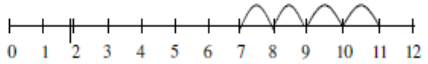





Year 1 Calculation Policy

1) Count to numbers across 100, forwards and backwards, beginning with 0 or 1, or from any given number 2) Count, read and write numbers to 100 in numerals, count in multiples of two, fives and 10 3) Given a number, identify one more or less than 4) Identifies and represents numbers using objects and pictorial expectations including the number line 5) Uses the language of: equal to, more than, less than, most, least 6) Read and write numbers from 1 to 20 in numerals and words. 7) Reads, writes and interprets mathematical statements involving addition (+), subtraction (-) and equals (=) signs 8) Represents and uses number bonds and related subtraction facts within 20 9) Adds and subtracts one-digit and two-digit numbers to 20, including zero 10) Solves one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems 11) Solves one-step problems that involve multiplication and division, by calculating the answer using concrete objects and pictorial representations

Addition	Subtraction	Multiplication	Division
<p>Record simple mental addition using + and =</p> <p>Be able to complete number sentences where a missing number is shown by a symbol.</p> <p style="text-align: center;">$3 + 4 =$</p> <p style="text-align: center;">$3 + \square = 7$</p> <p>Record addition by showing jumps on prepared number lines or moving onto higher numbers with the hundred square:</p> <p>$7 + 4 =$</p>  <p>Teacher models using numbered line or hundred square.</p>	<p>Record simple mental subtractions using - and =</p> <p>Record simple subtractions using pictures / marks: Understand subtraction as take away. Sam has 10p. I take away 4p from him. How much does he have left?</p>   <p>Be able to complete number sentences where a missing number is shown by a symbol.</p> <p style="text-align: center;">$7 - 3 =$</p> <p style="text-align: center;">$7 - \square = 4$</p>	<p>Recall doubles of all the numbers to at least 10 and recall the corresponding halves. Count on or back in 1's, 2's, 5's and 10's</p> <p>Through grouping and sharing small quantities, pupils begin to understand : multiplication and division; doubling numbers and quantities; and finding simple fractions of objects numbers and quantities</p> <p>Solve one step problems involving multiplication and division by calculating the answer using concrete objects, pictorial representations and</p>	<p>Sharing: 6 sweets are shared between 2 people. How many do they have each?</p>  <p>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</p>

Add and subtract one digit and two digit numbers to 20 including zero

More able

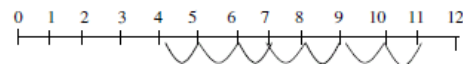
Using a hundred square to add two numbers together to include TU + U. Move Away from number lines to using fingers.

Pupils memorise and reason with number bonds to 10 and 20 in several forms for example, $9+7=16$; $16-7=9$; $7=16-9$

Solve one step problems that involve addition and subtraction using concrete objects and pictorial representations and missing number problems such as

$$7 = \square - 9$$

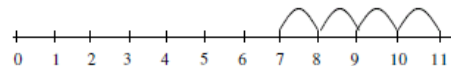
Use a number line to count back: e.g. $11 - 7 =$



More able

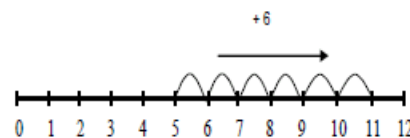
Children could move into finding the difference (Yr 2 objective)

Find 'a difference' by counting up: e.g. What is the difference between 11 and 7?



This will lead to word problems:

I have saved 5p. The socks I want to buy are 11p. How much more do I need to buy the socks?




arrays with the support of the teacher

Recognise, find and name a half as one of two equal parts of an object, shape or quantity
Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity (more able)

Year 2 Calculation Policy

1) Counts in steps of 2, 3 and 5 from 0, and in tens from any number, forward or backward 2) Recognises the place value of each digit in a two digit number (tens, ones) 3) Identifies, represents and estimates numbers using different representations, including the number line 4) Compares and orders numbers from 0 up to 100 5) Uses <, > and = signs 6) Reads and writes numbers to at least 100 in numerals and words 7) Uses place value and number facts to solve problems 8) Solves problems with addition and subtraction: using concrete objects, pictorial representations, including those involving numbers, quantities and measures 9) Applying their increasing knowledge of mental and written methods 10) Recalls and uses addition and subtraction facts to 20 fluently, and derives and uses related facts up to 100 11) Adds and subtracts 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 12) Show that addition of 2 numbers can be done in any order (commutative) and subtraction of one number from another cannot 13) Recalls and uses multiplication and division facts for the 2, 5 and 10 multiplication tables, including odd and even numbers 14) Calculates mathematical statements for multiplication and division within the multiplication tables and writes them using multiplication (x), division (÷) and equals (=) signs 15) Show that multiplication of 2 numbers can be done in any order (commutative) and division of one number from another cannot 16) Solves simple problems involving multiplication and division in a practical context using materials

Addition	Subtraction	Multiplication	Division
<p>Record mental addition using + and =</p> <p>Be able to complete number sentences where a missing number is shown by a symbol.</p> <p>E.g $9 + \underline{\quad} = 13$ $14 + 5 = 10 + \underline{\quad}$ $\underline{\quad} + \underline{\quad} = 14$ $5 + \underline{\quad} + 4 = 15$ $25 = 1 + \underline{\quad} + 5$ $12 + \underline{\quad} = 14 + 4$</p>	<p>Record simple mental subtractions using - and =</p> <p>Be able to complete missing number sentences:</p> <p>e.g $18 - 4 = 14$ $9 + 6 = 20 - \underline{\quad}$ $14 + 5 = 20 - \underline{\quad}$</p> <p>Understand when it is sensible to count back e.g. $18 - 5$ and when to count on e.g. $18 - 13$.</p>	<p>Understand that halving is the inverse of doubling and derive and recall doubles of all numbers to 20 and the corresponding halves.</p> <p>Record simple mental multiplication using x and =</p> <p>Represent problems involving multiplication using pictures and symbols:</p>	<p>Understand the concept of division as sharing and grouping:</p> <p>Represent problems using pictures and symbols: 12 children need to get into teams of 4 to play a game. How many teams are there?</p> <div style="text-align: center;">  </div>

Pupils practise addition and subtraction to 20 to become fluent in deriving facts such as using

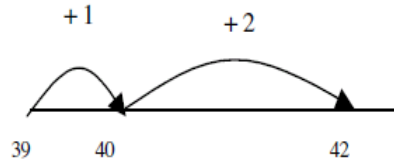
$3+7=10$; $10-7=3$ and $7=10-3$ so
 $30+70=100$; $100-70=30$ and
 $70=100-30$

Check addition and subtraction by adding in a different order
 Eg $5+2+1=1+5+2=1+2+5$

Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems
 $3+2=5$ $2+3=5$
 $5-2=3$ $5-3=2$

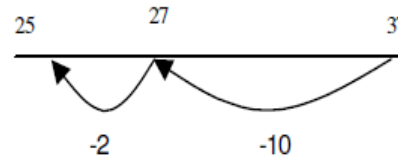
Recording addition and subtraction in columns supports place value and prepares for formal written methods with larger numbers

Use a number line to find a small difference by counting up.
 E.g. $42 - 39 = 3$



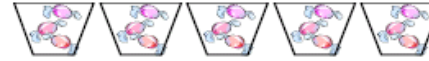
Use a number line or a hundred square to bridge through a multiple of 10
 e.g. $22 - 5 = 17$

This leads to children partitioning second number only to subtract:
 E.g. $37 - 12 = 25$



$$\begin{array}{r} 37 - 12 = \text{T} \\ \text{U} \end{array} \quad \begin{array}{r} 37 - 10 = 27 \\ 27 - 2 = 25 \end{array}$$

There are 3 sweets in one bag. How many sweets are there in 5 bags?



Be able to complete number sentences where a missing number is shown by a symbol:

$$7 \times 2 = \quad = 2 \times 7$$

$$7 \times \quad = 14 \quad 14 = \quad \times 7$$

$$\quad \times 2 = 14 \quad 14 = 2 \times \quad$$

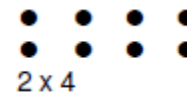
$$\quad \times \nabla = 14 \quad 14 = \quad \times \nabla$$

Represent multiplication as repeated addition and arrays:

$$2 \times 4 = 4 + 4 = 8$$

$$2 \text{ lots of } 4 = 8$$

$$2 + 2 + 2 + 2 = 8$$



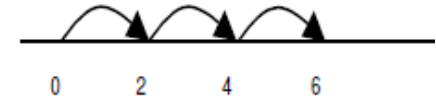
This can be modelled on a number line:

Sharing: 6 sweets are shared between 2 people. How many do they have each?



Grouping:

$6 \div 2$ can be modelled mentally using fingers or illustrated using:

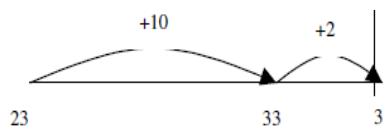


Remainders:

Children are able to recognize that sometimes there might be times where division results in remainders being left over. Record simple divisions using \div and $=$

Be able to complete number sentences where a missing number is shown by a symbol:

Use a hundred square. Start with the larger number in an addition where you must **bridge through the tens barrier** and count on: this can also be reinforced using a number line, e.g. $23 + 12 =$

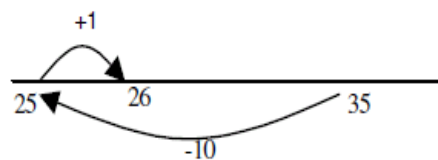


Use a number line/ hundred square to add on multiples of 10. e.g. $23 + 20$

Complete addition of two digit numbers:
e.g. $43 + 13$ by **partitioning** numbers into tens and ones and then recombining:

$$\begin{array}{r} 43 + 13 = \text{T} \quad 40 + 10 = 50 \\ \quad \quad \quad \text{U} \quad 3 + 3 = 6 \\ \quad \quad \quad \quad 50 + 6 \\ \quad \quad \quad \quad \quad = 56 \end{array}$$

Subtract 9 or 11 by taking away 10 and adjusting by 1 (using hundred square
E.g. $35 - 9 = 26$



More able

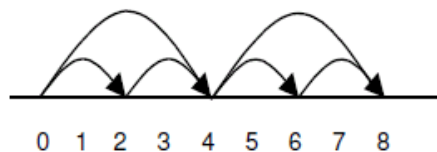
Lead into using standard written method without decomposition.

e.g. 48

$$\begin{array}{r} - 16 \\ \underline{32} \end{array}$$

* Subtractions must be able to be completed without 'exchanging'

Solve simple problems in a practical context involving subtraction of money of the same unit, including giving change



Derive and recall multiplication facts for the 2, 5 and 10 times tables and the related division facts.

To challenge HA children include 3 and 4 x tables within this.

$$6 \div 2 =$$

$$6 \div = 3$$

Use commutatively and inverse relations to develop multiplicative reasoning (for example, $4 \times 5 = 20$ and $20 \div 5 = 4$)

They begin to relate these to fractions and measures e.g. $40 \div 2 = 20$, 20 is half of 40

Be able to find simple fractions of objects. Numbers and quantities

Find $\frac{1}{2}$, $\frac{1}{4}$ of a quantity

Recognise, find and name a half as one of two equal parts of an object, shape or quantity

Write simple fractions e.g. $\frac{1}{2}$ of 6 = 3

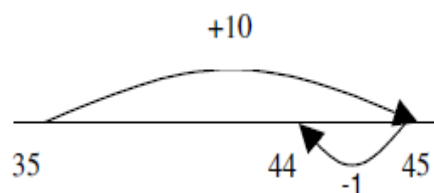
Recognise the equivalence of; $\frac{2}{4}$ and $\frac{1}{2}$

Refine this to partitioning the second number only to aid mental thinking:

$$\begin{aligned}43 + 13 &= 43 + 10 + 3 \\ &= 53 + 3 \\ &= 56\end{aligned}$$

Embed the mental strategy to add 9 or 11 just add 10 and adjust by 1:

e.g. $35 + 9$



Partition the second number only in addition problems to aid mental thinking:

$$\begin{aligned}43 + 13 &= 43 + 10 + 3 \\ &= 53 + 3 = 56\end{aligned}$$

Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity

Find $\frac{1}{3}$ $\frac{1}{4}$ $\frac{2}{4}$ $\frac{3}{4}$

of a length, shape, set of objects or quantity

Year 3 Calculation Policy

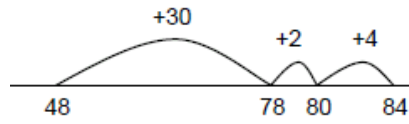
1) Counts from 0 in multiples of 4, 8, 50 and 100. 2) Finds 10 or 100 more or less from a given number. 3) Recognises the place value of each digit in a three-digit number (hundreds, tens, ones). 4) Compares and orders numbers up to 1000. 5) Identifies, represents and estimates numbers. 6) Reads and writes numbers up to 1000 in numerals and words. 7) Solves number problems and practical problems. 8) Adds and subtracts mentally including: 3-digit number and ones, 3-digit number and tens, 3-digit number and hundreds. 9) Adds and subtracts numbers with up to 3-digits, using formal written methods of columnar addition and subtraction. 10) Estimates an answer and uses inverses to check answers. 11) Solves problems, including missing number problems, using number facts, place value and more complex addition and subtraction. 12) Recalls and uses multiplication and division facts for the 3, 4 and 8 multiplication tables. 13) Writes and calculates mathematical statements for multiplication and division, including 2-digit times 1-digit using mental and progressing to formal written methods. 14) Solves problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and corresponding problems in which 'n' objects are connected to 'm' objects. 15) Counts up and down in tenths. 16) Recognise that tenths arise from dividing an object into 10 equal parts and in dividing One-digit numbers or quantities by 10. 17) Adds and subtracts fractions with the same denominator within one whole (e.g. $\frac{3}{5} + \frac{1}{5} = \frac{4}{5}$).

Addition	Subtraction	Multiplication	Division
<p>Record mental addition using + and = Be able to complete number sentences where a missing number is shown by a symbol. E.g $19 + \underline{\quad} = 33$ $\underline{\quad} + 14 = 33$ $10 + \underline{\quad} + 50 = 100$ $\underline{\quad} + \underline{\quad} + \underline{\quad} = 100$ $347 + \underline{\quad} = 447$</p>	<p>Subtract a 1, 2 or 3 digit number by using number bonds, halving, partitioning or counting back.</p> <p>Record mental subtractions using - and =</p> <p>Be able to complete missing number sentences: e.g. $36 - 17 = \underline{\quad}$ $\underline{\quad} - 15 = 19$</p>	<p>Understand that halving is the inverse of doubling and derive and recall doubles of all numbers to 20 and the corresponding halves.</p> <p>Record simple mental multiplication using x and = and understand that multiplication is the inverse of division and vice versa.</p>	<p>Record divisions using ÷ and = Understand that division is the inverse of multiplication and vice versa.</p> <p>Be able to complete number sentences where a missing number is shown by a symbol:</p> <p style="text-align: center;">$16 \div 2 =$ $16 \div \underline{\quad} = 2$</p>

Add a two digit number to a near multiple of 10 e.g. $35 + 19$ is the same as $35 + 20 - 1$

Number bonds (10, 20, 50, 100) using bead strings and/or number lines.

Use empty number lines initially to **demonstrate** mental addition:



Partition the second number only in addition problems to aid mental thinking:

$$\begin{aligned} 43 + 13 &= 43 + 10 + 3 \\ &= 53 + 3 \\ &= 56 \end{aligned}$$

Move then onto expanded methods of vertical standard addition **adding the most significant digits** first to support mental strategies:

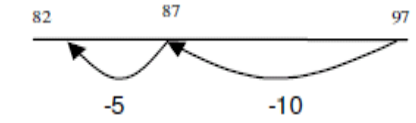
$$\begin{array}{r} 537 \longrightarrow 500 \quad 30 \quad 7 \\ +254 \quad \quad +200 \quad 50 \quad 4 \\ \hline \end{array}$$

$$\begin{aligned} _ - _ &= 19 \\ 20 - _ - _ &= 5 \end{aligned}$$

Find a small difference by counting up: e.g. $102 - 97 = 5$

Number bonds using bead strings and/or number lines.

Use empty number line or a hundred square to subtract **Tens** **Ones** from **TO** e.g. $97 - 15 = 72$



Partitioning into HTU and recombining.

$$\begin{aligned} 47 - 23 &= 40 - 20 = 20 \\ &\quad 7 - 3 = 4 \\ &= 20 + 4 = 24 \end{aligned}$$

Move then onto expanded methods of vertical standard addition **adding the most significant digits** first to support mental strategies:

Be able to complete number sentences where a missing number is shown by a symbol:

$$\begin{aligned} \text{e.g. } 6 \times _ &= 18 \\ 6 \times 10 &= _ \\ 20 &= _ \times 5 \\ _ \times 3 &= 18 \\ _ \times _ &= 24 \end{aligned}$$

Derive and recall multiplication facts for the 3, 4 and 8 times tables and the related division facts.

Continue to use repeated addition / arrays to help children understand the concept of multiplication.

Number lines can be used to model mental strategies: E.g. $6 \times 3 = 18$

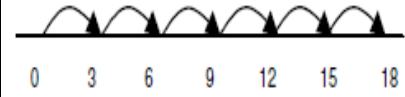


Use known facts to solve multiplication/ division facts e.g

Introduce division as **grouping** (repeated addition) as in Year 2.

$$\begin{aligned} \text{e.g. } 20 \div 4 & \\ & 1 \square \square \square \square \\ & 2 \square \square \square \square \\ & 3 \square \square \square \square \\ & 4 \square \square \square \square \end{aligned}$$

Use a number line to model grouping. E.g. How many 3's make 18? (6)

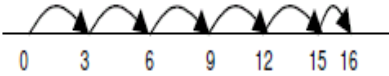


Also understand division as **sharing** (repeated subtraction)

$$\begin{aligned} \text{e.g. } 15 \div 3 &= 5 \\ 0 \quad 3 \quad 6 \quad 9 \quad 12 \quad 15 \end{aligned}$$



Also understand that division may result in remainders. e.g. $16 \div 3 = 5 \text{ r}1$

<p>TO</p> $\begin{array}{r} 67 \\ + 85 \\ \hline 152 \end{array}$ <p>Estimate the answer to a calculation and use inverse operations to check the answer $67 + 85 = 152$ $85 + 67 = 152$ $152 - 85 = 67$ $152 - 67 = 85$</p> <p>Round to the nearest 10 or 100 to estimate an answer</p> <p>Add fractions with the same denominator within one whole</p> $\frac{3}{5} + \frac{1}{5} = \frac{4}{5}$	$\begin{array}{r} 567 \longrightarrow 500 \quad 60 \quad 7 \\ -234 \quad \quad -200 \quad 30 \quad 4 \\ \hline \end{array}$ <p>Subtract mentally a near multiple of 10 by taking away multiple of 10 and adjusting by 1 E.g. $78 - 49$ is the same as $78 - 50 + 1$</p> <p>Subtract multiples of 5 from 100 by counting up e.g. $100 - 35$</p> <p>Lead into using standard written method without decomposition. e.g. 48</p> $\begin{array}{r} -16 \\ \hline 32 \end{array}$ <p>* Subtractions must be able to be completed without 'exchanging'</p> <p>Subtract numbers with up to three digits, using formal written methods of column subtraction</p> <p>HTU</p> $\begin{array}{r} 548 \\ -216 \end{array}$	$6 \times 3 = 18$ so $6 \times 30 = 180$ $3 \times 6 = 18$ so $30 \times 6 = 180$ $18 \div 3 = 6$ so $180 \div 30 = 6$ $18 \div 6 = 3$ so $180 \div 6 = 30$ <p>Bead strings.</p> <p>Number patterns.</p> <p>Pupils develop efficient mental methods eg using commutativity and associativity e.g.</p> $4 \times 12 \times 5 = 4 \times 5 \times 12 = 20 \times 12 = 240$ <p>and multiplication and division facts:</p> $3 \times 2 = 6, 6 \div 3 = 2, 2 = 6 \div 3$ $30 \times 2 = 60, 60 \div 3 = 20$ and $20 = 60 \div 3$ <p>Write and calculate mathematical statements for multiplication using the multiplication tables they know, including for two-digit numbers times one-digit numbers, using</p>	<p>Sharing: 16 cakes are shared between 3 children, how many are left over?</p> <p>Grouping: How many groups of 3 can I make from 16 cakes?</p>  <p>Find $\frac{1}{3} \frac{1}{4} \frac{2}{4} \frac{3}{4}$ of a length, shape, set of objects or quantity</p> <p>Bead strings.</p> <p>Number patterns.</p> <p>Formal method.</p>
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232

Subtract fractions with the same denominator within one whole

$$\frac{3}{5} - \frac{1}{5} = \frac{2}{5}$$

$$\frac{5}{5} - \frac{1}{5} = \frac{4}{5}$$

Subtract amounts of money to give change, using both £ and p in practical contexts.

mental and progressing to formal written methods

e.g

$$16 \times 5 = 10 \times 5 = 50$$

$$6 \times 5 = 30$$

$$50 + 30 = 80$$

$$24 \times 3 = 20 \times 3 = 60$$

$$4 \times 3 = 12$$

$$60 + 12 = 72$$

Grid method/partitioning

$$23 \times 5 =$$

x	20	3	
5	100	15	= 115

Formal column method

TU

23

X 5

100

+ 15

115

Year 4 Calculation Policy

1) Count in multiples of 6,7, 9, 25 and 1000. 2) Be able to recall multiplication and division facts for multiplication tables up to 12 x 12. 3) Finds a 1000 more or less than a given number. 4) Counts backwards through zero to include negative numbers. 5) Recognise the place value of each digit in a four-digit number e.g $3523 = 3000+500+20+3$. 6) Orders and compares numbers beyond 1000. 7) Round any number to the nearest 10, 100 and 1000. 8) Pupils should solve two- step problems choosing the appropriate operation 9) Reads Roman numerals to 100 (I to C). 10) Adds/subtracts numbers, with up to 4 digits using the formal written methods of columnar addition/subtraction where appropriate. 11) Estimates and uses inverse operations to check answers to a calculation. 12) Uses place value, known and derived facts to multiply and divide mentally, including multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers. 13) Recognises and uses factor pairs commutatively in mental calculations. 14) Multiplies 2 and 3-digit numbers by a 1-digit number using formal written layout. 15) Solves problems using the distributive law. 16) Pupils should connect hundredths to tenths and place value and decimal measure. 17) Convert between different units of measure e.g kilometre to metre; hour to minute. 18) Solve problems involving converting from hours to minutes, minutes to seconds, years to months; weeks to days. 19) Use understanding of place value and decimal notation to record metric measures, including money.

Addition	Subtraction	Multiplication	Division
<p>Use number lines/ 100 square as well as partitioning of 2-digit number.</p> <p>Partitioning to reinforce place value e.g. $24 + 37 =$</p> <p style="padding-left: 40px;">$20 + 30 = 50$</p> <p style="padding-left: 40px;">$4 + 7 = 11$</p> <p style="padding-left: 40px;">$50 + 11 = 61$</p> <p>Be able to complete number sentences where a missing number is shown by a symbol.</p>	<p>Record mental subtractions using - and =</p> <p>Be able to complete missing number sentences: e.g. $100 - 17 = \underline{\quad}$</p> <p style="padding-left: 40px;">$\underline{\quad} - 15 = 50$</p> <p style="padding-left: 40px;">$\underline{\quad} - \underline{\quad} = 20$</p> <p style="padding-left: 40px;">$100 - \underline{\quad} - \underline{\quad} = 10$</p> <p>Find a small difference by counting up: e.g. $503 - 496 = 7$</p>	<p>Identify the doubles of two-digit numbers, use these to calculate mentally doubles of multiples of 10 and 100 and derive the corresponding halves.</p> <p>Pupils practice mental methods and extend this to three-digit numbers to derive facts (for example $600 \div 3 =$</p>	<p>Inverse of multiplication tables.</p> <p>Practical - use multilink for division with remainder.</p> <p>Introduce short division method.</p> <p>Begin with $TU \div U$ and include remainders: E.g. $96 \div 6 = 16$</p>

E.g $54 + \underline{\quad} = 100$
 $\underline{\quad} + 14 = 39$
 $10 + \underline{\quad} + 50 = 120$
 $\underline{\quad} + \underline{\quad} + \underline{\quad} = 100$
 $347 + \underline{\quad} = 547$

Add the **nearest multiple of 10** and then adjust e.g. $63 + 29$ is the same as $63 + 30 - 1$
 Use **DISTRIBUTIVE LAW** to solve addition problems

e.g
 $54 + 63 = 110 + 7 = 117$

Add numbers up to 4 digits using the formal written methods of addition (using empty number line to reinforce)

Expand to HTU + TU
 Standard written method

e.g. 435

$$\begin{array}{r} 435 \\ + 24 \\ \hline 459 \end{array}$$

MOVE ONTO 4 DIGIT NUMBERS

Subtract mentally a near multiple of 10 by taking away multiple of 10 and adjusting by 1

E.g.
 $78 - 49$ is the same as $78 - 50 + 1$

Standard written method introducing decomposition extending to HTU.

E.g.
 Subtract numbers up to 4 digits using the formal written methods of subtraction

START WITH TWO NUMBERS WITH DECOMPOSITION AND EXTEND TO 3-4 NUMBERS ESTIMATE AND USE INVERSE OPERATIONS TO CHECK ANSWERS TO A CALCULATION

$$\begin{array}{r} 3 \\ 4548 \\ -1229 \\ \hline 3319 \end{array}$$

200 can be derived from $2 \times 3 = 6$)

Use **DISTRIBUTIVE LAW**
 $39 \times 7 = 30 \times 7 = 210$
 $9 \times 7 = 63$
 $210 + 63 = 273$

Use **ASSOCIATIVE LAW**
 $(2 \times 3) \times 4 = 2 \times (3 \times 4)$

Multiplying by 10 and 100, reinforce moving digits (place value).

Grid method
 349×6

X	300	40	9
6	1800	240	54

$$\begin{array}{r} 1800 \\ 240 \\ + 54 \\ \hline 2094 \\ 1 \end{array}$$

Teach formal methods to complete TU X U

When children are happy with the understanding here - model the **short division** method:

$$\begin{array}{r} 16 \\ 6 \overline{) 936} \end{array}$$

Extend to HTU ÷ U

$$\begin{array}{r} 122 \\ 6 \overline{) 71312} \end{array}$$

Pupils solve two step problems in contexts, choosing the appropriate operation, working with increasing harder numbers. This should include correspondence questions such as the number of choices of a meal on a menu, or 3 cakes shared equally between 10 children.

Find the effect of dividing a one/two-digit number by 10

Leading to 'carrying' below the line (to include 4 digit numbers)

$$\begin{array}{r} \text{e.g. } 625 \\ + 148 \\ \hline 773 \\ \hline \end{array}$$

ESTIMATE AND USE
INVERSE OPERATIONS TO
CHECK ANSWERS TO A
CALCULATION

$$\begin{array}{l} 625+148 = 773 \\ 148+625 = 773 \\ 773 - 148 = 625 \\ 773 - 625 = 148 \end{array}$$

Extend to use of decimals in
context, for example money.

e.g.
*know that decimal point must
be in line

$$\begin{array}{r} \text{£}4.21 \\ + \text{£}3.87 \\ \hline \text{£}8.08 \\ \hline \end{array}$$

SOLVE ADDITION TWO STEP
PROBLEMS IN CONTEXTS
DECIDING WHICH
OPERATIONS AND METHODS
TO USE AND WHY.

In decomposition use the word
'exchange' **not** borrow.

Extend to decimals in context of
money.

e.g.
*know that decimal point must be
in line

$$\begin{array}{r} \text{£}8.98 \\ - \text{£}4.35 \\ \hline \text{£}4.63 \\ \hline \end{array}$$

Solve simple and money problems
involving fractions and decimals to
two decimal places.

Subtract fractions with the same
denominator within one whole

$$\begin{array}{r} \underline{8} - \underline{3} = \underline{5} \\ 13 \quad 13 \quad 13 \end{array}$$

Use fractions that add to 1 to
find fraction complements to 1

$$\text{E.g. } \quad 1 - \frac{2}{3} = \frac{1}{3}$$

extend to HTU X U

E.g.

$$\begin{array}{r} 23 \\ \times 3 \\ \hline 69 \end{array} \quad \begin{array}{r} 123 \\ \times 3 \\ \hline 369 \end{array}$$

Extend to standard short
multiplication with carrying

$$\text{E.g. } \begin{array}{r} 23 \\ \times 8 \\ \hline 184 \\ 2 \end{array} \quad \begin{array}{r} 346 \\ \times 9 \\ \hline 3114 \\ 45 \end{array}$$

and 100, identifying the value
of the digits in the answer as
ones, tenths and hundredths
(including the use of
measures).

Add fractions with the same denominator within one whole

$$\frac{3}{5} + \frac{1}{5} + \frac{4}{5} = \frac{8}{5} = 1\frac{3}{5}$$

Be confident with fractions that add to one and fraction complements to one

E.g $\frac{2}{3} + ? = 1$

Year 5 Calculation Policy

- 1) Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit 4) Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10000 and 100000. 2) Count forwards or backwards in steps of powers of 10 for any given number up to 1000000. 3) Interpret negative numbers in context, count forwards or backwards with positive and negative whole numbers including through zero. 4) Rounds any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000. 5) Reads Roman numerals to 1000 (I to M) and recognises years written in Roman numerals. 6) Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign. 7) Solve problems involving number up to 3 decimal places. 8) Recognise and use square numbers and cube numbers and the notation for both 9) Establish whether a number up to 100 is prime and recall all prime numbers up to 19. 10) Pupils use and explain the equals sign to indicate equivalence, including missing number problems E.g. $13 + 24 = 12 \square 25$; $33 = 5 \times 8$. 11) Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. 12) Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy. 13) Recognises and uses square and cube numbers. 14) Adds and subtracts fractions with the same denominator and denominators that are multiples of the same number. 15) Multiplies proper fractions and mixed numbers by whole numbers. 16) Rounds decimals with 2 decimal places to the nearest whole number and to one decimal place. 17) Solves problems involving converting between units of time. 18) Uses all 4 operations to solve problems involving measures (e.g. length, mass, volume, money) using decimal notation involving scaling.

Addition	Subtraction	Multiplication	Division
<p>Be able to complete number sentences where a missing number is shown by a symbol.</p> <p>E.g. $154 + \underline{\quad} = 200$ $\underline{\quad} + 14 = 100$ $10 + \underline{\quad} + 50 = 500$ $\underline{\quad} + \underline{\quad} + \underline{\quad} = 1000$ $347 + \underline{\quad} = 1047$</p>	<p>Record mental subtractions using - and =</p> <p>Be able to complete missing number sentences:</p> <p>E.g. $1000 - 170 = \underline{\quad}$ $\underline{\quad} - 150 = 500$ $\underline{\quad} - \underline{\quad} = 200$</p>	<p>Identify the doubles of two-digit numbers, use these to calculate mentally doubles of multiples of 10 and 100 and derive the corresponding halves.</p>	

Add the **nearest multiple of 10 or 100** and then adjust E.g.
 $458 + 79$ is the same as $458 + 80 - 1$

Standard written method as in Year 4 extending to ThHTU.

Include multiple 'carrying'.

E.g.

$$\begin{array}{r} 7648 \\ +1486 \\ \hline \begin{array}{l} \swarrow \downarrow \downarrow \\ 9134 \end{array} \end{array}$$

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

Use decimals in context, for example money / measurements.

$$1000 - \underline{\quad} - \underline{\quad} = 190$$

Find a small difference by counting up:

E.g. $8006 - 2993 = 5013$

Subtract mentally a near multiple of 10 or 100 by taking away multiple of 10 or 100 and adjusting by 1

E.g. $781 - 199$ is the same as $781 - 200 + 1$

In standard written column method use the word 'exchange' NOT borrow.

Use the standard written column method up to numbers with 4 digits including decimals:

$$\begin{array}{r} 8. 5 \\ - 4. 8 \\ \hline 4. 7 \end{array}$$

Derive and recall multiplication facts up to 12×12 and the related division facts.

Extend to standard short multiplication with carrying

E.g.

$$\begin{array}{r} 23 \\ \times 8 \\ \hline 184 \end{array} \quad \begin{array}{r} 346 \\ \times 9 \\ \hline \begin{array}{l} \swarrow \downarrow \downarrow \\ 3114 \end{array} \end{array}$$

*To include decimals with one decimal point E.g. 12.5×2 (refer to expanded method first if necessary - leading to short method with carrying).

Extend to long multiplication- 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

E.g.

*know that decimal point must be in line

$$\begin{array}{r} \text{£}4.21 \\ + \text{£}3.87 \\ \hline \text{£}8.08 \end{array}$$

Add fractions with the same denominator beyond one whole

$$\frac{5}{13} + \frac{9}{13} = \frac{14}{13} = 1 \frac{1}{13}$$

Begin to add related fractions using equivalences

$$\text{E.g. } \frac{1}{2} + \frac{1}{6} = \frac{3}{6} + \frac{1}{6} = \frac{4}{6}$$

Practice calculations with increasingly large numbers to aid fluency (include numbers with multiple zeros)

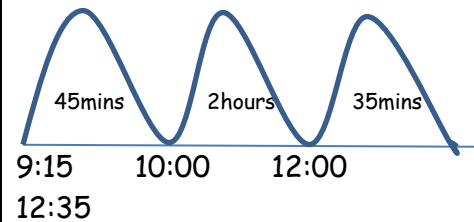
E.g. 4000-326

Begin to subtract related fractions using equivalences

$$\text{E.g. } \frac{1}{2} - \frac{1}{6} = \frac{3}{6} - \frac{1}{6} = \frac{2}{6}$$

Find the difference in times (from timetables) using blank number lines.

London 9:15
Darlington 12:35



$$2 \text{ hrs} + 45 \text{ mins} + 35 \text{ mins} = \\ 2 \text{ hr } 80 \text{ mins} = 3 \text{ hr } 20 \text{ mins}$$

E.g. $36 \times 42 =$

$$\begin{array}{r} 36 \\ \times 42 \\ \hline 1440 \\ + \quad 72 \\ \hline 1512 \end{array}$$

$$\begin{array}{r} 36 \\ \times 42 \\ \hline 72 \\ + 1440 \\ \hline 1512 \end{array}$$

Understand the terms factor, multiple, prime, square and cube numbers and use them to construct equivalent statements

$$\text{E.g. } 4 \times 35 = 2 \times 2 \times 35$$

$$3 \times 270 = 3 \times 3 \times 9 \times 19 = 9^2$$

$\times 10$

		<p>Begin to multiply fractions and mixed numbers by whole numbers less than 10</p> <p>E.g $4 \times \frac{2}{3} = \frac{8}{3} = 2 \frac{2}{3}$</p>	
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Year 6 Calculation Policy

- 1) Reads, writes, orders and compares numbers up to 10 000 000 and determines the value of each digit. 2) Round any whole number to a required degree of accuracy. 3) Uses negative numbers in context and calculates intervals across zero. 4) Multiplies multi-digit numbers up to 4-digits by a 2-digit whole number using long multiplication. 5) Divides numbers up to 4-digits by a 2-digit whole number using the formal written method of long division. 6) Divides numbers up to 4-digits by a 2-digit whole number using the formal written method of short division, interpreting remainders according to context. 7) Perform mental calculations, including with mixed operations and large numbers. 8) Identifies common factors, common multiples and prime numbers. 9) Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. 10) Pupils explore the order of operations using brackets E.g. $2 + 1 \times 3 = 5$ and $(2+1) \times 3 = 9$. 11) Pupils multiply and divide numbers with up to two decimal places by one digit and two digit numbers. Pupils multiply decimals by whole numbers starting with the simplest cases such as $0.4 \times 2 = 0.8$ and in practical contexts such as measures and money 12) Solve problems involving conversion of units of measure using decimal notation up to three decimal places

Addition	Subtraction	Multiplication	Division
<p>Be able to complete number sentences where a missing number is shown by a symbol. E.g. $54 + \underline{\quad} = 200$ $\underline{\quad} + 1.4 = 10$ $10 + \underline{\quad} + 50 = 250$ $\underline{\quad} + \underline{\quad} + \underline{\quad} = 1000$ $34.7 + \underline{\quad} = 40$</p> <p>Use number line to add (related to time)</p> <p>Add the nearest multiple of 10 or 100 or 1000 and then adjust e.g. $458 + 79$ is the same</p>	<p>Record mental subtractions using - and =</p> <p>Be able to complete missing number sentences: E.g. $1000 - 170 = \underline{\quad}$ $\underline{\quad} - 150 = 500$ $\underline{\quad} - \underline{\quad} = 200$ $1000 - \underline{\quad} - \underline{\quad} = 190$</p> <p>Find a difference by counting up: E.g. $0.5 - 0.31 = 0.19$</p> <p>Subtract mentally a near multiple of 10 / 100 by taking away</p>	<p>Identify the doubles of two-digit numbers, use these to calculate mentally doubles of multiples of 10 and 100 and derive the corresponding halves.</p> <p>Multiply one-digit numbers with up to two decimal places by whole numbers</p> <p>E.g. 3.46 $\times \quad 9$ <hr style="width: 50%; margin-left: 0;"/> 31.14 45</p> <p>Estimate 1st by multiplying whole numbers 1st</p>	<p>Extend to dividing numbers up to 4 digits by a two digit whole number.</p> <p>Use written division methods in cases where the answer has up to two decimal places E.g. $1.92 \div 6 = 32$</p> <div style="text-align: right; margin-right: 50px;"> $\begin{array}{r} 0.32 \\ 6 \overline{) 1.92} \\ \underline{6 1.9} \\ 1.92 \\ \underline{ 1.8} \\ 0.12 \\ \underline{ 0.12} \\ 0.00 \end{array}$ </div> <p>Check by using Inverse E.g. $0.32 \times 6 = 1.92$</p>

as $458 + 80 - 1$. Extend to adding $0.9 / 1.9 / 2.9$ etc. Standard written method as in Year 5 extending to numbers with any number of digits.

Extend decimals to numbers with one or two decimal places. e.g. *know that decimal point must be in line

$$\begin{array}{r} 124.9 \\ + 7.25 \\ \hline 132.15 \\ 11 \end{array}$$

Add and subtract fractions with different denominators and mixed numbers using the concept of equivalent fractions

$$2 \frac{1}{3} + 1 \frac{2}{3}$$

$$\frac{7}{3} + \frac{5}{3} = \frac{12}{3} = 4$$

multiple of 10 / 100 and adjusting by 1

E.g. $781 - 199$ is the same as $781 - 200 + 1$

Standard written method as in Year 5 extending to numbers with any number of digits.

Extend to decimals with one or two decimal places.

In standard written column method use the word 'exchange' **NOT** borrow.

$$\begin{array}{r} 3 \text{ i} 2 \text{ i} 4.8 \text{ i} 9 \text{ i} 0 \\ - 7.25 \\ \hline 3 \text{ i} 1 \text{ i} 7.6 \text{ i} 5 \end{array}$$

← known that extra 0's may need to fill in spaces.

*know that decimal point must be in line.

Add and subtract fractions with different denominators and mixed numbers using the concept of equivalent fractions

$$2 \frac{1}{3} - 1 \frac{2}{3}$$

E.g. $3 \times 9 = 27$

Extending to multiplying a one digit number up to two decimal places by a two digit number

E.g. 3.46×15

Estimate 1st by multiplying whole numbers 1st

E.g. $3 \times 15 = 45$

Extend Year 5 to standard short and long multiplication

Long multiplication initially with explanation, then long multiplication with decimal numbers.

Multiple simple pairs of fractions, writing the answer in the simplest form

$$\text{E.g. } \frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$$

Extend to standard long division

E.g. $972 \div 36 = 27$

$$\begin{array}{r} 27 \\ 36 \overline{) 972} \\ \underline{-72} \\ 252 \\ \underline{-252} \\ 000 \end{array}$$

Extend to dividing numbers up to 4 digits by a two digit whole number.

Children may be able to carry out $HTU \div TU$ as short division.

$$\begin{array}{r} 45 \\ 11 \overline{) 495} \end{array}$$

$$\frac{7}{3} - \frac{5}{3} = \frac{2}{3}$$

Express remainder as a whole number, fraction, decimal or by rounding

E.g. $9 \div 4 = 2 \text{ r } 1$

or 2.25

or $2 \frac{1}{4}$

Divide proper fractions by whole numbers

E.g. $\frac{1}{3} \div 2 = \frac{1}{6}$

Foundation Stage 2 Calculation Policy 2019/20

1) Count reliably with numbers from 1-20, have a secure understanding of numbers up to 20, counting objects and recognising numbers accurately 2) Count out a specific number of things from a larger collection e.g. coins, beads counters, bricks etc. 3) Place numbers in order from 1-20 e.g. sort mixed up numbers on a washing line 4) Say which number is one more or one less in practical contexts using objects/fingers e.g. 'There are 12 children on a bus, one more gets on/off. How many are on the bus now?' 5) Solve problems, including doubling and halving.

Addition

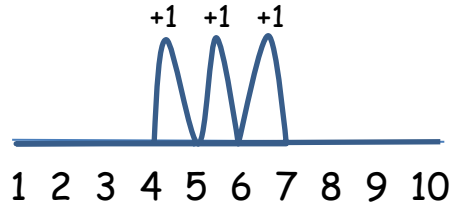
Subtraction

Multiplication

Division

Use of numbers 1-10, then to 20 and beyond.

Learning to count in sequence.



Adding 2 single digits using stepping stones/number tiles for children to physically jump on.

Practical sets - initially counting out a set accurately with a 1 to 1 correspondence

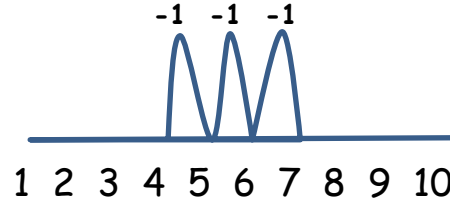
- Combining 2 sets (adding)

Language of addition: more, total, add, plus, altogether, makes, equals, counting on.

$$000 + 0000 \longrightarrow 7$$

Use of numbers 1-10, then to 20 and beyond.

Learning to count backwards in a sequence.



Subtracting 2 single digits using stepping stones/number tiles for children to physically jump on.

Practical sets - use of objects to take-away.

Pictorial - crossing out

E.g. $5 - 2 = 3$

~~00000~~

1 less than (put larger number first).

Doubling - up to double 5 first (using fingers then dice).

Counting in 2s, 5s, 10s.

Language of multiplication: lots of, doubles

All practical.

Sharing toys and objects.

Playing games

E.g. dealing cards/dominoes.

Practical problem solving

E.g. Grouping items to make sets of equal number (sharing out toys).

Language of division: halving, sharing, equal, divide, fair

$$000 + 0000 = 7$$

$$\begin{array}{r} 000 + 0000 = 7 \\ 3 \quad 4 \end{array}$$

Doubling up to 6

Language of subtraction: fewer, less, makes, equals, counting back, take-away, how many are left?

Children will engage in a wide variety of songs and rhymes, games and activities.

Foundation Stage 1 Calculation Policy 2019/20

1) Use number names and number language spontaneously. 2) Use number names accurately in play. 3) Recites numbers in order to 10. 4) Know that numbers identify how many objects are in a set. 5) Begins to match numeral and quantity correctly. 6) Compares two groups of objects, saying if they have the same number. 7) Separates a group of 3 or 4 objects in different ways, beginning to recognise that the total is still the same. Shows an interest in numbers in the environment.

Addition	Subtraction	Multiplication	Division
<p>Children asked to select an amount from a group, then 1 more.</p> <p>Introduce vocabulary: more, altogether, how many now?</p> <p>Introduction to counting forwards.</p> <p>Children aware that a group of objects gets bigger when something is added.</p>	<p>Children asked to select an amount from a group, then 1 less.</p> <p>Introduce vocabulary: less, smaller, how many are left?</p> <p>Introduction to counting backwards.</p> <p>Children aware that a group of objects gets smaller when something is taken away.</p>	<p>Groups of objects.</p>	<p>Sharing a group of objects (snacks).</p>

Children will engage in a wide variety of songs and rhymes, games and activities.