

Mathematics

Half Termly Planning

Objectives



Fairfield Primary Academy Medium Term Mathematics Plans

Who are the Mathematics Medium Term Plans for?

The purpose of this planning document is to map out the mathematics medium term plan for teaching and learning at Newcroft for Reception to Year 6. It should be used in conjunction with the school's Calculations Policy (included at the back of the document).

There are objectives identified for each year group for each half term, ensuring curriculum coverage over the academic year. Teachers should use professional judgement when deciding how much time should be spent on each theme. Objectives should be extended for the most able pupils, drawing on objectives from later terms or years if pupils are secure at the current expectation for the year group.

The aim is that all pupils are able to meet the objectives by the end of each year. It is designed to support the 2014 National Curriculum for Mathematics at Key Stages 1 and 2.

This booklet will be relevant and useful for all the following at our school:

- Class Teachers and HLTAs
- Teaching Assistants/Learning Support Assistants
- The SENCo
- Inclusion Leader
- Parents
- Pupils
- Volunteers
- Supply Teaching Staff
- ITT Students

How do I use the Medium Term Plans?

During the planning process (and ongoing weekly):

- Add the week numbers as objectives are covered
- Add the dates
- Build in 'Assess and Review' opportunities each half term (using the Symphony Assessment System Milestones) ready for data collection and analysis
- The objectives are broad so may need breaking down further. They will also need success criteria to clarify them
- Annotate the plans as you go – **adjusting and extending expectations at every opportunity**
- Be prepared to hand in your annotated plans on a termly basis (as part of the process of whole school monitoring and evaluation)

Denise Elliott

Mathematics Subject Leader
Autumn 2017

Mathematics

Half Termly Planning

Objectives



1 – EYFS Mathematics

Numbers: children count reliably with numbers from 1 to 20, place them in order and say which number is one more or one less than a given number. Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer. They solve problems, including doubling, halving and sharing.

Shape, space and measures: children use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems. They recognise, create and describe patterns. They explore characteristics of everyday objects and shapes and use mathematical language to describe them.

Theme	Date	Week	Foundation Stage - Autumn 1
Number and Place Value			- To recognise numerals 1 to 5. - To count up to three or four objects by saying one number name for each item. - To select the numeral to represent 1 to 5. - To recognise numbers of personal significance. - To count an irregular arrangement of up to 10 objects. - To know that numbers identify how many objects are in a set. - To count from 0-5 forwards and backwards within a play situation. - To recite numbers in order to 10, then 20. - To say and use number in songs, rhymes and stories. - To count backwards from 10 to 0. - To show awareness of one-to-one correspondence through practical everyday experience.
Addition and Subtraction			- To find one more or one less from a group of up to five objects. - To say the number that is one more than a given number. - To sing action songs and rhyme related to addition and subtraction.
Measurement (time)			- To use everyday language related to time. - To order and sequence familiar events.
Properties of shapes			- To use familiar objects and common shapes to create and recreate patterns and build models. - To show an interest in shape and space by playing with shapes or making arrangements with objects. - To show an awareness of shapes in the environment. - To show an interest in shape by sustained construction activity or by talking about shapes in the environment. - To use shapes appropriately for tasks. - To begin to talk about the shapes of everyday objects e.g. round, tall.
Position and direction			To use positional language.

Mathematics

Half Termly Planning

Objectives



Theme	Date	Week	Foundation Stage - Autumn 2
Number and Place Value			- To count objects to 10, and beginning to count beyond 10. - To select the correct numeral to represent 1 to 10 objects. - To count actions or objects which cannot be moved. - To count out up to six objects from a larger group. - To rehearse counting back from 10 to 0, including in songs, stories and rhymes. - To move around, or partition and recombine small groups of up to five objects, and recognise that the total is still the same. - To count objects up to 10 in a line, or by moving them. - To order numerals to 10 and beyond.
Addition and Subtraction			- To find one more or one less from a group of up to five objects. - To say the number that is one more than a given number. - To sing action songs and rhyme related to addition and subtraction.
Measurement (length, mass, capacity)			- To show an interest in practical activities related to length, capacity and weight. - To compare two heights using direct comparison (using language of taller and shorter). - To compare two lengths using direct comparison (using language of longer and shorter).
Measurement (money)			- To begin to use everyday language related to money. - To use money in role play (e.g. pound shop). - To solve practical problems involving counting / role play.

Mathematics

Half Termly Planning

Objectives



Theme	Date	Week	Foundation Stage – Spring 1
Number and Place Value			- To use the language 'more' or 'fewer' to compare two sets of objects. - To count from 0-10 forwards and backwards beginning with 0 or 1 or from any given number. - To recognise numerals 0-10 and begin to order them. - To recite numbers to 20, then to 100. - To count back from at least 10 to zero. - To order numbers across the 10 boundary (e.g. 8 to 11). - To count up to 20 objects. - To begin to use the ordinal language of 'first', 'second' and 'third' in practical contexts. - To count actions and sounds. - To rehearse counting to 100 and counting back. - To match numerals to the number in a set and understand zero to describe an empty set. - To count out up to 10 objects from a larger set (know when to stop!) - To say the number that is one more than a given number and begin to say one less to ten.
Addition and Subtraction			- To find one more or less from a group of up to 10 objects. - To find the total number of items in two groups by counting all of them. - To begin to use the vocabulary involved in adding and subtracting in practical activities and discussion. - To record, using marks that they can interpret and explain. - To say the next number (without counting from 1). - To find the total number of objects in two groups by counting all of them. - To add 1 to any number. - To add 2 to any number up to 10 and to read the corresponding addition. - To recognise that the number of objects in a set does not change if they are moved around. - To remove objects from a small group and count how many are left.
Measurement (time)			- To use everyday language related to time. - To order and sequence familiar events. - To measure short periods of time in simple ways. - To use the days of the week in context, e.g. story. - To recognise a minute as unit of time. - To count actions carried out in a minute (less than 20).
Properties of Shapes			- To begin to use mathematical names for 'solid' 3D shapes and 'flat' 2D shapes, and mathematical terms to describe shapes. - To select a particular named shape. - To sort other objects using given criteria. - To begin to explore symmetry.
Position and Direction			To describe their relative position such as 'behind' or 'next to'.

Mathematics

Half Termly Planning

Objectives



Theme	Date	Week	Foundation Stage – Spring 2
Number and Place Value			- To count back from 20 to 0. - To compare numbers to 20. - To read numbers to 20, match numerals to sets. To estimate how many objects they can see and check by counting them.
Addition and Subtraction			To find one more or less from a group of up to 10 objects. To find the total number of items in two groups by counting all of them. To begin to use the vocabulary involved in adding and subtracting in practical activities and discussion. To record, using marks that they can interpret and explain. - To say the next number (without counting from 1). - To find the total number of objects in two groups by counting all of them. - To add 1 to any number. - To add 2 to any number up to 10 and to read the corresponding addition. - To recognise that the number of objects in a set does not change if they are moved around. - To remove objects from a small group and count how many are left.
3D shape			- To recognise and name common 3D shapes including a cube, cuboid and sphere. - To sort 3D shapes according to whether they roll or not, stack or not.
Measurement (length, Mass, capacity)			To order two or three items by length or height. To order two items by weight or capacity. - To use uniform non-standard units to measure items up to 10 units high. - To put three heights in order. - To put three lengths in order.
Measurement (money)			- To solve practical problems involving counting or role play. - To compare prices in pounds up to £10 (by making lines of pound coins). - To recognise 1p, 2p, 5p and 10p coins and know the value of each. - To recognise £1 and £2 coins.

Mathematics

Half Termly Planning

Objectives



Theme	Date	Week	Foundation Stage – Summer 1
Counting			- To begin to count forwards in twos, fives, tens. - To recognise, say and identify numerals up to 20. - To counts reliably with numbers from one to 20, place them in order and say the number that comes before and after a given number. - To instantly recognise, without counting, organised and random arrangements of small numbers of objects. - To count to and cross 20, forwards and backwards beginning with 0 or 1 or from any given number. - To write numerals to 10 with some reversal.
Addition and Subtraction			To begin to identify their own mathematical problems based on their own interests and fascinations. To find the total number of items in two groups by counting all of them. To begin to use the vocabulary involved in adding and subtracting in practical activities and discussion. - Remove a smaller number from a larger and find how many are left by counting back from the larger number. - To begin to find out how many have been removed from a larger group of objects by counting up from a number. - Using quantities and objects add and subtract two single-digit numbers and counts on or back to find the answer. - To begin to develop an awareness of the addition and subtraction sign. - In practical situations, begin to know their addition number facts to 10. - To find one more/two more and one less/two less from a group of up to 20 objects.
Multiplication and Division			To solve problems in practical situations including doubling, halving and sharing.
Measurement (time)			To use everyday language related to time. To order and sequence familiar events. To measure short periods of time in simple ways for example, count actions carried out in a minute (more than 20); recognise that there are 60 seconds in 1 minute; carry out activities done in 1 minute. - To know how key times of day (hours only) are shown on the clock, analogue and digital. - To begin to know months of the year, including important months, e.g. birthday, celebrated festivals. - To recite the days of the week. - To use everyday language to talk about time to solve problems.
Shape Properties			To begin to use mathematical names for 'solid' 3D shapes and 'flat' 2D shapes, and mathematical terms to describe shapes. To select a particular named shape. - To begin to explore symmetry. - To explore characteristics of everyday objects and shapes and use mathematical language to describe them. - Sort irregular shapes according to number of corners/sides. - Sort objects using criteria such as colour, curved, no. of corners, etc. - Sort objects using their own criteria. - To recognise, create and describe patterns.
Position and Direction			To use everyday language to talk about position and distance (near, far, in front, on top, next to, under...)

Mathematics

Half Termly Planning

Objectives



Theme	Date	Week	Foundation Stage – Summer 2
Counting and comparing numbers			- To recite numbers to 100. - To begin to read numbers to 100. - To fill in missing numbers in a track to 20. - To count reliably with numbers from one to 20 by using efficient strategies. - To count and record number of objects to 20. - To count on or back 2 or 3.
Addition and Subtraction			- To begin to identify their own mathematical problems based on their own interests and fascinations. - To find the total number of items in two groups by counting all of them. - To begin to use the vocabulary involved in adding and subtracting in practical activities and discussion. - Remove a smaller number from a larger and find how many are left by counting back from the larger number. - To begin to find out how many have been removed from a larger group of objects by counting up from a number. - Using quantities and objects add and subtract two single-digit numbers and counts on or back to find the answer. - To begin to develop an awareness of the addition and subtraction sign. - In practical situations, begin to know their addition number facts to 10. - To find one more/two more and one less/two less from a group of up to 20 objects.
Multiplication and Division			To solve problems in practical situations including doubling, halving and sharing.
Measurement (length, mass, capacity)			- To order two or three items by length or height. - To order two items by weight or capacity. - To begin to identify their own mathematical problems based on their own interests and fascinations. - To use uniform non-standard units to measure items up to 10 units high. - To put three heights in order. - To put three lengths in order. - To use everyday language to talk about size, weight and capacity to compare quantities and objects and to solve problems.
Measurement (Money)			- To use everyday language to talk about money to solve problems. - To recognise all coins. - To carry out simple addition and subtraction problems involving money.

Mathematics

Half Termly Planning

Objectives



Mathematics Purpose of Study – National Curriculum 2014

Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

Aims

The National Curriculum for mathematics aims to ensure that all pupils:

- become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils have conceptual understanding and are able to recall and apply their knowledge rapidly and accurately to problems
- **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools].

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.

Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Theme	Date	Week	Year 1 - Autumn 1
Number and Place Value			○ To count to and across 50, forwards and backwards, beginning with 0 or 1, or from any given number. ○ To read numbers to 20 in numerals. ○ To order numbers up to 50 and say one more and one less using concrete objects or pictorial representations. ○ To count in multiples of 2, using quantities or objects. ○ To identify and represent numbers using objects and pictorial representations. ○ To use language one more and one less in practical situation using concrete objects or pictorial representations.
Addition and Subtraction			○ To start to read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs within 10. ○ To begin to know number bonds to 10 (using concrete objects or pictorial representations). ○ To solve one-step problems that involve addition and subtraction using concrete objects. ○ To <u>use</u> the vocabulary associated with + and - (e.g. add, take away, more, less, subtract, minus).
Multiplication and Division			○ To begin to know doubles up to double 5. ○ To begin to know halves up to 10. ○ To solve one-step problems involving multiplication and division by calculating the answer using concrete objects, with the support of the teacher. ○ To recognise patterns of numbers in the 10x table.
Measurement (time)			○ To begin to recognise and use language relating to dates including days of the week and be able to sequence these. ○ To tell the time to the hour and begin to draw hands on a clock face to show these times.
Properties of Shape			○ To begin to recognise and name common 2D shapes, including: • 2D shapes (for example, rectangles (including squares), circles and triangles) • Selects a particular named shape e.g. pick up the square, triangle, rectangle.

Mathematics

Half Termly Planning

Objectives



Position and direction			To know the vocabulary 'left' and 'right'.
The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools]. At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money. By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency. Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.			
Theme	Date	Week	Year 1 - Autumn 2
Addition and Subtraction			- To start to read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs within 10. - To begin to know number bonds to 10 (using concrete objects or pictorial representations). - To solve one-step problems that involve addition and subtraction using concrete objects. - To <u>use</u> the vocabulary associated with + and - (e.g. add, take away, more, less, subtract, minus).
Multiplication and Division			- To begin to know doubles up to double 5. - To begin to know halves up to 10. - To solve one-step problems involving multiplication and division by calculating the answer using concrete objects, with the support of the teacher. - To recognise patterns of numbers in the 10x table.
Fractions			- To recognise, find and name a half as one of two equal parts of a shape. - To find half of a quantity less than 10 using concrete objects.
Measurement (length, mass, capacity)			- To use everyday language to talk about mass/weight and volume/capacity. - To compare, describe and solve practical problems for: - Lengths and heights (for example: long/short, longer/shorter, tall/short, double/half) e.g. which is taller? Which is shorter? - Mass/weight (for example: heavy/light, heavier than, lighter than) e.g. which is heavier? Which is the heaviest? - Capacity and volume (for example: full/empty, more than, less than, half, half full, quarter). - To measure and begin to record the following using non-standard measures: - Lengths and heights e.g. cubes, hands, worms. - Mass/weight e.g. cubes, teddy bears. - Capacity and volume e.g. cups, sand, rice.
Measurement (money)			To begin to recognise different denominations of coins and notes.

Mathematics

Half Termly Planning Objectives



The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools].

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.

Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Theme	Date	Week	Year 1 – Spring 1
Number and Place Value			- To count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. - To count, read and write numbers to 100 in numerals. - To count in multiples of twos to 50 and tens to 100. - To identify one more and one less when given a 2 digit number. - To identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least. - To read and write numbers from 1 to 20 in numerals. - To begin to recognise odd and even numbers. - To begin to understand the place value of tens and units.
Addition and subtraction			- To read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs within 20 (e.g. $7+6=13$, $5-3+2$ and $12 = 7+6$, $2 = 5-3$). To know bonds of all numbers to 10 (with concrete objects or pictorial representations). - To represent and use number bonds. - To add and subtract one-digit and two-digit numbers to 20, including zero. - To solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = () - 9$. - To understand the vocabulary associated with problem solving.
Multiplication and Division			To begin to know doubles to double 10. To begin to know corresponding halves. - To solve one-step problems involving multiplication and division by calculating the answer using concrete objects and pictorial representations with the support of the teacher. - To recognise patterns of numbers in $x2$ $x10$. - To recognise odd and even numbers.
Measurement (time)			- To sequence events in chronological order using language (for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening). - To recognise and use language relating to dates, including days of the week, weeks, months and years. - To tell the time to the hour and half past the hour and begin to draw the hands on a clock face to show these times.
Properties of Shape			- To begin to recognise and name common 2D and 3D shapes, including: 2D shapes (for example, rectangles (including squares), circles and triangles). 3D shapes (for example, sphere, cone, cube).
Position and direction			To describe position, direction and movement, using the terms 'whole' and 'half' turns practically.

Year 2 ITAFs: Working Towards Expected (WTS)

Working At Expected (EXS)

Working at Greater Depth (GDS)

Mathematics

Half Termly Planning Objectives



The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools].

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.

Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Theme	Date	Week	Year 1 – Spring 2
Addition and subtraction			- To read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs within 20 (e.g. $7+6=13$, $5-3+2$ and $12 = 7+6$, $2 = 5-3$). To know bonds of all numbers to 10 (with concrete objects or pictorial representations). - To represent and use number bonds. - To add and subtract one-digit and two-digit numbers to 20, including zero. - To solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = () - 9$. - To understand the vocabulary associated with problem solving.
Multiplication and Division			To begin to know doubles to double 10. To begin to know corresponding halves. - To solve one-step problems involving multiplication and division by calculating the answer using concrete objects and pictorial representations with the support of the teacher. - To recognise patterns of numbers in $x2$ $x10$. - To recognise odd and even numbers.
Fractions			- To recognise, find and name a half as one of two equal parts of an object, shape or quantity using concrete objects. - To recognise, find and name a quarter as one of four equal parts of an object or shape using concrete objects.
Measurement (length, mass, capacity)			- To begin to measure the following using standard units of measurement and equipment e.g. rulers - Lengths and heights e.g. rulers, metre sticks. - Mass/weight e.g. scales. - Capacity and volume e.g. measuring jugs.
Measurement (money)			To recognise the value of different denominations of coins and notes (NOT conversion at this stage).

Year 2 ITAFs: **Working Towards Expected (WTS)**

Working At Expected (EXS)

Working at Greater Depth (GDS)

Mathematics

Half Termly Planning Objectives



The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools].

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.

Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Theme	Date	Week	Year 1 – Summer 1
Number and Place Value			- To count beyond 100, forwards and backwards, beginning with 0 or 1, or from any given number. - To be able to say one more or less than a number beyond 100. - To count in multiples of 2s, 5s to 100 and 10s to 120. - To say one more and one less than a given number. - To write numbers 1-20 in numerals and words (not necessarily spelt correctly). - To recognise odd and even numbers.
Addition and subtraction			- To read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs within 100. - To add and subtract one digit and two digit numbers to 100 (e.g. $46+3=49$ and $43=41+2$, $52=55-3$) To represent and use number bonds and related subtraction facts within 20 (using concrete objects or pictorial representations). To begin to know bonds of all numbers to 20 (using concrete objects or pictorial representations). - To solve one step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = [] - 9$ with numbers up to 100.
Multiplication and Division			- To group objects into 2, 5 or 10 to aid counting. - To 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. - To recognise patterns of numbers in $x2$ $x10$, $x5$.
Measurement (time)			- To use everyday language to compare, describe and solve practical problems for time e.g. quicker, slower, earlier and later. - To measure and begin to record time (hours, minutes, seconds). - To know the names of the seasons. - To know the names and sequence of the months.
Properties of Shape			- To recognise and name common 2D shapes in different orientations and sizes. - To recognise and name cube, cuboid, sphere, cylinder, cone and pyramid.
Position and direction			To describe position, direction and movement, using the terms 'quarter' and 'three quarter' turns.

Year 2 ITAFs: Working Towards Expected (WTS)

Working At Expected (EXS)

Working at Greater Depth (GDS)

Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools].

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.

Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Theme	Date	Week	Year 1 – Summer 2
Addition and subtraction			- To read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs within 100. - To add and subtract one digit and two digit numbers to 100 (e.g. $46+3=49$ and $43=41+2$, $52=55-3$) - To represent and use number bonds and related subtraction facts within 20 (using concrete objects or pictorial representations). - To begin to know bonds of all numbers to 20 (using concrete objects or pictorial representations). - To solve one step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = [] - 9$ with numbers up to 100.
Multiplication and Division			- To group objects into 2, 5 or 10 to aid counting. - To 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. - To recognise patterns of numbers in $x2$ $x10$, $x5$.
Fractions			To recognise, find and name a quarter as one of four equal parts of an object, shape or quantity using concrete objects.
Measurement (length, mass, capacity)			- To begin to measure and record the following using standard units of measurement and equipment when given the equipment and units of measure to use - Lengths and heights e.g. pen = 7cm. - Mass/weight e.g. glue stick = 10g. - Capacity and volume e.g. cup = 100ml.
Statistics			- Begin to interpret simple pictograms where the picture is worth 1 unit. - Begin to interpret simple tally charts.

Year 2 ITAFs: Working Towards Expected (WTS)

Working At Expected (EXS)

Working at Greater Depth (GDS)

Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools].

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.

Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Theme	Date	Week	Year 2 - Autumn 1
Number and Place Value			- To count in steps of 2 and 5 from 0; forwards and backwards. - To begin to use the term 'multiple'. - To identify and represent numbers using different representations. - To estimate a number of objects up to 20. - To compare and order numbers of objects up to 20. - To compare and order numbers up to 100. - To use number facts to solve problems. - To read and write numbers up to 50 in words and numerals (not necessarily spelt correctly).
Addition and subtraction			- To solve problems with addition and subtraction: - Using concrete objects and pictorial representations, including those involving numbers, quantities and measures. - To understand and use 'sum' and 'difference'. - To add and subtract numbers using a range of strategies e.g. concrete objects, hundred square, number line. - To begin to recall and use addition and subtraction facts for all numbers up to 10. - To begin to relate number facts to 10 to adding and subtracting multiples of 10 to 100. - To show that addition of two numbers can be done in any order (commutative).
Multiplication and Division			- To begin to recall x facts for 2s, 5s and 10s. - To recall doubles and halves to 20. ® - To begin to derive double multiples of 10 and relate this to the inverse e.g. double 30 is 60, half of 60 is 30. - To understand multiplication as repeated addition (for 2x, 5x and 10x). - To read and interpret ÷ = signs (when used in a number sentence). - To solve one-step problems involving multiplication and division using materials, arrays, including problems in contexts.
Measurement (time)			To tell and write the time to o'clock, half past and quarter past the hour and draw the hands on a clock face to show o'clock and half past.
Properties of Shape			- To recognise and name common 2D shapes in different orientations and sizes, for example, hexagons and pentagons. - To recognise and name 3D shapes, for example, cylinder.
Position and direction			To order and arrange combinations of mathematical objects in (increasingly complex) patterns and sequences.

Year 2 ITAFs: Working Towards Expected (WTS)

Working At Expected (EXS)

Working at Greater Depth (GDS)

Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools].

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.

Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Theme	Date	Week	Year 2 - Autumn 2
Addition and subtraction			- To solve problems with addition and subtraction: - Using concrete objects and pictorial representations, including those involving numbers, quantities and measures. - To understand and use 'sum' and 'difference'. - To add and subtract numbers using a range of strategies e.g. concrete objects, hundred square, number line. To begin to recall and use addition and subtraction facts for all numbers up to 10. To begin to relate number facts to 10 to adding and subtracting multiples of 10 to 100. - To show that addition of two numbers can be done in any order (commutative).
Multiplication and Division			- To begin to recall x facts for 2s, 5s and 10s. To recall doubles and halves to 20. ® - To begin to derive double multiples of 10 and relate this to the inverse e.g. double 30 is 60, half of 60 is 30. To understand multiplication as repeated addition (for 2x, 5x and 10x). - To read and interpret $\div$ = signs (when used in a number sentence). - To solve one-step problems involving multiplication and division using materials, arrays, including problems in contexts.
Fractions			- To count in halves from 0 to 10. - To recognise, find and name fractions $\frac{1}{2}$, $\frac{1}{3}$ and $\frac{1}{4}$ of a shape, set of objects or quantity using objects. - To begin to find $\frac{1}{2}$ and $\frac{1}{4}$ of a set of objects.
Measurement (length, mass, capacity)			- To begin to choose and use appropriate standard units to measure length/height in any direction (m/cm); mass (kg/g); temperature ($^{\circ}\text{C}$); capacity (litres, ml) to the nearest appropriate unit (e.g. nearest cm or m) using rulers, scales, thermometers and measuring vessels. - To begin to read labelled divisions for measure.
Measurement (money)			To recognise and use symbols for pounds (£) and pence (p). - To begin to solve simple problems in a practical context involving addition of money of the same unit, using appropriate amounts (e.g. 50p-23p, £5 - £4 – refer to addition and subtraction section for clarification).
Statistics			To accurately interpret and construct simple pictograms, tally charts and block diagrams.

Year 2 ITAFs: Working Towards Expected (WTS)

Working At Expected (EXS)

Working at Greater Depth (GDS)

Mathematics

Half Termly Planning Objectives



The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools].

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.

Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Theme	Date	Week	Year 2 – Spring 1
Number and Place Value			- To count in steps of ten from any number, forward and backward. - To demonstrate an understanding of place value e.g. the difference in tens and ones: 77 and 33 has a difference of 40 and 4 ones (can be done practically). - To recognise the place value of any digit in a two-digit number (tens, ones). - To partition numbers into tens and ones. - To name the value of any digit in whole numbers up to 99. - To identify, represent and estimate numbers using different representations, including the number line. - To compare and order numbers from 0 up to 100; use $<$, $>$ and $=$ signs. - To read and write numbers to at least 100 in numerals and in words. - To identify odd and even numbers. - To use place value and number facts to solve problems.
Addition and subtraction			- To solve 2 step problems with addition and subtraction: - Applying their increasing knowledge of mental and written methods (2 digit and 2 digit). - To add and subtract numbers using concrete objects, pictorial representations, and mentally, including: - A two-digit number and ones - A two-digit number and tens e.g. $23+10$, $43+20$ (not over 100 boundary) - Two two-digit numbers (begin to do this mentally for numbers that don't cross the 100 boundary e.g. $23+31$) - To recall and use addition and subtraction facts to at least 10, and begin to derive and use related facts up to 100. - To show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot. - To recognise and use the inverse relationship between addition and subtraction and solve missing number problems e.g. $___ - 14 = 28$. - To use estimation to check that their answers to a calculation are reasonable e.g. knowing $48 + 35$ will be less than 100.
Multiplication and Division			- To begin to recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables; use counting strategies to solve problems. - To make connections between multiplication by 2 and doubling and halving (and use these to reason about problems and calculations). - To calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division ($\div$) and equals = signs (within 2, 5 and 10 times tables). - To solve one step problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts (within the 2, 5 and 10 times tables). - To begin to recognise (using equipment) the relationship between addition and subtraction and can rewrite addition statements as simplified multiplication statements e.g. $2 + 2 + 2 = 3 \times 2$. - To show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot. - To recognise odd and even numbers to at least 100 (and explain why).
Measurement (time)			- To tell and write the time to o'clock, half past, quarter past and quarter to the hour and draw the hands on a clock face to show these times. - To know the number of minutes in an hour and the number of hours in a day.
Properties of Shape			- To identify and describe the properties of 3D shapes, including the number of edges, vertices and faces. - To identify 2D shapes on the surface of 3D shapes (e.g. a circle on a cylinder and a triangle on a pyramid).
Position and direction			To use mathematical vocabulary to describe position, direction and movement, including movement in a straight line.

Mathematics
Half Termly Planning
Objectives



Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools]. At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money. By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency. Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Theme	Date	Week	Year 2 – Spring 2
Addition and subtraction			- To solve 2 step problems with addition and subtraction: - Applying their increasing knowledge of mental and written methods (2 digit and 2 digit). - To add and subtract numbers using concrete objects, pictorial representations, and mentally, including: - A two-digit number and ones - A two-digit number and tens e.g. 23+10, 43+20 (not over 100 boundary) - Two two-digit numbers (begin to do this mentally for numbers that don't cross the 100 boundary e.g. 23+31) - To recall and use addition and subtraction facts to at least 10, and begin to derive and use related facts up to 100. - To show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot. - To recognise and use the inverse relationship between addition and subtraction and solve missing number problems e.g. $___ - 14 = 28$. - To use estimation to check that their answers to a calculation are reasonable e.g. knowing $48 + 35$ will be less than 100.
Multiplication and Division			- To begin to recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables; use counting strategies to solve problems. - To make connections between multiplication by 2 and doubling and halving (and use these to reason about problems and calculations). - To calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division ($\div$) and equals = signs (within 2, 5 and 10 times tables). - To solve one step problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts (within the 2, 5 and 10 times tables). - To begin to recognise (using equipment) the relationship between addition and subtraction and can rewrite addition statements as simplified multiplication statements e.g. $2 + 2 + 2 = 3 \times 2$. - To show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot. - To recognise odd and even numbers to at least 100 (and explain why).
Fractions			- To count in halves up to 10 from any number. - To recognise, find, name and write fractions $\frac{1}{3}$ and $\frac{1}{4}$ of a shape, set of objects or quantity using objects. - To recognise, find, name and write fractions of $\frac{1}{2}$ a length, shape, set of objects or quantity. - To write simple fractions for example, $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$.
Measurement (length, mass, capacity)			- To choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); capacity (litres, ml) to the nearest appropriate unit using rulers, scales and measuring vessels (not converting units – to the nearest appropriate unit). - To read scales in divisions of ones, twos, fives and tens in a practical situation where all the numbers on the scale are given. - To compare and order lengths, mass, volume/capacity and record the results using $<$ $>$ and $=$ (within the same measurement e.g. 30cm $>$ 23cm).
Measurement (money)			- To combine amounts of money to make a particular value using pounds and pence e.g. $36p = 20p + 10p + 5p + 1p$ or $\pounds 5.2 = \pounds 5 + 50p + 2p$. - To solve simple problems in a practical context involving addition and subtraction of money of the same unit using appropriate amounts (see addition and subtraction statements for guidance).
Statistics			- To interpret and construct simple tables. - To ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity.

Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools]. At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency. Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Theme	Date	Week	Year 2 – Summer 1
Number and Place Value			- To count in steps of 3 from 0 to at least 30. - To understand the importance of 0 as a place value holder in 2 and 3 digit numbers. - To partition numbers in different ways e.g. 23 as 20+3 or 10+13. - To begin to understand the place value of 3 digit numbers. - To estimate numbers on an empty number line. - To compare and order numbers beyond 100. - To round numbers to the nearest 10. - To read and write numbers beyond 100 in numerals and words. - To solve problems and explain reasoning.
Addition and subtraction			- To solve 3 step problems with addition and subtraction: - Applying their increasing knowledge of mental and written methods - To add 2 two digit numbers within 100 e.g. 48 + 35 and demonstrate their method using concrete apparatus or pictorial representations. - To add and subtract numbers mentally and using written columnar methods, including: - Adding several two-digit numbers - Subtracting two-digit numbers e.g. 74-33 - Mental calculations where regrouping is required e.g. 91-73 - Adding a two-digit number to a three-digit number - Adding and subtracting several single digit numbers - To begin to solve + and – in columns without crossing boundaries. - To recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100. - To recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems (involving a two-digit number and 1s or 10s). - To reason about addition e.g. the sum of 3 odd numbers will always be odd. - To solve more complex missing number problems e.g. 14 + ____ - 3 = 17.
Multiplication and Division			- To recall x facts for x2, 5, 10 and their inverse using the multiplication (x), division (÷) and equals (=) signs. - To relate fractions and measures e.g. 40÷2=20, and 20 is half of 40. - To derive facts for multiples of 5 by (for example) multiplying by 10 and halving. - To solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts. - To solve word problems that involve more than one step. - To use multiplication facts to make deductions outside known multiplication facts e.g. 18 x 5 cannot be 92 as it does not have a 0 or 5 in the ones. - To determine remainders using known facts. - To recognise the relationship between addition and subtraction and rewrite addition statements as simplified multiplication statements e.g. 10+10+10+5+5 = 3x10 + 2x5 = 4x10. - To count in 3s to solve x and ÷ problems for the 3 x table.
Measurement (time)			- To tell and write the time to five minutes and draw the hands on a clock face to show these times. - To know that there are 60 minutes in an hour and 24 hours in a day and use these facts to solve problems. - To compare and sequence intervals of time (e.g. I know a month is longer than a week – not converting and comparing units of time).
Properties of Shape			- To compare and sort common 2D and 3D shapes and everyday objects using more than one criterion (on the basis of their geometric properties including vertices, sides, edges, faces). - To describe the similarities and differences of shape properties e.g. that a cube and cuboid have the same number of edges, vertices and faces but can describe what is different about them. - To identify line symmetry in a vertical line when exploring 2D shapes.
Position and direction			- To explore, describe and explain patterns. - To distinguish between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns.

Mathematics

Half Termly Planning

Objectives



			To use the terms clockwise and anti-clockwise to describe position, direction and movement.
--	--	--	---

Year 2 ITAFs: **Working Towards Expected (WTS)**

Working At Expected (EXS)

Working at Greater Depth (GDS)

The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools]. At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency. Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Theme	Date	Week	Year 2 – Summer 2
Addition and subtraction			- To solve 3 step problems with addition and subtraction: - Applying their increasing knowledge of mental and written methods - To add 2 two digit numbers within 100 e.g. $48 + 35$ and demonstrate their method using concrete apparatus or pictorial representations. - To add and subtract numbers mentally and using written columnar methods, including: - Adding several two-digit numbers - Subtracting two-digit numbers e.g. $74 - 33$ - Mental calculations where regrouping is required e.g. $91 - 73$ - Adding a two-digit number to a three-digit number - Adding and subtracting several single digit numbers - To begin to solve + and – in columns without crossing boundaries. - To recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100. - To recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems (involving a two-digit number and 1s or 10s). - To reason about addition e.g. the sum of 3 odd numbers will always be odd. - To solve more complex missing number problems e.g. $14 + ___ - 3 = 17$.
Multiplication and Division			- To recall x facts for x2, 5, 10 and their inverse using the multiplication (x), division (÷) and equals (=) signs. - To relate fractions and measures e.g. $40 \div 2 = 20$, and 20 is half of 40. - To derive facts for multiples of 5 by (for example) multiplying by 10 and halving. - To solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts. - To solve word problems that involve more than one step. - To use multiplication facts to make deductions outside known multiplication facts e.g. 18×5 cannot be 92 as it does not have a 0 or 5 in the ones. - To determine remainders using known facts. - To recognise the relationship between addition and subtraction and rewrite addition statements as simplified multiplication statements e.g. $10 + 10 + 10 + 5 + 5 = 3 \times 10 + 2 \times 5 = 4 \times 10$. - To count in 3s to solve x and ÷ problems for the 3 x table.
Fractions			- To count in quarters up to 10 from any number. - To recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity using objects (include $\frac{2}{4}$). - To recognise and find the equivalence of $\frac{1}{2}$ and $\frac{2}{4}$ in practical contexts and when counting in fractions. - To find and compare fractions of amounts e.g. $\frac{1}{4}$ of £20 = £5 which is greater than $\frac{1}{2}$ of £8.
Measurement (length, mass, capacity)			To read scales in divisions of ones, twos, fives and tens in a practical situation where NOT all numbers on the scale are given.
Measurement (money)			- To find different combinations of coins that equal the same amounts of money. - To solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change with appropriate amounts (e.g. change from £1 or change from £50 e.g. £50-£36).
Statistics			- To interpret and construct pictograms (where the symbols show many-to-one correspondence) and block graphs (where the scale is divided into 2s and 5s). - To ask and answer questions about totaling and comparing categorical data.

Year 2 ITAFs: **Working Towards Expected (WTS)**

Working At Expected (EXS)

Working at Greater Depth (GDS)

Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of year 3, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Theme	Date	Week	Year 3 – Autumn 1
Number and place value			- To begin to count from 0 in multiples of 50 and 100. To recognise the place value of each digit in a three-digit number (hundreds, tens, ones). - To identify and represent numbers to 1000 using different representations (using counters, jottings, pictures). To partition 3 digit numbers into hundreds, tens and ones. To partition numbers in different ways e.g. 23 as 20+3 or 10+13. ® To estimate numbers on an empty number line ® - To round numbers to the nearest 10. ® - To find 10 or 100 more or less than a given number. - To read and write numbers up to 1000 in numerals.
Addition and subtraction			To add and subtract two 2 digit numbers where answers may exceed 100 (mentally). To solve 3 step problems with addition and subtraction within 100: - Applying their increasing knowledge of mental and written methods ® - To solve + and – in columns without crossing boundaries - To use rounding to make estimates. To reason about addition e.g. the sum of 3 odd numbers will always be odd. ® To solve more complex missing number problems e.g. 14 + ____ - 3 = 17. ®
Multiplication and division			- To learn facts for the 3 times tables and inverse. To learn multiplication facts up to 12 x 3. - To derive facts for x4 and x8 by doubling. - To solve mathematical statements for multiplication and division using known tables.
Measurement (time)			To tell and write the time to five minutes and draw the hands on a clock face to show these times. ® - To estimate and read time with increasing accuracy to the nearest minute. To know the number of seconds in a minute.
Properties of shapes			To recognise and name prisms. - To draw 2D shapes and make 3D shapes using modelling materials. - To recognise 3D shapes in different orientations and describe them. To identify right angles (as a quarter turn).
Position and direction			To use the terms clockwise and anti-clockwise to describe position, direction and movement. ®

Year 2 ITAFs: Working Towards Expected (WTS)

Working At Expected (EXS)

Working at Greater Depth (GDS)

Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Theme	Date	Week	Year 3 – Autumn 2
Addition and subtraction			- To add and subtract two 2 digit numbers where answers may exceed 100 (mentally). - To solve 3 step problems with addition and subtraction within 100: - Applying their increasing knowledge of mental and written methods ® - To solve + and – in columns without crossing boundaries - To use rounding to make estimates. - To reason about addition e.g. the sum of 3 odd numbers will always be odd. ® - To solve more complex missing number problems e.g. $14 + ___ - 3 = 17$. ®
Multiplication and division			- To learn facts for the 3 times tables and inverse. - To learn multiplication facts up to 12×3. - To derive facts for $\times 4$ and $\times 8$ by doubling. - To solve mathematical statements for multiplication and division using known tables.
Fractions			- To count up in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10. - To recognise the equivalence of $\frac{1}{2}$ and $\frac{2}{4}$ in practical contexts and when counting in fractions ® - To find and compare fractions of amounts e.g. $\frac{1}{4}$ of £20 = £5 which is greater than $\frac{1}{2}$ of £8. ® - To solve problems that involve all of the above, with appropriate fractions.
Measurement (length, mass, capacity)			- To read (and apply to problem solving) unlabelled divisions for measure – in 1s, 2s and 10s. - To reason about simple multiplicative relationships such as twice as long or 10 times as high (and drawing upon 2, 5 and 10 times table).
Statistics			- To interpret and construct pictograms (where the symbols show many-to-one correspondence) and block graphs (where the scale is divided into 2s and 5s). ® - To understand and use simple scales (e.g. divisions 2, 5 and 10).

Year 2 ITAFs: Working Towards Expected (WTS)

Working At Expected (EXS)

Working at Greater Depth (GDS)

Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Theme	Date	Week	Year 3 – Spring 1
Number and place value			- To count from 0 in multiples of 50 and 100. To understand the importance of 0 as a place holder in numbers up to 1000. - To name the value of any digit in whole numbers up to 999. - To partition 3 digit numbers in different ways e.g. 342 becomes $300 + 20 + 22$. - To identify, represent and estimate numbers up to 1000 using different representations using counters, jottings or pictures. - To compare and order numbers up to 1000, using $<$ $>$ and $=$ - To round numbers to nearest 100. To find 10 or 100 more or less than a given number. - To read and write numbers up to 1000 in numerals and in words. - To solve number problems and practical problems involving these ideas.
Addition and subtraction			- To add and subtract numbers mentally, including: - A three-digit number and ones - A three-digit number and tens (multiples of 10) - A three-digit number and hundreds (multiples of 100) To use columnar method for + and – with 2 digit numbers, crossing tens boundaries. - To estimate the answer to a calculation. - To begin to solve problems, using number facts, place value, and multiple step addition and subtraction with numbers up to 100. - To begin to solve missing number problems involving addition and subtraction with number bonds up to 100, which include balancing equation e.g. $48 + \underline{\quad} = 100$.
Multiplication and division			- To recall and use multiplication and division facts for the 3, 4 and 8 times tables. - To begin to write and calculate mathematical statements for multiplication and division using the multiplication tables above, including for two-digit numbers times one-digit numbers, using mental methods and jottings. - To begin to write and calculate mathematical statements for multiplication and division using the multiplication tables above, including for two-digit numbers times one-digit numbers, using formal written methods. - To solve missing number problems involving multiplication and division.
Measurement (time)			- To estimate and read time with increasing accuracy to the nearest minute using the vocabulary of am/pm. - To tell and write the time from an analogue clock, including using Roman numerals from I to XII, and the 12-hour clock. - To compare durations of events (for example to calculate the time taken by particular events or tasks).
Properties of shapes			- To identify horizontal and vertical lines. - To recognise angles as a property of shape or a description of turn. To identify right angles, recognise that two right angles make a half turn, three make three quarters of a turn and four complete a turn.
Position and direction			To know and use the terms 'North', 'South', 'East', 'West'.

Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Theme	Date	Week	Year 3 – Spring 2
Addition and subtraction			- To add and subtract numbers mentally, including: - A three-digit number and ones - A three-digit number and tens (multiples of 10) - A three-digit number and hundreds (multiples of 100) <u>To use columnar method for + and – with 2 digit numbers, crossing tens boundaries.</u> - To estimate the answer to a calculation. - To begin to solve problems, using number facts, place value, and multiple step addition and subtraction with numbers up to 100. - To begin to solve missing number problems involving addition and subtraction with number bonds up to 100, which include balancing equation e.g. $48 + \underline{\quad} = 100$.
Multiplication and division			- To recall and use multiplication and division facts for the 3, 4 and 8 times tables. - To begin to write and calculate mathematical statements for multiplication and division using the multiplication tables above, including for two-digit numbers times one-digit numbers, using mental methods and jottings. - To begin to write and calculate mathematical statements for multiplication and division using the multiplication tables above, including for two-digit numbers times one-digit numbers, using formal written methods. - To solve missing number problems involving multiplication and division.
Fractions			- To count up and down in tenths. <u>To recognise, find and write fractions of a discrete set of objects: non-unit fractions with small denominators.</u> - To recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. <u>To compare and order unit fractions and fractions with the same denominators.</u> - To recognise and show, using diagrams, equivalent fractions with small denominators. - To place fractions on a number line. - To add and subtract fractions with the same denominator within one whole [for example, $5/7 + 1/7 = 6/7$] with appropriate fractions. - To solve problems that involve all of the above, with appropriate fractions.
Measurement (length, mass, capacity)			- To measure and compare: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml). - To add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml). <u>To measure the perimeter of simple 2D shapes.</u> - To read (and apply to problem solving) labelled divisions for measure – in 1s, 2s, 5s, 10s, 100s – and begin to do so for unlabelled divisions up to the same numbers.
Statistics			- To interpret and present data using bar charts, pictograms and tables. - To solve one-step questions (for example, ‘how many more?’ And ‘how many fewer?’ using information presented in scaled bar charts and pictograms and tables.

Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Theme	Date	Week	Year 3 – Summer 1
Number and place value			- To count from 0 in multiples of 4, 8, 50 and 100. - To use partitioning up to 999 to solve problems. - To identify, represent and estimate numbers using different representations including measures up to 1000. - To compare and order numbers beyond 1000, using < > and = - To round numbers to the nearest 10 or 100. - To confidently read and write numbers beyond 1000 in numerals and in words. - To read Roman numerals up to 20. - To solve number problems and practical problems involving these ideas and explain reasoning.
Addition and subtraction			- To add and subtract numbers mentally, including: - A three-digit numbers and ones @ - A three-digit numbers and tens (multiples of 10) @ - A three-digit number and hundreds (multiples of 100) @ - To add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction up to 999. - To estimate the answer to a calculation and use inverse operations to check answers. - To solve problems, using number facts, place value, and multiple step addition and subtraction (with numbers up to 100). - To solve missing number problems involving addition and subtraction with numbers up to 100, which include balancing equations e.g. $48 + \underline{\quad} = 100$.
Multiplication and division			- To know facts for 2, 3, 4, 5, 8, 10 times tables up to $\times 12$. - To write and calculate mathematical statements for multiplication and division using the multiplication tables above, including for two-digit numbers times one-digit numbers, using mental methods and jottings. - To write and calculate mathematical statements for multiplication and division using the multiplication tables above, including for two-digit numbers times one-digit numbers, using formal written methods. - To solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems.
Measurement (time)			- To tell and write the time from an analogue clock, including using 12-hour and 24-hour clocks. - To estimate and read time with increasing accuracy to the nearest minute. - To record and compare time in terms of seconds, minutes and hours. - To use vocabulary such as o'clock, morning, afternoon, noon and midnight. - To know the number of days in each month, year and leap year.
Properties of shapes			- To identify vertical and horizontal lines of symmetry in common 2D shapes. - To identify pairs of perpendicular parallel lines. - To identify whether angles are greater than or less than a right angle.
Position and direction			- To know and use the terms 'North', 'North-East', 'East', 'South-East', 'South', 'South-West', 'West' and 'North-West'. - To be able to move between compass directions in half and quarter turns.

Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Theme	Date	Week	Year 3 – Summer 2
Addition and subtraction			- To add and subtract numbers mentally, including: - A three-digit numbers and ones @ - A three-digit numbers and tens (multiples of 10) @ - A three-digit number and hundreds (multiples of 100) @ To add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction up to 999. - To estimate the answer to a calculation and use inverse operations to check answers. - To solve problems, using number facts, place value, and multiple step addition and subtraction (with numbers up to 100). - To solve missing number problems involving addition and subtraction with numbers up to 100, which include balancing equations e.g. $48 + \underline{\quad} = 100$.
Multiplication and division			To know facts for 2, 3, 4, 5, 8, 10 times tables up to x12. - To write and calculate mathematical statements for multiplication and division using the multiplication tables above, including for two-digit numbers times one-digit numbers, using mental methods and jottings. - To write and calculate mathematical statements for multiplication and division using the multiplication tables above, including for two-digit numbers times one-digit numbers, using formal written methods. - To solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems.
Fractions			- To count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10. To recognise, find and write fractions of a discrete set of objects: non-unit fractions with small denominators. - To compare and order unit fractions, and fractions with the same denominators using $<$ $>$ $=$ - To solve problems that involve all of the above, with appropriate fractions, including measures.
Measurement (length, mass, capacity)			To measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml). - To read (and apply to problem solving) labelled and unlabelled divisions for measure – in 1s, 2s, 5s, 10s, 100s and other multiples of 1000.
Measurement (money)			To add and subtract amounts of money to give change, using both £ and p in practical contexts with appropriate amounts up to £5.
Statistics			To solve 2 step questions (for example, 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables.

Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Theme	Date	Week	Year 4 – Autumn 1
Number and place value			- To confidently count on in multiples of 2, 3, 4, 5, 8, 10 @ 50 and 100 (from any given starting number). - To recognise the place value of each digit in a four-digit number (thousands, hundreds, tens and ones). - To begin to identify, represent and estimate four-digit numbers up to 9999 using different representations (using counters, jottings, pictures). - To find 1000 more or less than a given number. - To read Roman numerals to 50 (I to L) - To begin to understand the concept of negative numbers. - To solve number and practical problems that involve all of the above.
Addition and subtraction			- To add and subtract numbers mentally, including: - Four-digit numbers and ones (multiples of 10) - Four-digit numbers and tens (multiples of 100) - With different numbers of digits e.g. 3 digit +/- 2 digit (without crossing the 100s boundary) - To add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction with answers exceeding 999. - To solve problems, using number facts, place value, and multiple step addition and subtraction with numbers up to 1000 (explaining reasoning). - To solve missing number problems involving addition and subtraction, which include balancing equations, with numbers up to 1000, explaining reasoning.
Multiplication and division			- To know facts for 2, 3, 4, 5, 8, 10 times tables up to x12. @ - To understand the term 'factor'. - To solve problems including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects. - To use place value, known and derived facts to multiply and divide mentally, including: - Multiplying by 0 and 1 - Dividing by 1 - e.g. $2 \times 3 = 6$ so $600 \div 3 = 200$
Measurement (time)			To read and write analogue and digital time.
Properties of shapes			- To know names of common quadrilaterals. - To know and name common triangles. - To identify all lines of symmetry in common 2D shapes. - To complete a simple symmetric figure with respect to a specific line of symmetry.
Position and direction			To know and use all terms relating to compass directions.

Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Theme	Date	Week	Year 4 – Autumn 2
Addition and subtraction			- To add and subtract numbers mentally, including: - Four-digit numbers and ones (multiples of 10) - Four-digit numbers and tens (multiples of 100) - With different numbers of digits e.g. 3 digit +/- 2 digit (without crossing the 100s boundary) - To add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction with answers exceeding 999. - To solve problems, using number facts, place value, and multiple step addition and subtraction with numbers up to 1000 (explaining reasoning). - To solve missing number problems involving addition and subtraction, which include balancing equations, with numbers up to 1000, explaining reasoning.
Multiplication and division			<u>To know facts for 2, 3, 4, 5, 8, 10 times tables up to x12. @</u> - To understand the term 'factor'. - To solve problems including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects. <u>To use place value, known and derived facts to multiply and divide mentally, including:</u> <u>Multiplying by 0 and 1</u> <u>Dividing by 1</u> <u>e.g. $2 \times 3 = 6$ so $600 \div 3 = 200$</u>
Fractions (including decimals)			- To count up in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. - To compare and order unit fractions, and fractions with the same denominators using <, > and =. @ <u>To add and subtract fractions with the same denominator within one whole [for example, $5/7 + 1/7 = 6/7$] with appropriate fractions. @</u> - To solve problems with simple non-unit fractions ($3/4$, $52/3$) to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number. <u>Round decimals with one decimal place to the nearest whole number.</u> - To solve simple measure and money problems involving fractions and decimals to one decimal place.
Measurement (length, mass, capacity)			<u>To find the area of rectilinear shapes by counting squares.</u> - To measure and calculate the perimeter of a rectilinear figure (including squares) in cm and m.
Measurement (money)			To use decimal notation to record money.
Statistics			<u>To solve 2 step questions (for example, 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables. @</u>

Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Theme	Date	Week	Year 4 – Spring 1
Number and place value			- To begin to count in multiples of 25 and 1000. - To begin to identify, represent and estimate four digit numbers up to 9999 using different representations (counters, jottings, pictures). @ - To order and compare numbers beyond 1000 using $< > =$ @ - To round any number to the nearest 1000. - To find 1000 more or less than a given number. <u>To read Roman numerals to 100 (I to C)</u> and know that over time, the numeral system changed to include the concept of zero and place value. <u>To count backwards through zero to include negative numbers.</u> - To solve number and practical problems that involve all of the above and with increasingly large positive numbers up to 10,000.
Addition and subtraction			<u>To add and subtract numbers mentally, including:</u> <u>Four-digit numbers and hundred (multiples of 100)</u> <u>Four-digit numbers and thousands (multiples of 1000) (including crossing the 100s boundary).</u> - To add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate not crossing the thousands barrier. - To begin to estimate and use inverse operations to check answers to a calculation with appropriate numbers (up to 9999). - To begin to solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why; with numbers up to 9999. - To begin to solve missing number problems involving addition and subtraction with numbers up to 1000, which include balancing equations.
Multiplication and division			- To know multiplication and division facts for 6 and 9 times tables. - To recall multiplication and division facts for all multiplication tables up to 12×12. - To recognise and use factor pairs and commutativity in mental calculations. <u>To multiply two-digit and three-digit numbers by a one-digit number using a formal written layout.</u> - To begin to divide two-digit and three-digit numbers by a one-digit number using a formal written layout. - To 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 in which n objects are connected to m objects (using appropriate $\times$ tables).
Measurement (time)			<u>To convert between analogue and digital 12- and 24-hour clocks (using am and pm).</u>
Properties of shapes			- To compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes. - To identify lines of symmetry in 2D shapes presented in different orientations. <u>To identify acute and obtuse angles.</u>
Position and direction			<u>To describe positions on a 2D grid as coordinates in the first quadrant.</u> - To read, write and use pairs of co-ordinates (2,5). - To describe movements between positions as translations of a given unit to the left/right and up/down.

Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Theme	Date	Week	Year 4 – Spring 2
Addition and subtraction			<u>To add and subtract numbers mentally, including:</u> Four-digit numbers and hundred (multiples of 100) Four-digit numbers and thousands (multiples of 1000) (including crossing the 100s boundary). - To add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate not crossing the thousands barrier. - To begin to estimate and use inverse operations to check answers to a calculation with appropriate numbers (up to 9999). - To begin to solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why; with numbers up to 9999. - To begin to solve missing number problems involving addition and subtraction with numbers up to 1000, which include balancing equations.
Multiplication and division			- To know multiplication and division facts for 6 and 9 times tables. - To recall multiplication and division facts for all multiplication tables up to 12 x 12. - To recognise and use factor pairs and commutativity in mental calculations. <u>To multiply two-digit and three-digit numbers by a one-digit number using a formal written layout.</u> - To begin to divide two-digit and three-digit numbers by a one-digit number using a formal written layout. - To 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 in which n objects are connected to m objects (using appropriate x tables).
Fractions (including decimals)			- To count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten, including use of a number line. <u>To recognise and show, using diagrams, families of common equivalent fractions $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{3}$.</u> <u>To add and subtract fractions with the same denominator within and beyond one.</u> <u>To recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$.</u> - To 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. <u>To recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$.</u> - To compare numbers with one decimal place. - To solve simple measure and money problems involving fractions and decimals to two decimal places.
Measurement (length, mass, capacity)			- To read (and apply to problem solving) labelled/unlabelled divisions for measure – in 25s, 50s, 100s and other multiples of 1000. - To convert between different units of measure [for example, kilometre to metre, hour to minute].
Measurement (money)			To compare and calculate different measures, including money in pounds and pence.
Statistics			<u>To draw and read line graphs.</u>

Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Theme	Date	Week	Year 4 – Summer 1
Number and place value			- To count in multiples of 6, 9, 25 and 100. - Use partitioning up to 9999 to solve problems. - To begin to identify, represent and estimate numbers up to 10,000 using different representations. - To read, write and order numbers to 10,000. To round any number to the nearest 10, 100, 1000. To read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value. ® - To begin to order and compare negative numbers. To count forwards through zero from a negative number. To order and compare numbers beyond 1000 using <, > and = - To solve number and practical problems that involve all of the above and with increasingly large positive numbers up to 10,000 and explain reasoning. - Begin to solve problems with negative numbers in context e.g. temperature.
Addition and subtraction			To add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate, crossing the thousands barriers with different numbers of digits e.g. 4-digit – 3-digit. To estimate and use inverse operations to check answers to a calculation with appropriate number, explaining reasoning and beginning to ensure that solutions make sense in the context of a problem. - To solve missing number problems involving addition and subtraction with numbers up to 1000, explaining reasoning.
Multiplication and division			- To know 7 and 11 times tables. To instantly recall all facts for tables to 12 x 12. To begin to use the formal method of short multiplication. To begin to use the formal method of short division. - To 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 in which n objects are connected to m objects (using appropriate x tables). - To use place value, known and derived facts to multiply and divide mentally, including: - Multiplying by 0 and 1 - Dividing by 1 - Multiplying together 3 numbers To multiply and divide whole numbers by 10, 100.
Measurement (time)			To solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days using appropriate amounts. - To convert between different units of measure, for example: hour to minute. ®
Properties of shapes			To compare and order angles up to two right angles by size.
Position and direction			To plot specified points and draw sides to complete a given polygon.

Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Theme	Date	Week	Year 4 – Summer 2
Addition and subtraction			- To add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate, crossing the thousands barriers with different numbers of digits e.g. 4-digit – 3-digit. - To estimate and use inverse operations to check answers to a calculation with appropriate number, explaining reasoning and beginning to ensure that solutions make sense in the context of a problem. - To solve missing number problems involving addition and subtraction with numbers up to 1000, explaining reasoning.
Multiplication and division			- To know 7 and 11 times tables. - To instantly recall all facts for tables to 12 x 12. - To begin to use the formal method of short multiplication. - To begin to use the formal method of short division. - To 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 in which n objects are connected to m objects (using appropriate x tables). - To use place value, known and derived facts to multiply and divide mentally, including: - Multiplying by 0 and 1 - Dividing by 1 - Multiplying together 3 numbers - To multiply and divide whole numbers by 10, 100.
Fractions (including decimals)			- To connect hundredths to tenths and place value and decimal measures. - To recognise and write decimal equivalents of any number of tenths or hundredths, including use of the number line. - To compare numbers with up to two decimal places. - To 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. - To solve simple measure and money problems involving fractions and decimals to two decimal places, with a mixed number of decimal places.
Measurement (length, mass, capacity)			- To begin to read (and apply to problem solving) labelled divisions for measure – including decimals (tenths). - To convert between different units of measure [for example, kilometre to metre, hour to minute]. ®
Measurement (money)			To estimate, compare and calculate different measures, including money in pounds and pence.
Statistics			- To draw and read line graphs. ® - To interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.

Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Pupils should read, spell and pronounce mathematical vocabulary correctly.

Theme	Date	Week	Year 5 – Autumn 1
Number and place value			- To count in multiples of 7. - To count forwards or backwards in steps of powers of 10 for any given number up to 10,000. - To identify, represent and estimate numbers up to 10,000 using different representations. - To read, write, order and compare numbers to at least 10,000 and determine the value of each digit. <u>To order and compare negative numbers using $<$ $>$ and $=$.</u> <u>To round any number up to 10,000 to the nearest 10, 100 and 1000.</u> <u>To read Roman numerals to 1000 (M)</u> - To recognise and describe linear number sequences.
Addition and subtraction			To solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why; with four digit numbers and explain their reasoning.
Multiplication and division			<u>To instantly recall all facts for tables to 12x12. @</u> - To identify multiples and factors, including finding all factor pairs of a number. <u>To multiply and divide numbers mentally drawing upon known facts.</u> - To use formal methods of short multiplication. - To divide numbers up to 4 digits by a one-digit number using the formal written method of short division without remainders in the context. - To 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 (using appropriate times tables). <u>To multiply and divide whole numbers by 10, 100 and 1000.</u> <u>To know and use the vocabulary of prime numbers.</u> - To recognise and use squared numbers, and the notation for squared (2).
Properties of shapes			<u>To identify 3D shapes, including cubes and other cuboids, from 2D representations.</u> - To distinguish between regular and irregular polygons based on reasoning about equal sides and angles. <u>To know that angles are measured in degrees.</u> <u>To estimate and compare acute, obtuse and reflex angles.</u> - To draw given angles, and measure them to the nearest 10°.

Year 6 ITAFs

Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Pupils should read, spell and pronounce mathematical vocabulary correctly.

Theme	Date	Week	Year 5 – Autumn 2
Addition and subtraction			To solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why; with four digit numbers and explain their reasoning.
Multiplication and division			To instantly recall all facts for tables to 12x12. @ - To identify multiples and factors, including finding all factor pairs of a number. To multiply and divide numbers mentally drawing upon known facts. - To use formal methods of short multiplication. - To divide numbers up to 4 digits by a one-digit number using the formal written method of short division without remainders in the context. - To 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 (using appropriate times tables). To multiply and divide whole numbers by 10, 100 and 1000. To know and use the vocabulary of prime numbers. - To recognise and use squared numbers, and the notation for squared (²).
Fractions (including decimals and percentages)			To identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths. - To compare and order fractions whose denominators are all multiples of the same number. - To add and subtract fractions with the same denominator. - To read, write, order and compare numbers with up to two decimal places. - To round decimals with two decimal places to the nearest whole number. To read and write decimal numbers as fractions (for example, 0.71 = 71/100) - To recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.
Measurement (length, mass, capacity)			To measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres. - To begin to read (and apply to problem solving) labelled divisions for measure with both decimals (up to 3dp) and whole numbers up to 1,000,000. - To use all four operations to solve problems involving measure (for example, length, mass, money) using decimal notation, including scaling with appropriate numbers.
Measurement (money)			To use all four operations to solve problems involving measure (for example, length, mass, money) using decimal notation, including scaling with appropriate numbers.
Statistics			- To solve comparison, sum and difference problems using information presented in a line graph. - To solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.

Year 6 ITAFs

Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Pupils should read, spell and pronounce mathematical vocabulary correctly.

Theme	Date	Week	Year 5 – Spring 1
Number and place value			- To count forwards or backwards in steps of powers of 10 for any given number up to 100,000. - To read, write, order and compare numbers to at least 100,000 and determine the value of each digit using $<$, $>$ and $=$. To round any number up to 10,000 to the nearest 10, 100, 1000. ® To interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero. To recognise and describe linear number sequences including fractions and decimals. - To solve number problems and practical problems involving all of the above.
Addition and subtraction			With numbers up to 10,000 and/or mixed numbers of digits: To add and subtract numbers mentally with increasingly larger numbers up to 10,000. To add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction). - To use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy. - To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
Multiplication and division			- To identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. - To 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. To 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. To solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign. - To multiply and divide whole numbers and those involving decimals by 10 and 100. - To establish whether a number up to 100 is prime and recall prime numbers up to 19. - To recognise and use squared and cubed numbers, and the notation for squared (2).
Measurement (time)			To solve problems involving converting between units of time (including problems involving the duration of events).
Properties of shapes			To identify: Angles at a point and one whole turn (total 360°) Angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180°) Angles at other multiples of 90° - To draw given angles, and measure them to the nearest 5°.
Position and direction			To describe positions on a 2D grid as coordinates in the first quadrant. ® - To identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language and know that the shape has not changed.

Year 6 ITAFs

Mathematics

Half Termly Planning Objectives



The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Pupils should read, spell and pronounce mathematical vocabulary correctly.

Theme	Date	Week	Year 5 – Spring 2
Addition and subtraction			<i>With numbers up to 10,000 and/or mixed numbers of digits:</i> - To add and subtract numbers mentally with increasingly larger numbers up to 10,000. - To add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction). - To use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy. - To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
Multiplication and division			- To identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. - To 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. - To 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. - To solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign. - To multiply and divide whole numbers and those involving decimals by 10 and 100. - To establish whether a number up to 100 is prime and recall prime numbers up to 19. - To recognise and use squared and cubed numbers, and the notation for squared (²).
Fractions (including decimals and percentages)			- To add and subtract fractions with the same denominator and denominators that are multiples of the same number. - To recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number (e.g. $2/5 + 4/5 = 6/5 = 1 \frac{1}{5}$). - To multiply proper fractions and mixed numbers by whole number, supported by materials and diagrams. - To calculate simple fractions and percentages of whole numbers and quantities. - To read, write, order and compare numbers with up to three decimal places. - To round decimals with two decimal places to the nearest whole number and to one decimal place. - To add and subtract decimal numbers (to at least 3dp) and round as required. - To solve problems involving decimals with up to 3dp.
Measurement (length, mass, capacity)			- To calculate and compare the area of rectangles (including squares) and including using standard units, square centimetres and square metres and estimate the area of irregular shapes (if necessary, by counting squares including fractions of squares). - To begin to read (and apply to problem solving) unlabelled divisions for measure with both decimals (up to 3dp) and whole numbers up to 1,000,000. - To convert between different units of metric measure (for example, kilometre to metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre). - To use all four operations to solve problems involving measure (for example, length, mass, money) using decimal notation, including scaling with appropriate numbers.
Statistics			To complete, read and interpret information in tables, including timetables.

Year 6 ITAFs

Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Pupils should read, spell and pronounce mathematical vocabulary correctly.

Theme	Date	Week	Year 5 – Summer 1
Number and place value			- To count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000. To read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit using <, > and =. - To round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000. - To recognise years written in Roman numerals (i.e. read and write Roman numerals to at least 3000- MMM). - To recognise and describe linear number sequences including fractions and decimals and find term to term rule in words.
Addition and subtraction			<i>With numbers up to 100,000 and/or mixed numbers of digits:</i> To add and subtract numbers mentally with increasingly large numbers up to 100,000. To add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction). - To use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy. To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. - To use calculators to explore more complex number problems.
Multiplication and division			- To 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. @ To 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, expressing remainders as a fraction or decimal. - To solve problems involving multiplication and division, including scaling (multiplicative reasoning) by simple fractions and problems involving simple rates. To multiply and divide whole numbers and those involving decimals (up to 3dp) by 10, 100 and 1000. - To know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. To recognise and use squared numbers (up to at least 144) and cubed numbers, and the notation for squared (²) and cubed (³). - To solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes. - To begin to use letters to symbolise unknown numbers to help to solve missing number problems involving multiplication and division (with one unknown).
Properties of shapes			- To use the properties of rectangles to deduce related facts and find missing lengths and angles. To draw given angles, and measure them to the nearest °
Position and direction			To describe positions on a 2D grid as coordinates in the first two quadrants.

Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Pupils should read, spell and pronounce mathematical vocabulary correctly.

Theme	Date	Week	Year 5 – Summer 2
Addition and subtraction			<i>With numbers up to 100,000 and/or mixed numbers of digits:</i> - To add and subtract numbers mentally with increasingly large numbers up to 100,000. - To add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction). - To use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy. - To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. - To use calculators to explore more complex number problems.
Multiplication and division			- To 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. @ - To 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, expressing remainders as a fraction or decimal. - To solve problems involving multiplication and division, including scaling (multiplicative reasoning) by simple fractions and problems involving simple rates. - To multiply and divide whole numbers and those involving decimals (up to 3dp) by 10, 100 and 1000. - To know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. - To recognise and use squared numbers (up to at least 144) and cubed numbers, and the notation for squared (²) and cubed (³). - To solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes. - To begin to use letters to symbolise unknown numbers to help to solve missing number problems involving multiplication and division (with one unknown).
Fractions (including decimals and percentages)			- To identify equivalent fractions, using common multiples to express fractions in the same denomination. - To recognise the percent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal. - To solve problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25.
Measurement (length, mass, capacity)			- To read labelled/unlabelled divisions for measure with both decimals (up to 3dp) and whole numbers up to 1,000,000. - To estimate volume [for example, using 1cm³ to build cuboids (including cubes)] and capacity (for example using water). - To understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints.

Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Pupils should read, spell and pronounce mathematical vocabulary correctly.

Theme	Date	Week	Year 6 – Autumn 1
Number and place value			- To count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000. ® To read and write numbers up to at least 1,000,000 in numerals and words and determine the value of each digit using < > and =. - To round any whole number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 1,000,000.
Addition and subtraction			To add and subtract numbers mentally with increasingly larger numbers up to 10,000. To add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction). - To use rounding to check answers to a calculation and determine, in the context of a problem, levels of accuracy. To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. - To use letters to symbolise unknown numbers to help to solve missing number problems involving addition and subtraction (with one unknown).
Multiplication and division			To multiply and divide numbers mentally drawing upon known facts. ®
Properties of shapes			- To use the properties of rectangles to deduce related facts and find missing lengths and angles. ® To draw given angles, and measure them to the nearest °. ®

Year 6 ITAFs

Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Pupils should read, spell and pronounce mathematical vocabulary correctly.

Theme	Date	Week	Year 6 – Autumn 2
Addition and subtraction	30.10.18 – 2.11.18	1&2	- To add and subtract numbers mentally with increasingly larger numbers up to 10,000. - To add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction). - To use rounding to check answers to a calculation and determine, in the context of a problem, levels of accuracy. - To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. - To use letters to symbolise unknown numbers to help to solve missing number problems involving addition and subtraction (with one unknown).
Multiplication and division	22.10.18	1	To multiply and divide numbers mentally drawing upon known facts. ®
Fractions (including decimals and percentages)	30.10.18 – 2.11.18	1	- To add and subtract decimal numbers (to at least 3dp) and round as required. ® - To solve problems involving numbers up to three decimal places. - To solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25. ® - To calculate simple fractions and percentages of whole numbers and quantities.
Measurement (length, mass, capacity)			- To read and apply to problem solving, labelled and unlabelled divisions for measure with both decimals (up to 3dp) and whole numbers up to 1,000,000. ® - To use all four operations to solve problems involving measure (for example, length, mass, money) using decimal notation, including scaling with appropriate numbers. ®

Year 6 ITAFs

Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Pupils should read, spell and pronounce mathematical vocabulary correctly.

Theme	Date	Week	Year 6 – Spring 1
Number and place value			- To read, write, order and compare numbers up to 10,000,000 in numerals and words and determine the value of each digit. - To round any whole number to a required degree of accuracy. - To use negative numbers in context. - To solve number and practical problems that involve all of the above.
Addition and subtraction			- To use calculators to develop and investigate patterns and sequences. - To start to understand the use of brackets.
Multiplication and division			To divide numbers up to 4 digits by a two-digit number using the formal written method of short division.
Properties of shapes			- To draw 2D shapes using given dimensions and angles. - To recognise, describe and build simple 3D shapes, including making nets. - To calculate, estimate and compare the volume of cubes/cuboids using standard units.
Position and direction			- To describe positions on the full coordinate grid (all four quadrants). - To draw and translate simple shapes on the coordinate plane in the first quadrant.
Algebra			- To use simple formulae. - To generate and describe linear number sequences. - To express missing number problems algebraically.

Year 6 ITAFs

Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Pupils should read, spell and pronounce mathematical vocabulary correctly.

Theme	Date	Week	Year 6 – Spring 2
Addition and subtraction			- To use calculators to develop and investigate patterns and sequences. To start to understand the use of brackets.
Multiplication and division			To divide numbers up to 4 digits by a two-digit number using the formal written method of short division.
Fractions (including decimals and percentages)			- To compare and order fractions, including fractions >1. To multiply simple pairs of proper fractions. To divide proper fractions by whole numbers (e.g. $1/3 \div 2 = 1/6$). To associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (3/8). To identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places. To multiply one-digit numbers with up to two decimal places by whole numbers. To recall and use equivalences between simple fractions, decimals and percentages. - To round decimals for simple fractions with recurring decimal equivalents.
Measurement (length, mass, capacity)			To recognise that shapes with the same areas can have different perimeters and vice versa. - To convert between miles and kilometres.
Statistics			To interpret pie charts and line graphs and use these to solve problems.
Ratio and proportion			- To solve problems involving the calculation of percentages (e.g. of measures, and such as 15% of 360) and the use of percentages for comparison, multiples of 5 and 10. To solve problems involving similar shapes where the scale factor is known or can be found. To use simple ratio and proportional reasoning to solve problems.

Year 6 ITAFs

Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Pupils should read, spell and pronounce mathematical vocabulary correctly.

Theme	Date	Week	Year 6 – Summer 1
Number and place value			- To read, write, order and compare numbers up to 10,000,000 and determine the value of each digit. - To round any number to a required degree of accuracy. ® - To use negative numbers in context, and calculate intervals across zero. - To solve number and practical problems that involve all of the above.
Addition and subtraction			- To perform mental calculations, including with mixed operations and large numbers. - To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. - To use estimation (and approximation) to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. - To explore the order of operations using brackets e.g. $2+1 \times 3=5$; $[2+1] \times 3=9$ - To use their knowledge of the order of operations to carry out calculations involving the four operations.
Multiplication and division			- To perform mental calculations, including with mixed operations and large numbers. - To multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication. - To divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate to the context. - To solve multiplication and division multi-step problems in contexts, deciding which operations and methods to use and why. - To solve problems involving addition, subtraction, multiplication and division. - To identify common factors, common multiples and prime numbers. - To use their knowledge of the order of operations to carry out calculations involving the four operations. - To use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. - To check with a calculator.
Measurement (time)			To use, read, write and convert between different standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit and vice versa, using decimal notation up to three decimal places.
Properties of shapes			- To compare and classify geometric shapes based on their properties. - To illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius. - To find unknown angles in any triangles and quadrilaterals. - To recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.
Position and direction			- To draw and translate simple shapes on the coordinate plane in any quadrant and reflect them in the axis. - To solve problems relating to coordinates, reflections and translations.
Algebra			- To find pairs of numbers that satisfy an equation with two unknowns. - To find possible values in missing number problems and equations involving 1 or 2 unknowns.

Year 6 ITAFs

Mathematics

Half Termly Planning

Objectives



The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Pupils should read, spell and pronounce mathematical vocabulary correctly.

Theme	Date	Week	Year 6 – Summer 2
Addition and subtraction			- To perform mental calculations, including with mixed operations and large numbers. To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. To use estimation (and approximation) to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. - To explore the order of operations using brackets e.g. $2+1 \times 3=5$; $[2+1] \times 3=9$ To use their knowledge of the order of operations to carry out calculations involving the four operations.
Multiplication and division			- To perform mental calculations, including with mixed operations and large numbers. To multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication. To divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate to the context. To solve multiplication and division multi-step problems in contexts, deciding which operations and methods to use and why. - To solve problems involving addition, subtraction, multiplication and division. - To identify common factors, common multiples and prime numbers. - To use their knowledge of the order of operations to carry out calculations involving the four operations. - To use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. - To check with a calculator.
Fractions (including decimals and percentages)			To add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. To use common factors to simplify fractions. - To use common multiples to express fractions in the same denomination. - To multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$). - To recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. To use written division methods in cases where the answer has up to two decimal places. To solve problems which require answers to be rounded to specified degrees of accuracy.
Measurement (length, mass, capacity)			To use, read, write and convert between different standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit and vice versa, using decimal notation up to three decimal places. To recognise when it is possible to use formulae for area and volume of shapes To solve problems involving the calculation and conversion of units of measure, using decimal notation.
Statistics			To construct pie charts and line graphs and use these to solve problems. To calculate and interpret the mean as an average (for sets of discrete data in different contexts).
Ratio and proportion			- To solve problems involving the calculation of percentages (e.g. of measures, and such as 15% of 360) and the use of percentages for comparison, single digit percentages e.g. 7%, 22%. - To solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts.

Year 6 ITAFs

Mathematics

Half Termly Planning

Objectives



Theme	Date	Week	Beyond Year 6 – Autumn 1
Properties of shapes			To compare and classify regular polygons.
Algebra			To enumerate possibilities of combinations of two variables.

Theme	Date	Week	Beyond Year 6 – Autumn 2
Fractions (including decimals and percentages)			To understand the relationship between unit fractions and division to work backwards e.g. if $\frac{1}{4}$ of a length is 36cm, then the whole length is 36×4.
Measurement (length, mass, capacity)			- To calculate the area of parallelograms and triangles. - To calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3), and extending to other units (e.g. mm^3 and km^3).
Ratio and proportion			To solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

Mathematics

Half Termly Planning

Objectives



Theme	Date	Week	Beyond Year 6 – Spring 1
Number and place value			- To round large numbers to a given power of 10 and to one significant figure. - To make generalisations about properties of number e.g. prime numbers, square or cube numbers.
Multiplication and division			To understand and use square root symbol $\sqrt{\quad}$
Properties of shapes			- To recognise and use common 2D representations of 3D objects e.g. interpret diagrams on isometric paper. - To find the fourth coordinate when given the coordinates of 3 vertices of a parallelogram.
Position and direction			- To reflect shapes in oblique mirror lines where the shape either does not touch the mirror line or where the shape crosses the mirror line. - To reflect shapes not presented on grids by measuring perpendicular distances to or from the mirror.
Algebra			- To construct, express in symbolic form, and use simple formulae involving one or two operations. E.g. understand simple expressions using symbols 2 less than n can be written as $n - 2$. - To evaluate expressions by substituting numbers into them and use symbols to represent an unknown number or a variable. - To use and interpret coordinates in all four quadrants.

Theme	Date	Week	Beyond Year 6 – Spring 2
Multiplication and division			To understand and use square root symbol $\sqrt{\quad}$
Fractions (including decimals and percentages)			- To use a calculator where appropriate to calculate fractions/percentages of quantities and/or measurements. - To understand and use common denominators to add and subtract fractions. - To order and approximate decimals.
Measurement (length, mass, capacity)			To use a straight edge and compasses to carry out standard construction.
Statistics			- To construct pie charts using ICT and on paper. - To construct frequency diagrams using ICT and on paper. E.g. construct simple time graphs for time series, interpret frequency diagrams. - To understand and use the mode and range to describe sets of data. - To understand that the median represents the middle value of a set of data. - To understand the language of probability such as more likely, equally likely, fair, unfair and certain in the context of everyday situations.

Mathematics

Half Termly Planning

Objectives



Theme	Date	Week	Beyond Year 6 – Summer 1
Number and place value			- To understand and use negative numbers as translations on a number line e.g. know the direction of travel when subtracting a negative number. - To use concepts and vocabulary of highest common factor (HCF) and lowest common factor (LCF).
Addition and subtraction			To add and subtract fractions by writing them with a common denominator.
Multiplication and division			- To estimate using known facts e.g. using $\sqrt{81} = 9$ and $\sqrt{100} = 10$ to estimate $\sqrt{85}$. - To use prime factor decomposition of positive integers e.g. understand that 120 can be expressed as $2 \times 2 \times 3 \times 5$ or $23 \times 3 \times 5$.
Properties of shapes			- To know and use the properties of quadrilaterals to classify different types of quadrilateral e.g. sort using criteria such as 'diagonals bisect each other' and 'diagonals intersect at right angles' and identify a shape for each region of their Venn diagram. - To identify alternate and corresponding angles. - To understand a proof that the sum of angles in a triangle is 180° and in quadrilaterals is 360°. - To solve problems using angle and symmetry properties of polygons, and explain these properties. - To solve problems using angle properties of intersecting and parallel lines, and explain these properties.
Position and direction			- To reflect shapes in two mirror lines where the shape is not parallel or perpendicular to either mirror. - To devise instructions for a computer to generate and transform shapes and paths. - To enlarge 2D shapes by a positive whole-number scale factor, when given a centre of enlargement. - To begin to understand properties of translations, reflections and rotations e.g. understand that translations, reflections and rotations preserve length and angle. - To map objects onto congruent images and describe the transformation.
Algebra			- To find and describe in words the rule for the next term or nth term of a sequence where the rule is linear. - To formulate and solve linear equations with whole number coefficients. - To use trial and improvement methods and ICT tools when solving equations such as e.g. $x^3 + x = 20$. - To represent mappings expressed algebraically, and use Cartesian coordinates for graphical representation.

Mathematics

Half Termly Planning

Objectives



Theme	Date	Week	Beyond Year 6 – Summer 2
Addition and subtraction			To add and subtract fractions by writing them with a common denominator.
Multiplication and division			- To estimate using known facts e.g. using $\sqrt{81} = 9$ and $\sqrt{100} = 10$ to estimate $\sqrt{85}$. - To use prime factor decomposition of positive integers e.g. understand that 120 can be expressed as $2 \times 2 \times 3 \times 5$ or $23 \times 3 \times 5$.
Fractions (including decimals and percentages)			- To evaluate one number as a fraction or percentage of another. - To calculate fractions of quantities with fractional answers. - To understand and use equivalences between fractions, decimals and percentages e.g. $7/8$, $1/6$. - To use trial and improvement methods when solving numerical problems that involve ordering and approximating decimals. - To solve problems that include percentage increase or decrease. - To know which number to consider as 100 per cent, or a whole, in problems involving comparisons.
Measurement (length, mass, capacity)			- To calculate lengths, areas and volumes in plane shapes and right prisms e.g. calculate volumes and surface areas of cuboids. - To understand and use appropriate formulae for finding circumferences and areas of circles, areas of plane rectilinear figures and volumes of cuboids when solving problems e.g. deduce and use formulae for the area of a triangle and parallelogram.
Statistics			- To design a survey or experiment to capture necessary data from one or more sources, for example: - Design, trial and, if necessary, refine data collection sheets. - Design and use two-way tables. - To collect and record continuous data, choosing appropriate equal class intervals over a sensible range to create frequency tables, for example: - Choose suitable class intervals when constructing tables. - For large sets of raw (discrete or continuous) data, when dealing with a combination of two experiments, identify all the outcomes, using diagrammatic, tabular or other forms of communication. - Communicate the outcomes of a statistical survey. - Select appropriate tables, graphs and diagrams to support. - To draw conclusions from scatter diagrams. - To have a basic understanding of correlation to compare two simple distributions, using the range and one of mode, median or mean. - To understand and use the probability scale from 0 to 1. - To use methods based on equally likely outcomes and experimental evidence, as appropriate to find and justify probabilities, and approximations to these.
Ratio and proportion			- To calculate using ratio in appropriate situations. - To divide a quantity into two or more parts in a given ratio.

Fairfield Primary School

Written calculation Policy

ADDITION (1)

Step 1	$4 + 2 = 6$	Pictures or objects Children use pictures or objects to help them count, and add what they need to.
Step 2	$8 + 3 = 11$ $8 + 3 = 11$	Tallies or dots Children use tallies or dots to help them be more efficient and add what they need to.
Step 3	$7 + 4 = 11$	Addition number line (jumping in 1s) Children 'jump' in 1s on a number line from one number.
Step 4	$23 + 12 = 35$	Addition number line (jumping in 10s and 1s) Children 'jump' in 10s and 1s from one number to help them be more efficient.

ADDITION (2)

Step 5	$83 + 42 = 125$ $234 + 179 = 413$	Expanded column method Children add the numbers together starting from the right hand side (smallest place value column), writing the answers to each column added separately.
Step 6	$234 + 179 = 413$ $74.5 + 48.8 =$	Column method Children add the numbers together starting from the right hand side (smallest place value column), writing the answers to each column on a single line, and 'carrying' if needed.

SUBTRACTION (1)

SUBTRACTION (1)		
Step 1	$5 - 2 = 3$	Pictures or objects Children use pictures or objects to help them, and take away what they need to.
Step 2	$13 - 4 = 9$ $13 - 4 = 9$	Tallies or dots Children use tallies or dots to help them be more efficient, and take away what they need to.
Step 3	$13 - 5 = 8$ Take away: $13 - 5 = 8$ Difference between:	Subtraction number lines (jumping in 1s) Take away: Children take away a number by 'jumping' back in 1s on a number line. Difference between: Children 'jump' forwards in 1s from the smallest to the largest number. The language for each is very specific – <u>take away</u> or <u>difference between</u> the two numbers.

SUBTRACTION (2)			
Step 4	$24 - 11 = 13$ Take away: $24 - 11 = 13$ Difference between:	Subtraction number lines (jumping in 10s and 1s) Take away: Children take away a number by 'jumping' back in 10s and 1s on a number line. Difference between: Children 'jump' forwards in 10s and 1s from the smallest to the largest number. The language for each is very specific – <u>take away</u> or <u>difference</u> between the two numbers.	
Step 5	$87 - 35 = 52$ $137 - 28 = 119$ $87.6 - 49.7 = 37.9$	Column method Children take the bottom digits away from the digits above it, starting from the right hand side (smallest place value column), and 'borrowing' from the larger column to the left if needed.	

MULTIPLICATION (1)

Step 1	$2 \times 3 = 6$ 2 cubes, 3 times is 6 $3 \times 2 = 6$ 3 cars, 2 times is 6	Pictures or objects Children use pictures or objects to help them count.
Step 2	$4 \times 5 = 20$ 4 dots, repeated 5 times $5 \times 4 = 20$ 5 dots, repeated 4 times	'Arrays' using dots Children use dots to help them become more efficient, arranging the dots into rectangles (or 'arrays') according to the numbers.
Step 3	$4 \times 5 = 20$ Repeatedly add 4 (in this case, 5 times)	Repeated addition Children use a number line to repeatedly 'jump' forward the number of times needed.

MULTIPLICATION (2)		
Step 4	$27 \times 6 = 162$ $56 \times 34 = 1904$	Grid method Children 'partition' the numbers into units, tens, hundreds etc. and arrange outside a grid. Each number within the grid is made by multiplying the numbers in the same row and column. The answers are then added together to give the answer.
Step 5	$27 \times 6 = 162$ $56 \times 34 = 1904$	Column method The digit(s) at the bottom are multiplied by each digit from the top number in turn, with each answer written on a new line below. Each of those answers is then added together to give the answer to the question.

DIVISION (1)

DIVISION (1)		
Step 1 Sharing	$6 \div 2 = 3$ What is 6 <u>shared between</u> 2? = 3 $12 \div 3 = 4$ What is 12 <u>shared between</u> 3? = 4	Pictures or objects then Tallies or dots Division as 'sharing' (What is 18 <u>shared between</u> 3?) This involves children 'sharing' objects or numbers between 2, 3, 4 etc.
Step 2 Grouping	$6 \div 2 = 3$ How many <u>groups</u> of 2 are in 6? = 3 <u>groups</u> 1 group 1 group 1 group $12 \div 3 = 4$ How many <u>groups</u> of 3 are in 12? = 4 <u>groups</u>	Pictures or objects then Tallies or dots Division as 'grouping' (How many <u>groups</u> of 3 are there in 18?) This involves children 'grouping' / sorting objects or numbers into groups of 2s, 3s, 4s etc.

DIVISION (2)

Step 3

$$15 \div 3 = 5$$

Count in 3s until reaching 18.

$$27 \div 4 = 6 \text{ r } 3$$

For 'remainders', count in 4s until just before 27, as you can't land directly on 27. What is left over is the 'remainder'.

Division number line in jumps of the divisor

Children count in 'jumps' of the 'divisor' (the number they are dividing by) and count the number of jumps they made to get to the 'dividend' (the number being divided).

This links division with multiplication (counting in the times table of the divisor, called 'repeated addition').

DIVISION (3)		
Step 4	$52 \div 4 = 13$ The <u>lots of</u> the divisor are 10 in the first jump (because 10 lots of 4 is 40) and 3 in the second jump (because 3 lots of 4 is 12), so the answer is 13. $135 \div 6 = 22 \text{ r } 3$	Division number line in larger jumps of the divisor Children 'jump' much larger steps forwards towards the 'dividend' in large multiples of the 'divisor'. This is more efficient when dividing large numbers, and the children don't have to write <u>every</u> multiple on their number line up to the dividend. To find the answer, the <u>lots of</u> the divisor are added together
Step 5	$748 \div 9 = 83 \text{ r } 1$ $748 \div 16 = 46 \text{ r } 12$	Bus stop method 1 The dividend is under the 'bus stop', with the divisor outside to the left. The children see how many times the divisor 'goes into' each digit of the dividend, starting from the left. The number of times is written above the bus stop, and any spare digits left over are written next to the next

Mathematics
Half Termly Planning
Objectives



		digit of the dividend.
--	--	------------------------

DIVISION (4)

DIVISION (4)		
Step 6	$135 \div 6 = 22 \text{ r } 3$ $748 \div 9 = 83 \text{ r } 1$ $748 \div 16 = 46 \text{ r } 12$	Bus stop method 2 As above, but the children don't write the multiples of the divisor in their margin. This means they are more efficient. Remainders are the amount of the dividend that is 'left over'.
Step 6 <i>Extension 1</i>	$748 \div 9 =$ $748 \div 16 =$ The remainder above is simplified to $\frac{3}{4}$.	Bus stop method 2 As before, but any remainders are written as <u>fractions</u> instead of writing r__. If there are any remainders, the children write them as a fraction of the divisor. They can then 'simplify' the fraction if possible.

D Elliott