

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 4

Terms 1 & 2

Oral and Mental calculation

- Read and write numbers up to 10,000.
- Count on and back in 1s, 10 s or 100 s from any number up to 10,000.
- Count forwards and backwards in equal steps
- *Identify and describe number patterns*
- Compare and order a set of random numbers up to 10,000 *using > or <*
- Round any number up to 10000 to the nearest 10, 100 or 1000.
- Recall addition and subtraction facts for each number up to 20.
- Recall addition and subtraction facts for 100
- *Add and subtract pairs of two digit and/or three digit numbers mentally*
- Find , 1, 10, 100 or 1000 more or less than a given number
- Recall multiplication facts for 2, 3, 4, 5 and 8 x tables including: multiplying by 0 and 1 multiply three numbers from known together
- Divide multiples from known tables mentally, including dividing by 1.
- Multiply and divide whole numbers by 10 or 100 (whole number answers).
- Recognise 2 D and 3D shapes and describe them.

<p>Week 1</p>	<p>Number and place value to solve problems</p> <ul style="list-style-type: none"> • Read and write numbers to 10000 • Order and compare numbers beyond 1000. • Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens and ones). • Identify, represent and estimate numbers using different representations, including the number line. • Solve problems involving number and place value
<p>Week 2</p>	<p>Addition and subtraction to solve problems</p> <ul style="list-style-type: none"> • Estimate answers • <i>Consider the most appropriate strategy to solve a calculation: calculate mentally, use a jotting or a written method</i> • Add numbers with up to 4 digits using a compact written method of addition. • Subtract numbers with up to 4 digits using an expanded method of subtraction • Add numbers with up to 4 digits and decimals with one decimal place using a written method of addition • Subtract numbers with up to 4 digits and decimals with one decimal place using an expanded method of subtraction • Use inverse to check the answers to calculations • Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.
<p>Week 3</p>	<p>Decimal Fractions to solve problems</p> <ul style="list-style-type: none"> • Count in tenths <i>on counting stick</i> • <i>Recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10(year 3)</i> • <i>Identify the value of each digit to one decimal place.</i> • <i>Read and write numbers with one decimal place.</i> • <i>Partition numbers into ones and tenths (for example, $2.3 = 2 + 0.3$)</i> • <i>Order and compare numbers with one decimal place including on a number line.</i> • <i>Solve problems involving ordering numbers to one decimal place</i>
<p>Week 4</p>	<p>Measures-length to solve problems</p> <ul style="list-style-type: none"> • <i>Read and interpret the scale on a range of measuring equipment</i> • Estimate, compare and calculate different lengths in meters and/or centimetres • Estimate answers • <i>Consider the most appropriate strategy to solve a calculation: calculate mentally, use a jotting or a written method</i> • Add two or more lengths with up to 4 digits (including decimals with two decimal places) using a written method of addition where appropriate. • Subtract lengths up to 4 digits (including decimals with two decimal places) using a written method of subtraction where appropriate • Use inverse to check the answers to calculations • <i>Revise perimeter(Y3)</i> • Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and/or metres. • Convert between different units of measure (e.g. kilometre to metre). • Solve problems involving length

<p>Week 5</p>	<p><i>Measures -Money to solve problems</i></p> <ul style="list-style-type: none"> • <i>Revise coinage and notes</i> • <i>Continue to recognise and use symbols for pounds (£) and pence (p)</i> • <i>Understand that the decimal point separates pounds and pence</i> • <i>Estimate answers</i> • <i>Consider the most appropriate strategy to solve a calculation: calculate mentally, use a jotting or a written method</i> • <i>Add two or more amounts of money with up to 4 digits (including decimals with two decimal places) using a written method of addition where appropriate.</i> • <i>Subtract amounts of money with up to 4 digits (including decimals with two decimal places) using a written method of subtraction where appropriate</i> • <i>Use inverse to check the answer to calculations</i> • <i>Give change from £20</i> • <i>Solve problems involving money</i>
<p>Week 6</p>	<p><i>Multiplication and division to solve problems</i></p> <ul style="list-style-type: none"> • <i>Estimate answers</i> • <i>Consider the most appropriate strategy to solve a calculation calculate mentally, use a jotting or a written method</i> • <i>Use partitioning to double or halve any number, including decimals to one decimal place</i> • <i>Recall multiplication and division facts for the 6x and 9x tables.</i> • <i>Identify patterns of similar calculations, e.g. if I know 5×9, I also know 0.5×0.9, 90×5, 90×50 etc.</i> • <i>Find factor pairs for numbers within known tables</i> • <i>Multiply two-digit and three-digit numbers by a one-digit number using an expanded written layout</i> • <i>Use inverse to check answers to calculations.</i> • <i>Solve problems involving multiplying and adding</i> • <i>Solve problems involving division (including remainders),</i>
<p>Week 7</p>	<p><i>Shape and position and direction in solve problems</i></p> <ul style="list-style-type: none"> • <i>Continue to identify horizontal and vertical lines and pairs of perpendicular and parallel lines(year 3)</i> • <i>Identify acute and obtuse angles and compare</i> • <i>Order angles up to two right angles by size.</i> • <i>Identify lines of symmetry in 2-D shapes.</i> • <i>Sort geometric shapes, including quadrilaterals and triangles, based on their properties and sizes.</i> • <i>Solve problems involving position and /or direction</i> • <i>Solve problems involving shapes</i>
<p>Week 8</p>	<p><i>Statistics to solve problems</i></p> <ul style="list-style-type: none"> • <i>Read and interpret a range of scales- link to number line</i> • <i>Interpret and present discrete using appropriate graphical methods, including bar charts and time graphs.</i> • <i>Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.</i>

Week 9	<p><i>Measures - Time to solve problems</i></p> <ul style="list-style-type: none"> • <i>Revise estimating and reading time to a least the nearest five minutes (Y 3) on an analogue clock</i> • <i>Continue to record and compare time as minutes and hours (Y 3) crossing the hour on an analogue clock</i> • <i>Read time on a digital clock</i> • <i>record and compare time as minutes and hours crossing the hour on a digital clock (12 hour)</i> • <i>Use vocabulary of time (Y 3)</i> • <i>Convert time between analogue and digital clocks and times</i> • <i>Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days</i>
Week 10	<p><i>Assess and review</i></p>

Oral and Mental calculation

- Read and write numbers with one decimal place up to 10,000.
- Count on and back in 1s, 10 s or 100 s from any number up to 10,000.
- Count forwards and backwards in equal steps
- Count forwards and backwards through zero to include negative numbers
- *Order temperatures including those below 0°C.*
- Count in fraction steps, e.g. $\frac{1}{5}$, $\frac{2}{5}$, $\frac{3}{5}$... 0.1, 0.2, 0.3, 0.4
- *Count on and back in steps of unit fractions.*
- *Identify, extend and describe number patterns or sequences*
- Compare and order a set of random numbers up to 10,000 using > or <
- Round any number up to 10000 to the nearest 10, 100 or 1000.
- Recall addition and subtraction facts for each number up to 20.
- Recall addition and subtraction facts for 100
- *Add and subtract pairs of two digit and/or three digit numbers mentally*
- Find 0.1 , 1, 10, 100 or 1000 more or less than a given number
- Recall multiplication facts for 2, 3, 4, 5,6 ,8 and 9 x tables
- Multiply numbers by 0 and 1
- Count in multiples of 25, 50 and ,100
- Multiply three numbers together - from within known facts
- Recognise and use factor pairs in mental calculations.
- Divide multiples from known tables mentally
- Divide numbers by 1
- Multiply and divide whole numbers by 10 or 100 (*whole number that will give answers to one decimal place*)
- Double any multiple of 10 or 100.
- Recognise 2 D and 3D shapes and describe their properties

Week 1**Number and place value to solve problems**

- Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens and ones).
- *Identify the value of each digit to at least one decimal place.*
- Identify, represent and estimate numbers using different representations, including the number line.
- Solve number and practical problems that involve number and place value.

<p>Week 2</p>	<p>Addition and subtraction to solve problems</p> <ul style="list-style-type: none"> • Estimate answers • <i>Think about the most appropriate strategy to solve a calculation mentally, using a jotting or a written method</i> • Add numbers with up to 4 digits and decimals with one decimal place using a compact written method • Subtract numbers with up to 4 digits and decimals with one decimal place using an expanded or compact written method. • Use inverse to check the answer to calculations • Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.
<p>Week 3</p>	<p>Measures -Money</p> <ul style="list-style-type: none"> • <i>Revise coinage and notes</i> • <i>Continue to recognise and use symbols for pounds (£) and pence (p)</i> • <i>Understand that the decimal point separates pounds and pence</i> • Estimate answers • <i>Think about the most appropriate strategy to solve a calculation: mentally, using a jotting or a written method</i> • <i>Add two or more amounts of money using compact written methods</i> • <i>Subtract to find a price difference or to calculate change using an expanded written method</i> • <i>Count up (shopkeepers addition) to find change from notes</i> • <i>Multiply amounts of money to find the price of several of the same article using an expanded method (use pictures or manipulatives to support)</i> • Use inverse to check the answer to calculations • Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why • Solve simple money problems involving fractions and decimals to at least one decimal place.
<p>Week 4</p>	<p>Measures-weight -to solve problems</p> <ul style="list-style-type: none"> • <i>Read and interpret the scale on a range of measuring equipment</i> • <i>Estimate weights before measuring</i> • <i>Measure weights in Kg or g and record results using one decimal place</i> • <i>Convert between Kg and g</i> • Estimate answers • <i>Think about the most appropriate strategy to solve a calculation: mentally, using a jotting or a written method</i> • Add two or more weights with up to 4 digits and decimals with one decimal place using a written methods • Subtract weights to find the difference or a decrease with numbers with up to 4 digits and decimals with one decimal place using an expanded or compact written method • Use inverse to check the answer to calculations • Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why. • Solve simple weight problems involving fractions and decimals to one decimal place.

<p>Week 5</p>	<p>Fractions to solve problems</p> <ul style="list-style-type: none"> • Understand that a fraction is one whole number divided by another (for example, $\frac{3}{4}$ can be interpreted as $3 \div 4$) • Compare and order unit fractions and fractions with the same denominator (including on a number line). (Year 3 objective) • Recognise, find and write fractions of a discrete set of objects. • Estimate answers • Think about the most appropriate strategy to solve a calculation mentally, using a jotting or a written method • Add fractions with the same denominator using diagrams to support. • Subtract fractions with the same denominator using diagrams to support. • Recognise and show, using diagrams, families of common equivalent fractions, especially in relation to halves and quarters. • Solve problems involving fractions to calculate quantities, including non-unit fractions where the answer is a whole number • Solve problems involving fractions to fractions to divide quantities
<p>Week 6</p>	<p>Decimals to solve problems</p> <ul style="list-style-type: none"> • Count in tenths on counting stick • Read and write numbers with one decimal place. • Recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10(year 3) • Identify the value of each digit to one decimal place. • Partition numbers into ones and tenths (for example, $2.3 = 2 + 0.3$) • Order and compare numbers with one decimal place including on a number line. • Divide a two -digit number by 10 to create decimals with one decimal place • Recognise and write decimal equivalents of any number of tenths e.g. $1/10 = 0.1$. • Recognise and write decimal equivalents to $\frac{1}{4}$; $\frac{1}{2}$; $\frac{3}{4}$. • Solve problems involving ordering numbers to one decimal place
<p>Week 7</p>	<p>Multiplication to solve problems</p> <ul style="list-style-type: none"> • Recall multiplication and division facts for the 7 x and 11 x tables • Use partitioning to double or halve any number, including decimals to one decimal place by partitioning and re-combining. • Estimate answers • Think about the most appropriate strategy to solve a calculation mentally, using a jotting or a written method • Multiply two-digit or three-digit numbers by a one-digit number using an expanded written method • Use inverse to check the answer to calculations • Solve problems involving multiplying (and maybe adding) including integer scaling problems to make an amount a number of times larger

<p>Week 8</p>	<p>Division to solve problems</p> <ul style="list-style-type: none"> • Continue to understand division as sharing and grouping and use each appropriately. • Estimate answers • Think about the most appropriate strategy to solve a calculation :mentally, using a jotting or a written method • Divide numbers up to 3 digits by a one-digit number using an expanded or written method of short division (using manipulative /diagrams to support). • Interpret remainders appropriately for the context • Use inverse to check the answer to calculations • Solve problems involving division (including remainders) and integer scaling problems to make an amount a number of times smaller
<p>Week 9</p>	<p>Shape and position and direction</p> <ul style="list-style-type: none"> • Understand that area is a measure of surface within a shape. • Find the area of rectilinear shapes by counting squares. • Describe movements between positions as translations of a given unit to the left/right and up/down. • Describe positions on a 2-D grid as coordinates in the first quadrant. • Plot specified points and draw sides to complete a given polygon. • Complete a simple symmetric figure with respect to a specific line of symmetry • Solve problem involving shape • Solve problems involving position and /or direction
<p>Week 10</p>	<p>Assess and review</p>

Year 4

Terms 5 & 6

Oral and Mental calculation

- Read and write numbers to 10,000 including those with one decimal place
- *Describe and extend number sequences involving counting on or back in different steps, including steps that are multiples, doubles or halves.*
- Count on and back in 0.1 s, 1s, 10 s or 100 s from any number up to 10,000.
- Count backwards through zero to include negative numbers.
- Count up and down in tenths.
- Count in fraction steps, e.g. $\frac{1}{5}$, $\frac{2}{5}$, $\frac{3}{5}$...
- Order a set of random numbers to at least 10,000 including amounts of money and measures and numbers involving decimal.
- Round any number to the nearest 10, 100 or 1000
- Recall and use addition and subtraction facts for 100.
- Recall and use addition and subtraction facts for multiples of 100 totalling 1000.
- Derive and use addition and subtraction facts for 1 and 10 (including with decimal numbers to one decimal place).
- Use partitioning to double or halve any number, including decimals to one decimal place.
- Count in multiples of 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 20, 25, 50, 100, 250, 500 and 1000.
- Recall multiplication facts for all times up to 12 x 12 and derive associated division facts Multiply and divide numbers by 10, including those which have answers to one decimal place
- Multiply 0 and 1
- Divide by 1
- multiply together three numbers
- Recognise and use factor pairs
- Identify and use patterns of similar calculations for addition and subtraction and for multiplication and division statements
- Recognise 2D and 3D shapes in different orientations and describe them.

Week 1

Number and place value to solve problems

- *Introduce hundredths as the effect of dividing a one- or two-digit number by 100*
- *Partition numbers into tens, ones, tenths and hundredths using manipulative to support*
- *Identify the value of each digit to at least one decimal place*
- *Read and write decimal numbers using the correct terms*
- Recognise and write decimal equivalents of any number of tenths and hundredths
- Recognise and write decimal equivalents to $\frac{1}{4}$; $\frac{1}{2}$; $\frac{3}{4}$.
- Round decimals with one decimal place to the nearest whole number.
- Order and compare numbers with the same number of decimal places up to two decimal places *including on a number line*
- Solve problems that involve number and place value

<p>Week 2</p>	<p>Addition and subtraction to solve problems</p> <ul style="list-style-type: none"> • Estimate answers • <i>Consider the most appropriate strategy to solve a calculation: calculate mentally, use a jotting or a written method</i> • Add numbers with up to 4 digits and decimals with at least one decimal place using a compact written method. • subtract numbers with up to 4 digits and decimals with at least one decimal place using a compact written methods of subtraction • use inverse to check the answers to calculations • Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.
<p>Week 3</p>	<p>Measures -Money to solve problems</p> <ul style="list-style-type: none"> • <i>Revise coinage and notes</i> • <i>Continue to recognise and use symbols for pounds (£) and pence (p)</i> • <i>Understand that the decimal point separates pounds and pence</i> • Estimate answers • <i>Consider the most appropriate strategy to solve a calculation calculate mentally, use a jotting or a written method</i> • Add two or more amounts of money with up to 5 digits (including decimals with two decimal places) using a written method of addition where appropriate. • Subtract amounts of money with up to 5 digits (including decimals with two decimal places) using a written method of subtraction where appropriate. • Use inverse to check the answers to calculations • <i>Calculate change from multiples of 10 or 100 to £500</i> • Solve problems involving money
<p>Week 4</p>	<p>Measures-capacity / volume to solve problem</p> <ul style="list-style-type: none"> • <i>Read and interpret the scale on a range of measuring instruments -link to number line</i> • Estimate, compare and calculate different capacity/volumes. • Convert between different units of capacity l/mm • Estimate answers • <i>Consider the most appropriate strategy to solve a calculation calculate mentally, use a jotting or a, written method</i> • Add two or more volumes with up to 4 digits (including decimals with two decimal places) using a written method of addition where appropriate. • Subtract volumes up to 4 digits (including decimals with two decimal places) using a written method of subtraction where appropriate. • Solve problems involving capacity

<p>Week 5</p>	<p>Fractions to solve problems</p> <ul style="list-style-type: none"> • Estimate answers • <i>Consider the most appropriate strategy to solve a calculation calculate mentally, use a jotting or a written method</i> • Add fractions with the same denominator-use diagrams <i>and manipulatives</i> to support. • Subtract fractions with the same denominator- use diagrams and <i>manipulatives</i> to support. • Recognise and show, using diagrams, families of common equivalent fractions • Solve problems involving using fractions to calculate quantities, including non-unit fractions where the answer is a whole number • Solve problems involving using fractions to divide quantities including non-unit fractions where the answer is a whole number.
<p>Week 6</p>	<p>Multiplication and division to solve problems</p> <ul style="list-style-type: none"> • Estimate answers • <i>Consider the most appropriate strategy to solve a calculation calculate mentally, use a jotting or a written method</i> • Multiply two-digit and three-digit numbers by a one-digit number using an expanded written layout. • <i>Divide numbers up to 3 digits by a one-digit number using a written method of short division and interpret remainders appropriately for the context.</i> • Use inverse to check the answers to calculations • Solve problems involving multiplying and adding, scaling problems and harder correspondence problems such as which n objects are connected to m objects. • Solve problems division (including remainders) and integer scaling problems
<p>Week 7</p>	<p>Shape and position and direction to solve problems</p> <ul style="list-style-type: none"> • Identify lines of symmetry in 2-D shapes presented in different orientations. • <i>Complete a simple symmetric figure</i> • Describe movements between positions as translations the left/right and up/down. • Describe positions on a 2-D grid as coordinates in the first quadrant. • Plot specified points on a grid • Draw sides to complete a given polygon on a grid • Sort compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties • <i>Continue to identify horizontal and vertical lines and pairs of perpendicular and parallel lines.</i> • Identify acute and obtuse angles • Compare and order angles up to two right angles by size • Solve problems involving shapes • Solve problems involving position and/or direction

Week 8	<p><i>Statistics to solve problems</i></p> <ul style="list-style-type: none"> • <i>Read and interpret a range of scales -link to number line</i> • <i>Understand the distinction between discrete and continuous data</i> • Interpret and present discrete data including bar charts, pictograms, diagrams, tables and time graphs • Interpret and present continuous data using graphs • Solve comparison, sum and difference problems using information presented in bar charts, pictograms, diagrams ,tables and graphs
Week 9	<p><i>Measures -Time to solve problems</i></p> <ul style="list-style-type: none"> • Read, write and convert time between analogue and digital (<i>12 hour clocks.</i>) • Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days • Solve problems involving time expressed on graphs
Week 10	<p><i>Assess and review</i></p>

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 4

Suggested Activities

NUMBER	Children need the opportunity to
<p>Number and place value</p>	<ul style="list-style-type: none"> • Read and write numbers • Order numbers • Use <, > or = when ordering numbers • Position numbers on a number line including multiples of 10 or 100 on a blank number line • Use bead string to show decimal place value and make links to money and measures • Round whole numbers • Round decimals to nearest whole number • Create and continue number sequences involving decimal numbers • Use models to explain negative numbers - lifts that go below the ground floor, swimming pool steps that go below the water • count below zero using the vocabulary 'zero, negative one, negative two' and so on. • Use counting stick or Number line ITP to show counting backwards can lead to negative numbers and compare and order positive and negative numbers on number lines-link to temperature and use Temperature ITP. • Reinforce their understanding of the structure of the number system based on groups of 10 i.e. 10 ones make a ten, ten tens make a hundred and so on • Count in multiples of 2,3,4,5,6,7,8,9,10,11,12, 20,25,50 and 100 • recognise the relationships between counting in: 2s and 4s; 3s and 6s; 5s and 10s • Count forwards and backwards in steps of any size, including starting at numbers that are not a multiple of the step size. • link the reciting of number names to counting by using visual images of numbers -, counting stick, bead strings, number lines, 100 squares and manipulatives • Link counting to money and measures i.e. 25p, 50p, 75p, £1, £1 and 25p etc • use concrete objects, partially marked number lines, place value cards, manipulatives and money to <ul style="list-style-type: none"> - count in tens/hundreds/thousands to establish 10 tens make 1 hundred, 10 hundreds make 1000 - represent and compare numbers beyond 1000 including money and measures. • use manipulatives, place value cards or money to partition 4-digit numbers into thousands, hundred, tens and ones and later to re-partition • $2146 = 2000 + 100 + 40 + 6$, $2146 = 2130 + 16$, $2146 = 2120 + 26$ etc • use manipulatives or money to represent a number that is 1000 more than/less than a 4-digit number • use place-value cards and place value grids to illustrate and explain place values, e.g. the digit 3 stands for 3000, 300, 30 or 3 depending on where it appears in a number. • use place-value cards to compare 4 digit numbers -digit by digit from left and then place on a partly numbered or blank number line e.g. 6706 on a line marked in multiples of 1000 • Use Decimal Number ITP and partially numbered number lines and knowledge of multiples of 10/100/1000 to round

	<p>numbers to the nearest 10,100 or 1000</p> <ul style="list-style-type: none"> • Understand place value including decimals to 1 or 2 decimal places
Addition and subtraction	<ul style="list-style-type: none"> • NB decimal numbers to one decimal place and money and measure examples to two decimal places need to be included in the examples given • Estimate answers -use rounding • Consider the most appropriate strategy to solve a calculation: calculate mentally, use a jotting or a , written method • Use place value and number facts to calculate mentally(with jottings) -share methods • Use manipulatives to add 2 or more numbers with up to 4 digits including exchange. • Use manipulatives to subtract 2 numbers with up to 4 digits including partitioning of the larger number • Add or subtract decimal numbers with one or two decimal places -use manipulatives • write addition and subtraction stories and write an equation for each story • create word problems involving addition and subtraction for others to solve. • know and use the fact that addition and subtraction are inverse operations when calculating
Multiplication and division	<ul style="list-style-type: none"> • Estimate answers • Consider the most appropriate strategy to solve a calculation: calculate mentally, use a jotting or a , written method • know and use the fact that multiplication and division are inverse operations when calculating • Understand that multiplication is commutative i.e. $2 \times 6 = 6 \times 2$ but division is not. • Use bead bar to show groups of for multiplication • Use bead bar to show groups of and remainders for division • Use and apply all the tables to 12×12 and related division facts including the families of 4 facts • Use known fact so solve $600 \div 3 = 200$ when you know $6 \div 3 = 2$ and $60 \div 3 = 20$ • Use partitioning to support division of larger numbers i.e. for 90 divided by 6 partition in to 60 and 30 • Use Multi array ITP or manipulatives to create arrays for three digit or two-digit x one-digit calculations and record as "grid" multiplication • Use manipulatives to calculate multiplication and record on grids. • Understand the term factor i.e. $2 \times 3 = 6$ so 2 and 3 are both factors of 6. $1 \times 6 = 6$ so 1 and 6 are factors of 6. The factors of 6 are 1, 2, 3 and 6. List factors systematically. • Draw factor spiders for numbers such as 12, 20 and 36 which have many factors • explore factors and factor pairs • write multiplication and division stories to match calculations • create word problems involving multiplication and division for other groups to solve. • Explore problem such as <ul style="list-style-type: none"> - the number of different meals possible from a menu with 3 main courses and 4 desserts - the number of possible out comes when two or three dice are rolled. - the number of outfits possible if one had shorts, a T shirt and socks in three different colours. • Explore scaling problems • Know scaling up to make an amount a number of times larger i.e. 3 times as tall

	<ul style="list-style-type: none"> scaling down to make an amount a number of times smaller i.e. half as heavy
Fractions (including decimals)	<ul style="list-style-type: none"> Estimate answers Consider the most appropriate strategy to solve a calculation: calculate mentally, use a jotting or a written method <p>FRACTIONS</p> <ul style="list-style-type: none"> Link fractions of shapes to fractions of amounts using shape "mats" i.e. draw a square , divide it into quarters and then use this to work out $\frac{1}{4}$, $\frac{2}{4}$ or $\frac{3}{4}$ of amounts practically Use language of fractions "2 tenth " and decimals "nought point two" Use factors and multiples to find equivalent fractions -100 square can be used to show how to scale fractions up or down i.e. what needs to happen to change $\frac{3}{4}$ into other equivalent fractions Use paper folding i.e. fold a strip of 20 squares into quartets and colour $\frac{3}{4}$ of them to show that $\frac{3}{4}$ of 20 is 15. Put fractions on a number line to show that 1 point can have more than 1 label ie $\frac{2}{3}$, $\frac{4}{6}$,$\frac{6}{9}$ Make links with division explicit Use fraction walls and Fraction Wall ITP to show equivalent fraction Become fraction detectives "looks different but has the same meaning" Explore equivalent fractions through practical equipment and diagrams use fraction discs or modelling materials to illustrate addition and subtraction of like fractions within one whole ie $\frac{3}{5} + \frac{1}{5} = \frac{4}{5}$ (3 fifths + 1 fifth = 4 fifths) and $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{4}{4}$ or 1. begin to record simple number sentences such as $\frac{1}{5} + \frac{3}{5} = \frac{4}{5}$ or $\frac{5}{8} - \frac{3}{8} = \frac{2}{8}$. Write addition and subtraction stories involving like fractions. <p>DECIMALS</p> <ul style="list-style-type: none"> Use a number line marked in divisions of 0.5 or 0.2 to practice counting forwards and backwards in decimal steps Count in tenths and hundredths Use a double number line to show both fractions and decimals make number lines with fractions and decimals them Convert $\frac{1}{10}$ and $\frac{1}{100}$ to decimals equivalents- link to base 10 equipment Use number lines, Decimal number line ITP, decimal place value cards , decimal place value charts, bead strings and measuring sticks or rulers to show decimals Read and write decimal numbers and say three units and six tenths as well as three point six. Use manipulatives to show the effect of dividing numbers by 10 or 100
MEASUREMENT	
	<ul style="list-style-type: none"> Estimate answers Consider the most appropriate strategy to solve a calculation: calculate mentally, use a jotting or a written method use Measuring cylinder , Measuring scales and Thermometer ITPs Work practically with weight, length, volume and capacity so children can estimate with reasonable accuracy. Make and read scales and interpolate between the marks Work out where the scale starts and ends, the interval , count along the scale to check and label marks Identify points between two marks and estimate their value

	<ul style="list-style-type: none"> • Read values from scales including alternative units eg 0g, 100g , 200g or 0Kg , 0.1 Kg , 0.2 Kg • Link converting measures to x10 x100 and x1000 and explore the relationships between them. • Make shapes with canes or straws and then lay them out to find the perimeter • Use Area ITP to create rectangles and change the perimeter and notice the resulting change in area. • Make explicit the 2 lengths and the two widths when looking at the perimeter of a rectangle. • Find perimeter of rectangles including compound shapes • Find the area of rectangles- the surface inside them by counting squares. Relate area to arrays made of cubes. • Investigate relationships between area and perimeter. <p>MONEY</p> <p>TIME</p> <ul style="list-style-type: none"> • Write analogue and digital time • Relate time to number bonds for 60 so children can see that 40 minutes past is the same as 20 minute to • Match, read and write analogue and digital times. • Set a digital time and ask children for the analogue equivalent and vice versa • Convert between units of time e.g. 140 seconds is 2 min an 20 secs • Add times and find time differences using a time (number) line, converting between units of time if required • Use real time tables , opening and closing times etc
<p>GEOMETRY</p>	
<p>Properties of shapes</p>	<ul style="list-style-type: none"> • Sort and investigate different triangles(right angles, isosceles, equilateral and scalene) • Sort and investigate different quadrilaterals(including parallelogram , rhombus and trapezium) • Sort shapes in to regular (equal sides and equal angles) and those that are irregular • Compare and order angles by size- use strips of paper or geo strips to model angles as a measure of turn. • Explain 90^o as a benchmark and visualise a square corner /right angle • Draw and make symmetrical patterns • Recognise lines of symmetry in diagram including where the line of symmetry does not dissect the original shape. • Extend symmetry to include completing drawings where the line of symmetry is vertical or horizontal • Sketch quadrilaterals (and other shapes) with one line of symmetry, two lines etc. • Name various triangles (isosceles, equilateral, scalene, right-angled) and quadrilaterals (square, oblong, parallelogram, rhombus, kite, trapezium). • Sort quadrilaterals and triangles by given criteria e.g. has parallel sides, has equal sides etc • Know properties of quadrilaterals • Identify a shape from a set of given properties • use a pinboard to make shapes.

Position and direction

- Introduce co-ordinates
- Use Coordinates ITP to create the start of a shape which children can then complete
- recognise when lines are **horizontal and vertical** and identify simple examples in the environment
- know that rows on a grid are described as horizontal and columns as vertical,
- describe the position of a square on a grid with the rows and columns labelled.
- Complete partly drawn shapes or polygons on grids and then give the coordinates.
- Link to maps.
- introduce translation