

Mathematics

National Curriculum Aims and Objectives:

The national curriculum for maths 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.

Vision for Subject at Queenborough School:

A high-quality mathematics education will help pupils gain 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.

Year 3

Terms 1 & 2

Oral and Mental calculation

- Read and write numbers to at least 200 in numerals and words
- Count on and back in 1s, 10 s or 100 s from any two- or three-digit number to at least 200.
- Count from 0 in multiples of 2, 4, 5, 10, and 100
- Count in fraction steps, e.g. $\frac{1}{5}$, $\frac{2}{5}$, $\frac{3}{5}$...
- Order a set of random numbers to at least 200.
- Extend number sequences involving counting on or back in different steps-link to scales.
- Find 1, 10 or 100 more/less than a given number to at least 200
- Recall multiplication and division facts for 2x, 4x 5x and 10 tables
- Add and subtract mentally HTO +/-O and HTO +/-H
- Recall and use number facts to 20
- Derive number facts up to 100
- Add two or more multiples of 10
- Add two or more multiples of 5
- Add three or more one digit numbers
- Double and halve numbers to 50
- Use "see 9 or 11 but think 10 " or " see 99 but think 100" when calculating mentally

<ul style="list-style-type: none"> • Find differences by counting up • Solve missing number problems • Revise names and properties of 2D and 3D shapes 	
Week 1	<p><u>Number and place value</u></p> <ul style="list-style-type: none"> • <i>Continue to count in ones, tens and hundreds</i> • Recognise the place value of three digit numbers to at least 200 • <i>Partition numbers in different ways</i> • Partition and re-partition 2 and 3 digit numbers to at least 200 • Compare and order numbers to at least 200 • Recognise the place value of each digit in a three-digit number (hundreds, tens and ones) to at least 200. • Identify, represent and estimate numbers using different representations, <i>including the number line.</i> • <i>Round numbers to at least 200 to the nearest 10 or 100 using a number line .</i> • Find 1, 10 or 100 more or less than a given number • Solve problems involving number and place value.
Week 2	<p><u>Addition and subtraction to 200 to solve problems</u></p> <ul style="list-style-type: none"> • <i>Ensure children think -can I do it in my head, with some jottings or by using a written method</i> • <i>Ensure range of questions that require either take away or difference for subtraction.</i> • Estimate answers to calculations • <i>Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:</i> <ul style="list-style-type: none"> - 2-digit number and ones <ul style="list-style-type: none"> ○ <i>a 2-digit number and tens</i> ○ <i>two 2-digit numbers. (Year 2 objective)</i> • Add numbers mentally, including: combinations of two digit numbers or of three-digit number and ones. • Subtract numbers mentally, including combinations of two digit numbers or of three-digit number and ones. • Begin to add two 2 digit numbers crossing the tens and/or hundred boundaries. Use a column method of written recording supported by manipulatives (answer less than 200) • Begin to subtract a 2 digit numbers from a 2 digit number crossing the tens using an expanded method of written recording and manipulatives • Solve missing number problems. • Use inverse to check the answers to calculations • Solve problems involving these ideas-use practical equipment to support.
Week 3	<p><u>Measures -Money</u></p> <ul style="list-style-type: none"> • <i>Ensure children think -can I do it in my head, with some jottings or by using a written method</i> • Estimate answers to calculations • Recognise coinage and bank notes • Add and subtract money to find totals and to give change to £2 • Use inverse to check the answers to calculations

	<ul style="list-style-type: none"> • Use £ or p. • Solve problems, including missing number problems around money.
Week 4	<p><u>Measures-length</u></p> <ul style="list-style-type: none"> • Estimate, measure and compare lengths m , cm • Read and interpret the scale on a range of measuring equipment-rules, tapes etc • <i>Understand that perimeter is a measure of distance</i> • Measure objects including the perimeter of simple 2 D shapes. • <i>Ensure children think -can I do it in my head, with some jottings or by using a written method</i> • Estimate answers to calculations • Apply measures to addition and subtraction problems • Use inverse to check answers to calculations • Solve problems involving length
Week 5	<p><u>Fractions to solve problems</u></p> <ul style="list-style-type: none"> • Count up and down in $\frac{1}{2}$, $\frac{1}{3}$ $\frac{1}{4}$, $\frac{1}{10}$ to 10 • Recognise, find and name fractions of a set of objects- a third, a half , a quarter and a tenth with whole number answers • Find $\frac{3}{4}$ of a set of objects • <i>Calculate fractions of amounts practically and link to division and to length money etc.</i> • Recognise and use fractions as numbers- thirds , halves , quarters and tenths • Solve problems involving fractions
Week 6	<p><u>Multiplication and division to solve problems</u></p> <ul style="list-style-type: none"> • <i>Ensure children think -can I do it in my head, with some jottings or by using a written method</i> • Estimate answers to calculations • Count from 0 in multiples of 3 or 4. • <i>Describe and extend number sequences involving counting on or back in sizes different steps- link to manipulatives and arrays</i> • Recall and use multiplication and division facts for the 3 and 4 times tables. • Write and calculate number sentences for 2x ,3x 4x 5x, and 10x, tables and the related division facts -<i>link to arrays and manipulatives</i> • Use inverse to check answers to calculations • Solve missing number problems involving multiplications or division-<i>link to arrays and manipulatives</i> • <i>Solve multiplication or division problems involving money and measures.</i>
Week 7	<p><u>Shape and position and direction</u></p> <ul style="list-style-type: none"> • <i>Continue to compare and sort common 3-D shapes and everyday objects. (Year 2 objective)</i> • Make and then describe 3D shapes using modelling materials -edges , vertices and faces • Recognise 3D shapes in different orientations • Identify a right angle • Recognise angles as a description of a turn • Use correct vocabulary to describe rotation in terms of right angles • 2 make a half turn ,

	<ul style="list-style-type: none"> • 3 a three quarter turn • 4 a complete turn • Identify horizontal and vertical lines and pairs of perpendicular and parallel lines-<i>link to right angles</i> • Solve problems involving shape • Solve problems involving position and /or direction
Week 8	<p><u>Statistics</u></p> <ul style="list-style-type: none"> • Read and interpret an range of scales • Construct pictograms, bar charts and tables where the scale increases by 2, 3,5 or 10 • Interpret pictograms, bar charts and tables • Answer one-step and two-step questions (for example, 'How many more?' and 'How many fewer?') using information presented in scaled bar charts, pictograms and tables. • Solve problems involving statistics
Week 9	<p><u>Measures -Time</u></p> <ul style="list-style-type: none"> • Estimate, read and write time to a least the nearest five minutes from an analogue clock • Record and compare time as minutes and hours • Use vocabulary such as o'clock, a.m. /p.m., morning, afternoon, noon and midnight. • Know the number of seconds in a minute and the number of days in each month, year and leap year. • Solve simple problems involving passage of time-<i>use a number line.</i>
Week 10	<u>Assess and review</u>

Oral and Mental calculation

- Read and write numbers to at least 500 in numerals and words
- Count on and back in 1s, 10 s or 100 s from any two- or three-digit number.
- Count from 0 in multiples of 2, 4, 5, 8, 10, and 100
- Count in fraction steps, e.g. $\frac{1}{5}, \frac{2}{5}, \frac{3}{5} \dots$
- Order a set of random numbers to at least 500.
- Extend number sequences involving counting on or back in different steps-link to scales.
- Find 1, 10 or 100 more/less than a given number
- Recall multiplication and division facts for 2x, 4x 5x, 8x and 10 tables
- *Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:*
 - a 2-digit number and ones
 - a 2-digit number and tens
 - two 2-digit numbers
 - adding three 1-digit numbers. (Year 2 objective)
- Add and subtract mentally HTO +/-O, HTO +/-T and HTO +/-H
- Recall and use number facts to 20
- Derive and use number facts up to 100
- Add two or more multiples of 10
- Add two or more multiples of 5
- Double and halve numbers to 100
- Use "see 9 or 11 but think 10" or "see 99 but think 100" when calculating mentally
- Find differences by counting up
- Solve missing number problems
- Revise names and properties of 2D and 3D shapes

Week 1Number and place value to solve problems

- *Recognise the place value of three digit numbers to at least 500*
- *Partition and re-partition 2 and 3 digit numbers to at least 500*
- *Continue to count in ones, tens and hundreds*
- *Partition numbers in different ways*
- *Partition and re-partition 2 and 3 digit numbers to at least 500*
- *Compare and order numbers to at least 500*
- *Recognise the place value of each digit in a three-digit number (hundreds, tens and ones) to at least 500.*
- *Identify, represent and estimate numbers using different representations, including the number line.*
- *Round numbers to at least 500 to the nearest 10 or 100 using a number line.*
- *Find 1, 10 or 100 more or less than a given number.*

	<ul style="list-style-type: none"> • <i>Solve simple problems involving place value or number</i>
Week 2	<p><u>Addition and subtraction to 1000 to solve problems</u></p> <ul style="list-style-type: none"> • <i>Ensure children think -can I do it in my head, with some jottings or by using a written method</i> • Estimate answers to calculations • Add two or more numbers (2-digit or 3- digits) crossing the tens and/or hundred boundaries -expanded written recording or column method (answer less than 500) • Subtract a 2 or 3 - digit numbers number from another 2 or a 3-digit number (less than 500) crossing the tens and hundreds boundaries- expanded method of written recording • Use inverse to check the answers to calculations • Solve problems, including missing number problems, using number facts or place.-link to real life contexts-e.g. money and measures
Week 3	<p><u>Measures -Money to solve problem</u></p> <ul style="list-style-type: none"> • Recognise coinage and bank notes • <i>Ensure children think -can I do it in my head, with some jottings or by using a written method</i> • Estimate answers to calculations • Add and subtract money to find totals and to give change to £5 • Use £ or p • Use inverse to check the answers to calculations • <i>Solve problems involving calculating amounts of money and giving change</i>
Week 4	<p><u>Measures-Mass to solve problems</u></p> <ul style="list-style-type: none"> • Estimate, measure and compare mass g and kg • Read and interpret the scale on a range of measuring equipment • <i>Ensure children think -can I do it in my head, with some jottings or by using a written method</i> • Estimate answers to calculations • Measure, compare, add and subtract masses • <i>Solve problems involving mass.</i>
Week 5	<p><u>Fractions to solve problems</u></p> <ul style="list-style-type: none"> • Count up and down in $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{10}$ to 10 • Compare and order unit and non-unit fractions with the same denominator (<i>including on a number line</i>) • Recognise and show using diagrams, equivalent fractions with small denominators (e.g. $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{6}$, $\frac{1}{12}$) • <i>Show practically and pictorially that unit fraction can be added to total one i.e. $\frac{1}{3} + \frac{1}{3} + \frac{1}{3} = 1$</i> • <i>Show practically and pictorially that a fraction is one whole number divided by another (for example, $\frac{3}{4}$ can be interpreted as $3 \div 4$).-link to division</i> • <i>link fractions of amounts to division by sharing</i> • Solve problems involving fractions- <i>link to money or measurement</i>

<p>Week 6</p>	<p><u>Multiplication to solve problems</u></p> <ul style="list-style-type: none"> • Recall and use facts for the, 3x 4x and 8s tables and related division facts • Write and calculate number sentences for 2x ,5x, 10x, 4x and 8x tables • including division facts • <i>Understand how multiplication statements can be represented using arrays.</i> • <i>Ensure children think -can I do it in my head, with some jottings or by using a written method</i> • Estimate answers to calculations • Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and/or expanded written methods <i>(supported by diagrams or manipulatives.)</i> • Use inverse to check the answers to calculations • <i>Solve problems involving money and measures including scaling problems (making an amount a number of times larger).</i>
<p>Week 7</p>	<p><u>Shape and position and direction to solve problems</u></p> <ul style="list-style-type: none"> • <i>Use mathematical vocabulary to describe position, direction and movement, including distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise), and movement in a straight line. (Year 2 objective)</i> • <i>Compare and sort common 2-D shapes and everyday objects. (Year 2 objective)</i> • Draw then describe 2D shapes -edges , vertices and faces • Recognise that angles are a property of a shape or a description of a turn. • Identify whether angles are greater than or less than a right angle. • <i>Describe positions on a square grid labelled with letters and numbers.</i> • <i>Solve simple problems involving shape, direction or position</i>
<p>Week 8</p>	<p><u>Division to solve problems</u></p> <ul style="list-style-type: none"> • Recall and use facts for the, 3x 4x and 8s tables and related division facts • Write and calculate number sentences for 2x ,5x, 10x, 4x and 8x tables • including division facts • <i>Understand how division statements can be represented using arrays.</i> • <i>Select a mental strategy appropriate for the numbers involved in the calculation.</i> • <i>Understand division as sharing and grouping and use each appropriately</i> • <i>Ensure children think -can I do it in my head, with some jottings or by using a written method</i> • Estimate answers to calculations • Write and calculate mathematical statements for division using the multiplication tables that they know, including for two-digit numbers divided by one-digit numbers, using mental and/or expanded written methods.<i>(supported by diagrams or manipulatives)</i> • Use inverse to check the answers to calculations • <i>Solve problems involving money and measures including scaling problems (making an amount a number of times smaller)</i>

Week 9	<u>Measures - Time to solve problems</u> <ul style="list-style-type: none">• Continue to tell and write the time from an analogue clock to at least the nearest five minutes• Record and compare time in terms of minutes and hours;• Continue to use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight.• Know the number of seconds in a minute and the number of days in each month, year and leap year.• Compare durations of events, for example to calculate the time taken by particular events or tasks-<i>using a number line.</i>• <i>Solve simple problems involving time.</i>
Week 10	<u>Assess and review</u>

Year 3

Terms 5 & 6

Oral and Mental calculation

- Read and write numbers to 1000 in numerals and words
- Partition three-digit numbers in different ways, (e.g. $325 = 300 + 20 + 5$ but is also $200 + 125$ etc.).
- Count on and back in 1s, 10 s or 100 s from any two- or three-digit number.
- Count from 0 in multiples of 2,3,4, 5, 8 , 10 , 50 and 100
- Find 1, 10 or 100 more/less than a given number
- Recall addition and subtraction facts for 10 ,20 and 100
- Mentally add groups of one digit numbers and/or multiples of 5 or 10.
- Add and subtract mentally:
 - 2 two-digit numbers
 - a three-digit number and ones
 - a three-digit number and tens
 - a three-digit number and hundreds.
- Recall multiplication facts for 2, 3, 4, 5, 8 and 10 times tables and associated division facts.
- Describe and extend number sequences involving counting on or back in different steps.
- Double any number up to 100.
- Halve any number up to 200.
- Count in fraction steps, e.g. $\frac{1}{5}, \frac{2}{5}, \frac{3}{5}$,
- Solve missing number problems
- Identify and describe 2-D and 3D shapes

Week 1

Number and place value to solve problems

- Read and write numbers to at least 1000 in numerals and in words.
- Compare and order numbers to 1000
- Find 1, 10 or 100 more or less than a given number within 1000.
- Recognise the place value of each digit in a three-digit number (hundreds, tens and ones).
- Partition and re-partition 2 and 3 digit numbers to 1000
- Identify, represent and estimate numbers using different representations, *including the number line.*
- *Solve problem with place value -link to measures, scales and comparing and ordering measurements /money*

<p>Week 2</p>	<p><u>Addition and subtraction to 1000 to solve problems</u></p> <ul style="list-style-type: none"> • <i>Ensure children think -can I do it in my head, with some jottings or by using a written method</i> • Estimate the answer to a calculation • Use inverse operations to check the answers. • Add two 3 digit numbers crossing the tens and/or hundred boundaries -column method of written recording (answer less than 1000) • Subtract a 2 or 3 digit numbers from a three digit number less than 1000 crossing the tens and hundreds boundaries- expanded method of written recording and possibly using a column method • Use inverse to check answers to calculations • Link to real life e.g. add and subtract amounts of money to give change, using both £ and p in practical contexts. • <i>Solve problems involving and measures and simple problems involving passage of time.</i>
<p>Week 3</p>	<p><u>Measures -Money to solve problems</u></p> <ul style="list-style-type: none"> • Recognise coinage and bank notes • Use £ or p • <i>Ensure children think -can I do it in my head, with some jottings or by using a written method</i> • Estimate the answer to a calculation • Add and subtract amounts of money to give change, using both £ and p in practical contexts to £10. • Use inverse to check answers to calculations • <i>Solve problems involving money.</i>
<p>Week 4</p>	<p><u>Measures-capacity/volume to solve problems</u></p> <ul style="list-style-type: none"> • Read and write numbers to at least 1000 in numerals • <i>Read and interpret the scale on a range of measuring equipment</i> • Estimate, measure, compare volume/capacity • <i>Ensure children think -can I do it in my head, with some jottings or by using a written method</i> • Estimate the answer to a calculation • Add and subtract volume/capacity (l/ml) • <i>Solve problems involving capacity</i>
<p>Week 5</p>	<p><u>Fractions to solve problems</u></p> <ul style="list-style-type: none"> • Count up and down in $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{10}$ to 10 • Continue to recognise, find and name fractions of a set objects- thirds, halves, quarters and tenths, unit and non-unit fractions (whole number answers) • Continue to recognise and use fractions as numbers- thirds, halves, quarters and tenths unit and non-unit fractions with small denominators • Compare and order fractions with the same denominator • Recognise and show, using diagrams, equivalent fractions with small denominators • <i>link fractions of amounts to division by sharing</i> • <i>Ensure children think -can I do it in my head, with some jottings or by using a written method</i> • Estimate the answer to a calculation

	<ul style="list-style-type: none"> • Introduce addition of fractions with the same denominator within one whole (<i>practically and using diagrams</i>) e.g. $2/7 + 4/7 =$ • Introduce subtraction of fractions with the same denominator within one whole (<i>practically and using diagrams</i>) e.g. $5/7 - 1/7 =$ • <i>Solve problems involving fractions -link to use money or measurement</i>
Week 6	<p><u>Multiplication and division to solve problems</u></p> <ul style="list-style-type: none"> • Recall and use multiplication and division facts for the 2, 3, 4, 5 8 and 10 multiplication tables. • <i>Ensure children think -can I do it in my head, with some jottings or by using a written method</i> • <i>Estimate answers to calculations</i> • Write and calculate number sentences for multiplication using the multiplication tables that they know, including for two-digit numbers multiplied by one-digit numbers, using mental and/or progressing to expanded written methods(<i>supported by manipulatives and arrays</i>) • Write and calculate number sentences for division using the multiplication tables that they know, including for two-digit numbers divided by one-digit numbers, using mental and progressing to expanded written methods(<i>supported by manipulatives and arrays</i>) • Use inverse to check answers to calculations • Solve missing number problems involving multiplication or division • Solve positive integer scaling problems involving multiplications or division • Solve correspondence problems in which n objects are connected to m objects involving multiplications or division
Week 7	<p><u>Shape and position and direction to solve problems</u></p> <ul style="list-style-type: none"> • <i>Compare and sort common 2-D and 3-D shapes and everyday objects. (Year 2 objective)</i> • <i>Compare and sort common 2-D and 3-D shapes and everyday objects. (Year 2 objective)</i> • Recognise that angles are a property of a shape or a description of a turn. • Identify right angles and continue to relate them to turns • Identify whether angles are greater than or less than a right angle • Identify horizontal and vertical lines and pairs of perpendicular and parallel lines. • <i>Solve problems involving shapes or position and direction</i>
Week 8	<p><u>Statistics to solve problems</u></p> <ul style="list-style-type: none"> • Construct scaled (in steps of 2,3 5 or 10) pictograms, bar charts and tables • Interpret pictograms, bar charts and tables • Solve one-step and two-step questions such as 'How many more?' and 'How many fewer?' using information presented in scaled bar charts ,pictograms and tables • Solve problems involving statistics.
Week 9	<p><u>Measures -Time to solve problems</u></p> <ul style="list-style-type: none"> • Estimate and read time to a least the nearest five minutes • Record and compare time as seconds , minutes and hours • Use vocabulary of time • <i>Ensure children think -can I do it in my head, with some jottings or by using a written method</i> • Estimate the answer to a calculation • <i>Solve problems in involving time</i>

Non-negotiable requirements for the provision of Subject:

- Each classroom will have a visible number line to 100
- Each classroom will have a maths resource stacker with equipment that the children will have access to in any maths lesson

Promoting Pupils' Spiritual, Moral, Social and Cultural Development:**Spiritual Development**

- Encouraging pupils to reflect and learn from reflection
- Develop a climate or ethos within which all pupils can grow and flourish, respect others and be respected
- Monitoring, in simple, pragmatic ways, the success of what is provided
- Promote teaching styles which:
 - Value pupils' questions and give them space for their own thoughts, ideas and concerns
 - Enable pupils to make connections between aspects of their learning
 - Encourage pupils to relate their learning to a wider frame of reference - for example, asking 'why?', 'how?' and 'where?' as well as 'what?'

Moral Development

- Providing a clear moral code as a basis for behaviour which is promoted consistently through all aspects of the school
- Developing an open and safe learning environment in which pupils can express their views and practise moral decision-making

Social Development

- Encouraging pupils to work co-operatively

Cultural Development

- Recognising and nurturing particular gifts and talents

Year 3

Suggested Activities

NUMBER	Children need the opportunity to
<p>Number and place value</p>	<ul style="list-style-type: none"> • Understand how the number system works and that it is based on groupings of ten- 10 tens are 100, 10 hundreds are 1000 and so on. • Count in ones and tens , backwards and forwards , over boundaries e.g. 187,197,207 • link the reciting of number names to counting by using visual images of numbers - , counting stick, bead strings, number lines 100 squares and manipulatives • visualise a number track in their head for steps of 2,3,4, 5, 8, 10 and 20 to 100 • position numbers on partially marked number lines • use concrete objects, partially marked number lines ,place value cards ,manipulatives and money to <ul style="list-style-type: none"> - count in tens/hundreds to establish 10 tens make 1 hundred and 10 hundreds make 1000 - represent and compare numbers to 1000 including money and measures. • Read and write numbers including those that contain zero, understanding it role. • Use < , > or = when ordering numbers and know the important digits when comparing numbers eg 184 and 275 (hundreds), 384 and 392 (tens) • use manipulatives, place value cards or money to partition 3-digit numbers into hundred , tens and ones and later to re-partition 146= 100+40+6, 146=130+16, 146=120+26 etc • use manipulatives or money to represent a number that is 10 or 100 more than/less than a 3-digit number • use place-value cards and place value grids to illustrate and explain place values, e.g. the digit 3 stands for 300, 30 or 3 depending on where it appears in a number. • use place-value cards to compare 3 digit numbers -digit by digit from left and then place on a partly numbered or blank number line eg 706 on a line marked in multiples of 100 • Use place value and number facts to calculate mentally(with jottings) -share methods • Use place value to add or subtract multiples of ten to and from numbers
<p>Addition and subtraction</p>	<ul style="list-style-type: none"> • Move from counting to using known facts to work to out related ones eg $7+8=15$ to work out $37+8$ or $150-80$ including using the inverse • Use number facts to add or subtract e.g. tackle $144-8 =$ by partitioning the 8 into 4 and 4 to reach 136 • Use take way and difference examples when subtracting depending on the position of the numbers • Use bead strings, 100 squares number lines and Beadsticks ITP to find pairs of number that total 100 i.e. 55 and 45 • Use manipulatives to support subtracting or adding 2 numbers with up to 3 digits • Apply fact families to calculations-e.g. $25-9=16$ so 16 add what is 25? Or $6-4=2$ so $16-4=12$ • Use manipulatives, diagrams and number lines to show the inverse and the effect of adding or subtracting zero. • Play "I am thinking of a number..." • Draw their own empty number lines to support calculation • write addition and subtraction stories and write an equation for each story • create word problems involving addition and subtraction for others to solve.

Multiplication and division

- Learn and apply the 2x, 5x, 10x 3x ,4x and 8x tables and related division facts
- link the reciting of tables and related division facts to counting stick, fingers, 100 squares, manipulatives, arrays, ICT , Multiplication facts ITP and physical actions
- find missing numbers in calculations e.g. ? divided by 5=12 or 180 divided by what equals 30
- represent multiplication as an array and carry out multiplication calculations using an array
- Know about "special case " calculations and relate tables to doubling (2 and 4 and 8 or 5 and 10 or 3 and 6) and tripling(2 and 6 or 3 and 9) and relate to scaling e.g. three times as high or double the price
- Understand that multiplication is commutative i.e. $2 \times 6 = 6 \times 2$ but division is not.
- Move to using multiplication rather than repeated addition for well-known tables
- use known facts and place value to multiply and divide by multiples of 10 is $20 \times 4 = 80$ (using $2 \times 4 = 8$) or $120/3 = 40$ using ($12/3 = 4$)
- Use Moving digits ITP to show the need to fill the spaces in $\times 10$ and $\times 100$ calculations as all the digits move to the left with zero as a place holder
- rapidly multiply or divide by 10 or 100 mentally
- create arrays using partitioning for two-digit \times one-digit calculations and record as "grid" multiplication
- divide a two digit number by a one digit number by splitting it into sensible "chunks"
- Relate multiplication to division as inverse and practice facts together
- explore number patterns in the multiplication tables of 3,4, and 8 through activities such as colouring a hundred square or numbers on a line
- Find the family of 4 facts within the multiplication tables (e.g. $2 \times 4 = 8$, $4 \times 2 = 8$, $8 \div 4 = 2$ and $8 \div 2 = 4$ are a family of multiplication and division facts).
- write multiplication and division stories and write a multiplication or division equation for each story
- create word problems involving multiplication and division for other groups to solve.
- Solve correspondence problems to find all the possible links between one or two small groups such as
-3 hats, 4 coats how many different outfits?
-5 boys, 2 girls -how many handshakes?

<p>Fractions</p>	<ul style="list-style-type: none"> • Link fractions of shapes to fraction of quantities by making "mats " with the shapes, finding and colouring a fraction and then using them to share objects into equal groups • Fold fraction strips to represent- one whole, halves, quarters, thirds, sixths and twelfths. • Build own fraction wall • Build understanding of fractions as "parts of " and as "numbers" -$\frac{3}{5}$ of a metre or $\frac{3}{5}$ of a 10 cm line • Order known fractions on a 0-1 number line and notice all unit fractions lie between 0 and $\frac{1}{2}$ • Link fractions to division-e.g. dividing by 5 and finding $\frac{1}{5}$ • Read and write fractions. • Count in fractions, including tenths, and link count to number lines, fraction walls Fractions ITP or pictures • use concrete objects, fraction discs, shapes and pictorial representations to represent and interpret fractions in terms of unit fractions e.g. $\frac{3}{5}$ is 3 units of $\frac{1}{5}$, $\frac{1}{5}+\frac{1}{5}+\frac{1}{5}$, $\frac{1}{5} \times 3$ or 3 fifths, and to compare the sizes of fractions referring to the same whole. • use fraction discs or walls to represent and compare two unit fractions and explain why the greater the denominator, the smaller the unit fraction, e.g. $\frac{1}{6}$ is smaller than $\frac{1}{3}$ or $\frac{1}{2}$ is larger than $\frac{1}{99}$ • use fraction discs or walls to represent and compare two fractions with the same denominator and explain why the greater the numerator, the greater the fraction e.g. $\frac{6}{7}$ is greater than $\frac{4}{7}$ • Find fractions from a range of "wholes" i.e. $\frac{5}{6}$ of a shape, a number , an amount of money, a length of wool a set of counters etc • Investigate making "wholes" such as what is $\frac{1}{6}$ of 30 cm , $\frac{2}{6}$ etc until you reach $\frac{6}{6}$ • Find a unit fractions using division e.g. $\frac{1}{5}$ of an amount and then use multiplication to find $\frac{2}{5}$ $\frac{3}{5}$ etc • Add and subtract fractions with the same denominator as a practical activity using manipulatives, diagrams or modelling material.
<p>MEASUREMENT</p>	
	<p>MEASURES</p> <ul style="list-style-type: none"> • use Measuring cylinder , Measuring scales and Thermometer ITPs • Practical activities including measuring distances , weigh/mass and capacity/volume and recording as 3 m 24 cm etc are essential • Solve problems based on the measurements they have made.eg finding the difference in between two routes to the playground • Develop "benchmarks" for estimating measures e.g. a bag of sugar is 1Kg , a drinks can is 330 ml or $\frac{1}{3}$ of a litre <p>MONEY</p> <ul style="list-style-type: none"> • write prices in pounds and pence and in decimal notation, e.g. £3.45 is 3 pounds and 45 pence • use money up to £10 to add during shopping activities and write the number sentences to match • use money up to £10 to calculate change during shopping activities, use a number line to find the change and write the number sentences to match. <p>TIME</p> <ul style="list-style-type: none"> • Practical experience with geared clocks

	<ul style="list-style-type: none"> • Use a number line to make a "time" line to work out lengths of time. • Begin to understand the relationships between different units of time • Time events and discuss and compare the results • Look at a calendar and understand the relationship between months, weeks and days (NB learning to tell the time needs to be revisiting frequently throughout the year)
<p>GEOMETRY</p>	<ul style="list-style-type: none"> • Develop visualisation of shapes -i.e. imagine a triangle, snip off one of its corner , describe and name the shape have you left • Name, sort and describe 2D shapes using a range of properties including sides and angles • Use geo-boards, tiles, geo- strips, ICT, squared paper , isometric paper and straws to draw or make 2D shapes including irregular ones • Know that a quadrilateral is any shape with four straight sides • Name, sort and describe 3D shapes using a range of properties including number of faces vertices edges and angles • Use straws or construction kits to make 3D shapes • Use sets of shapes and/or packaging to build with 3D shapes • Identify the shapes of faces of common 3-D shapes, and count the number of faces, edges and vertices (corners) of cubes, cuboids, pyramids and prisms • Know that in a 3D shape: <ul style="list-style-type: none"> - Each face is a flat surface and a polygon - An edge is the straight line where two faces meet - A vertex is the point where two or more faces meet • Know that perpendicular lines are at right angles to each other and that parallel lines are the same distance apart • Link parallel and perpendicular to real life examples. • Use geostrips to investigate parallel and perpendicular sides in common quadrilaterals. • Use practical equipment to relate angles as a measure of turn to the "angle" made when two lines or sides meet. • Read and use vocabulary associated with turn: <i>quarter (1/4) turn, angle, right angle, straight line, greater than, less than, degree.</i> • Recognise right angles in the school building and take photos with a digital camera. • use geostrips or strips of card joined by a split pin to create an "angle-maker" and use it to show angles that are less than, more than or approximately equal to a right angle • Understand that a quarter turn is also equivalent to a right angle • Use geo strips to explain that a straight line is the same as two right angles. • Use directional language to follow and describe a route, for example around a maze or grid • Have practical experience of symmetry in 2D and simple 3D shapes • Describe and find the position of a square on a grid with the rows and columns labelled • Create a simple picture by following or giving instructions to colour squares on the grid
<p>STATISTICS</p>	

- Follow the data handling cycle of -consider the problem ; plan; collect the data; draw the graph/chart; interpret their findings
- Recognise the key features of tables, pictograms and graphs
- make a bar chart or pictogram where the scale goes up in more than 1's
- explain when a simple scale(1:2, 1:5 or 1:10) may be appropriate
- Link scale to counting in multiples on a counting stick and finding numbers on a partially numbered line
- Understand how to find the required information e.g. how to use ruler to find the points between labelled divisions on a graph.
- Data Handling ITP can be used to show the impact of altering the scale.
- Make and interpret simple tables
- represent and interpret bar graphs ,pictograms and tables in both vertical and horizontal forms
- make a story using information from a graph, pictogram or table
- Ask and answer questions such as "How many more....?" "How many fewer/less....?" "How many altogether....?" "What is the difference between?" about data they have collected or secondary data