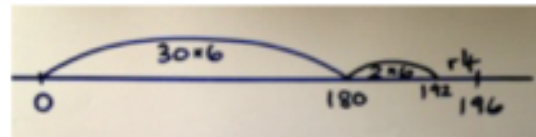
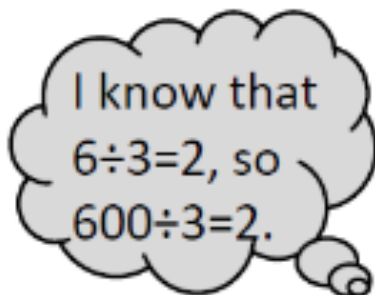
$$36 \div 3 = 12$$

$$30 \qquad 6$$

$$30 \div 3 = 10 \quad 6 \div 3 = 2$$

"4 x 3 is 12, so
 $12 \div 3 = 4$."

'Chunking up' on a number line
 $196 \div 6 = 32 \text{ r } 4$



$$\begin{array}{r} 32 \\ 6 \overline{) 192} \end{array}$$

$$192 \div 6 = 32$$

Formal written method:

Begin to introduce the formal written method of short division and interpret remainders appropriately for the context.

Links to other strands:

- Convert between different units of measure e.g. km to m, hour to minute.
- Estimate, compare and calculate different measures, including money in pounds and pence.
- Recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.
- Recognise and show, using diagrams, families of common equivalent fractions.
- Recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.
- Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number.
- Find the effect of dividing a one or two digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths.

Year 4 Addition

Statutory requirements:

- Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate.
- Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.

Common mental calculation strategies:

Partitioning and recombining

Doubles and near doubles

Use number pairs to 10 and 100

Adding near multiples of 10 and adjusting

Using known number facts

Bridging through tens and hundreds

Partitioning and recombining – $12462 + 2300$

$$12462 + 2000 = 14462$$

$$14462 + 300 = 14762$$

$12.7 + 23.5$ becomes $12 + 23$ and $.7 + .5$.

$$12 + 23 = 35 \quad .7 + .5 = 1.2 \quad 35 + 1.2 = 36.2$$

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7	9	4	8	
1	2	2	3	+
<hr/>				
9	1	7	1	
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1		1		

Formal written method:

Add three digit numbers using columnar method and then move on to four digits. Include decimal addition for money.

Links to other strands:

- Estimate and use inverse operations to check answers.
- Solve addition and subtraction two step problems in context, deciding which operations and methods to use and why.
- Identify, represent and estimate numbers using different representations.
- Recognise the place value of each digit in a four-digit number.
- Estimate, compare and calculate different measures, including amounts of money in £ and p (including fractions and decimals)
- Addition of fractions with the same denominator to become fluent.
- Counting using simple fractions and decimals, both forwards and backwards.

Year 4 Subtraction

Statutory requirements:

- Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate.
- Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.

Common mental calculation strategies:

Find a small difference by counting up e.g.
 $5003 - 4996$

Subtract nearest multiple of ten and adjust

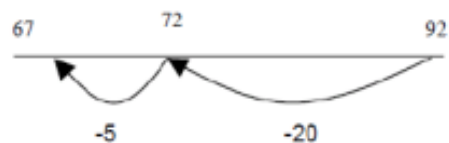
Partition larger numbers

Visualise number lines

This could be done using an empty number line. Children should recall and use number facts to reduce the number of steps.

Use known number facts and place value to subtract

$$92 - 25 = 67$$



$$\begin{array}{r} 1 \\ 2344 \\ - 187 \\ \hline 2157 \end{array}$$

Formal written method:

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

Links to other strands:

- Identify, represent and estimate numbers using different representations.
- Recognise the place value of each digit in a four digit number.
- Estimate and use inverse operations to check answers to a calculation.
- Solve addition and subtraction two-step problems in context, deciding which operations and methods to use and why.
- Estimate, compare and calculate different measures, including money in pounds and pence.
- Add and subtract fractions with the same denominator.

Year 5 Multiplication

Statutory requirements:

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

Informal strategies to support mental calculation:

Multiply and divide drawing on known facts e.g. 50×70 and using 5×7

Multiply and divide whole and decimal numbers by 10, 100 and 1000

Recognise and use square and cube numbers (and notation)

$$24 \times 15 = ?$$

I did: $24 \times 5 = 120$ (half of 24×10), then multiplied 120 by 3 to get 360

I did: $(24 \times 10) + (24 \times 5)$.

$$\begin{array}{r} 243 \\ \times 6 \\ \hline 1458 \\ 1 \end{array}$$
$$\begin{array}{r} 243 \\ \times 36 \\ \hline 1458 \\ 7290 \\ \hline 8748 \\ 1 \end{array}$$

Formal written method:

Multiply numbers up to 4 digits by a one or two digit number using column multiplication.

Links to other strands:

- 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 a prime number and recall prime numbers up to 19.
- Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes, including understanding the meaning of the equals sign.
- Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.
- Use all four operations to solve problems involving measures using decimal notation, including scaling.
- Convert between different units of metric measure; problems including money.
- Multiply proper fractions and mixed numbers by whole numbers.

Year 5 Division

Statutory requirements:

- 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 numbers mentally drawing upon known facts.
- Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.

Informal strategies to support mental calculation:

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

Draw up on known facts, identifying multiples and factors

$$\begin{array}{l} \text{If } 42 \div 6 = 7 \\ \div 10 \qquad \qquad \div 10 \\ \swarrow \qquad \qquad \searrow \\ \text{Then } 4.2 \div 6 = 0.7 \end{array}$$

"I know that the answer to $138 \div 6$ will be close to 20, because $2 \times 6 = 12$, so $20 \times 6 = 120$."

$$\begin{array}{r} 32 \\ 6 \overline{) 192} \\ \underline{18} \\ 12 \\ \underline{12} \\ 0 \end{array}$$

$192 \div 6 = 32$

$432 \div 5$ becomes

$$\begin{array}{r} 86 \text{ r } 2 \\ 5 \overline{) 432} \\ \underline{40} \\ 32 \\ \underline{30} \\ 2 \end{array}$$

Answer: 86 remainder 2

Formal written method:

Divide numbers up to four digits by a one digit number using the formal written method of short division and interpret remainders appropriately for the context.

Links to other strands:

- Pupils use all four operations in problems involving time and money, including conversions using decimal notation, including scaling.
- Calculate and compare the area of rectangles.
- Establish whether a number up to 100 is a prime number and recall prime numbers up to 19.
- Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes, including scaling by simple fractions and problems involving simple rates.
- Recognise and use square numbers and cubed numbers, and the notation for squared and cubed.
- Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.
- Recognise mixed number and improper fractions and convert from one form to another.
- Make connections between percentages, fractions and decimals.

Year 5 Addition

Statutory requirements:

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

Common mental calculation strategies:

Partitioning and recombining

Doubles and near doubles

Use number pairs to 10 and 100

Adding near multiples of 10 and adjusting

Using known number facts

Bridging through ten, hundred, tenth

Partitioning and recombining – $12462 + 2300$

$$12462 + 2000 = 14462$$

$$14462 + 300 = 14762$$

$12.7 + 23.5$ becomes $12 + 23$ and $.7 + .5$.

$$12 + 23 = 35 \quad .7 + .5 = 1.2 \quad 35 + 1.2 = 36.2$$

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7	9	4	8	
1	2	2	3	+
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9	1	7	1	
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1		1		

Formal written method:

Column addition using larger numbers, including a range of digits e.g. $45674 + 3625$ with and without carrying.

Column addition using decimal numbers, including a range of decimal places e.g. $473.47 + 28.2$ with and without carrying.

Links to other strands:

- Solve problems involving up to three decimal numbers.
- Solve addition and subtraction multi step problems in context, deciding which operations and methods to use and why.
- Use all four operations to solve problems involving measures using decimal notation.
- Calculate the perimeter of composite rectilinear squares in cm and m
- Use angle sum facts and other properties to make deductions about missing angles.
- Solve comparison, sum and difference problems using information presented in a line graph.
- Add fractions with the same denominator and denominators that are multiples of the same number.

Year 5 Subtraction

Statutory requirements:

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

Common mental calculation strategies:

Find differences by counting up

Partitioning

Applying known number facts

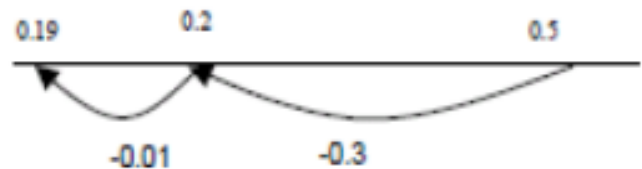
Bridging through 10 and multiples of 10

Subtracting 9, 11 etc. by compensating

Visualising number lines

Using known number facts

Use known number facts and place value to subtract
 $0.5 - 0.31 = 0.19$



$$\begin{array}{r}
 2 \quad 1 \quad 1 \\
 5 \quad 2 \quad 4 \quad 4 \\
 - 1 \quad 1 \quad 8 \quad 7 \\
 \hline
 5 \quad 1 \quad 1 \quad 5 \quad 7
 \end{array}$$

$$\begin{array}{r}
 \pounds 2 \\
 17.34 \\
 - 12.16 \\
 \hline
 5.18
 \end{array}$$

Formal written method:

Subtract whole numbers with more than four digits using formal columnar method.

Subtract decimal numbers using columnar method where appropriate.

Links to other strands:

- Subtract fractions with the same denominator and denominators that are multiples of the same number.
- Solve problems involving numbers up to three decimal places.
- Mentally add and subtract tenths, and one-digit whole numbers and tenths.
- Solve addition and subtraction multi step problems in context, deciding which operations and methods to use and why.
- Use all four operations to solve problems involving measures using decimal notation.

Year 6 Multiplication

Statutory requirements:

- Multiply multi-digit numbers by up to 4 digits by a two digit whole number using the formal written method of long multiplication.
- Perform mental calculations, including with mixed operations and large numbers.
- Solve problems involving addition, subtraction, multiplication and division.
- Multiply one-digit numbers with up to two decimal places by whole numbers.

Informal strategies to support mental calculation:

X 4 - double and double again

X 5 – x 10 and half it

X 20 – x 10 and double it

X 9 – x 10 and adjust

X 6 – x 3 then double

How many different \times/\div facts can you make using 72? 7.2? 0.72?

Children should know the square numbers up to 12×12 & derive the corresponding squares of multiples of 10 e.g. $80 \times 80 = 6400$

$$\begin{array}{r} 243 \\ \times 36 \\ \hline 1458 \\ 7290 \\ \hline 8748 \\ 1 \end{array}$$

$$\begin{array}{r} 5172 \\ \times 38 \\ \hline 41376 \\ + 155160 \\ \hline 196536 \\ 1 \end{array}$$

Formal written method:

Multiply multi-digit numbers up to four digits by a two digit whole number using formal written method of column multiplication.

Links to other strands:

- Identify common factors, common multiples and prime numbers.
- Use their knowledge of the order of operations to carry out calculations involving the four operations.
- Solve problems involving addition, subtraction, multiplication and division.
- Fractions, decimals and percentages including equivalence in context.
- Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts.
- Solve problems involving the calculation of percentages and the use of percentages for comparison.
- Solve problems involving similar shapes where the scale factor is known or can be found.
- Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.
- Algebra
- Measurement – Conversion of units.
- Statistics – Pie charts, calculating mean etc.
- Multiply simple pairs of proper fractions.

Year 6 Division

Statutory requirements:

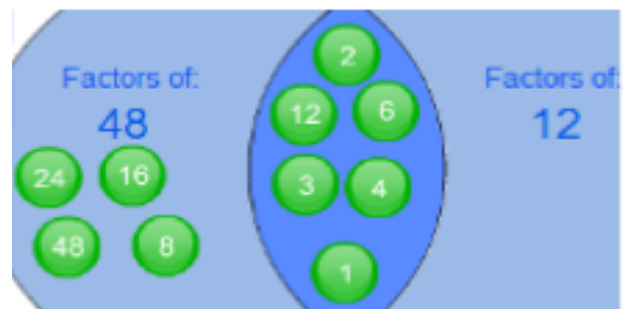
- Divide numbers up to 4 digits by a two digit number using the formal written method of long division, and interpret remainders as whole number remainders, fractions or by rounding, as appropriate for the context.
- Divide numbers up to 4 digits by a two digit number using the formal written method of short division where appropriate, interpreting remainders according to the context.
- Perform mental calculations, including with mixed operations and large numbers.
- Solve problems involving addition, subtraction, multiplication and division.
- Use written division methods in cases where the answer has up to two decimal places.

Informal strategies to support mental calculation:

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

Identify common factors, common multiples and prime numbers

I know that 366 will divide by 6 because it has 2 and 3 as factors



$$\begin{array}{r} 43r5 \\ 13 \overline{) 564} \\ \underline{52} \\ 44 \\ \underline{39} \\ 50 \\ \underline{46} \\ 40 \end{array}$$
$$\begin{array}{r} 43.38... \\ 13 \overline{) 564.00} \\ \underline{52} \\ 44 \\ \underline{39} \\ 50 \\ \underline{46} \\ 40 \end{array}$$

Formal written method:

Divide numbers up to four digits by a two digit whole number using the formal written method of short division where appropriate for the context, interpreting remainders as appropriate.

Links to other strands:

- Pupils are introduced to the division of decimal numbers by one digit whole number, initially, in practical contexts involving measures and money. They recognise division as the inverse of multiplication.
- Pupils develop their skills of rounding and estimating. This includes rounding answers to a specified degree of accuracy and checking the reasonableness of their answers.
- Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate.
- Calculate and interpret the mean as an average.
- Solve problems involving the relative sizes of two quantities where missing values can be found using integer multiplication and division facts.
- Use common factors to simplify fractions.
- Divide proper fractions by whole numbers.
- Associate a fraction with division and calculate decimal fraction equivalents.

Year 6 Addition

Statutory requirements:

- Perform mental calculations, including with mixed operations and large numbers.
- Solve problems involving addition, subtraction, multiplication and division.

Common mental calculation strategies:

Partitioning and recombining

Doubles and near doubles

Use number pairs to 10 and 100

Adding near multiples of 10 and adjusting

Using known number facts

Bridging through ten, hundred, tenth

Partitioning and recombining – $12462 + 2300$

$$12462 + 2000 = 14462$$

$$14462 + 300 = 14762$$

$12.7 + 23.5$ becomes $12 + 23$ and $.7 + .5$.

$$12 + 23 = 35 \quad .7 + .5 = 1.2 \quad 35 + 1.2 = 36.2$$

$$\begin{array}{r} 5127.346 \\ + 2762.823 \\ \hline 7890.169 \\ \hline 11 \end{array}$$

Formal written method:

Column addition using larger numbers, including a range of digits e.g. $45674 + 3625$ with and without carrying.

Column addition using decimal numbers, including a range of decimal places e.g. $473.47 + 28.2$ with and without carrying.

Links to other strands:

- Adding fractions with same and different denominators.
- Solve problems involving all four operations.
- Use their knowledge of the order of operations to carry out calculations involving the four operations.
- Algebra – Use symbols and letters to represent variables and unknowns e.g. $a + b = b + a$
- Using the number line, pupils use, add and subtract positive and negative integers for measures such as temperature.

Written August 2019

To be reviewed August 2021

Year 6 Subtraction

Statutory requirements:

- Perform mental calculations, including with mixed operations and large numbers.
- Solve problems involving addition, subtraction, multiplication and division.

Common mental calculation strategies:

Find differences by counting up

Partitioning

Applying known number facts

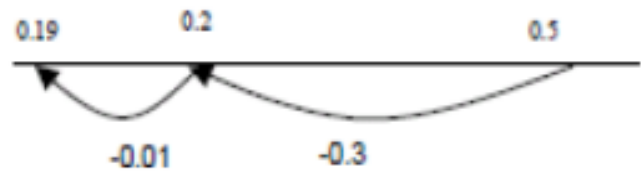
Bridging through 10 and multiples of 10

Subtracting 9, 11 etc. by compensating

Visualising number lines

Using known number facts

Use known number facts and place value to subtract
 $0.5 - 0.31 = 0.19$



$$\begin{array}{r}
 5129 \\
 7\cancel{0}\cancel{0}\cancel{0}15 \\
 - 45537 \\
 \hline
 30768
 \end{array}$$

$$\begin{array}{r}
 7159914 \\
 \cancel{8}\cancel{0}\cancel{0}\cancel{0}. \cancel{1}47 \\
 - 2762.853 \\
 \hline
 5837.694
 \end{array}$$

Formal written method:

Subtract whole numbers with more than four digits using formal columnar method.

Subtract decimal numbers using columnar method where appropriate.

Links to other strands:

- Use their knowledge of the order of operations to carry out calculations involving the four operations.
- Solve problems involving all four operations.
- Algebra: use symbols and letters to represent variable and unknowns.
- Using the number line, pupils use, add and subtract positive and negative integers for measures such as temperatures.
- Add and subtract fractions with different denominators and mixed numbers.