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 1

Terms 1 & 2

Oral and Mental calculation

- Recite numbers to 100 forwards and backwards from 0 or 1
- Recite numbers to 10 as first, second , third
- Read and write numbers to at least 20
- Spell numbers to 10
- Order numbers to at least 20
- Compare numbers within 20
- Find 1 more/ 1 less of any number to 1- 20
- Find numbers between 2 given numbers
- Count on or back in ones from a given number within at least 0- 20
- Identify 2-D shapes in different orientations and begin to describe them
- Identify 3-D shapes in different orientations and begin to describe them
- Compare and sort common 2-D and 3-D shapes and everyday objects
- Describe position, direction and movement

Week 1	Number and place value to solve problems • Count up to at least 20 objects accurately • Order numbers to at least 20 • Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. • Read and write numbers from 1 to 20 in numerals and be to write them in words. • 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. • Model 1 more /1 less (before /after) given number to at least 20 • Given a number, identify one more and one less. • Solve practical problems involving all of the above
Week 2	Addition within 10 to solve problems • Partition numbers 3-10 into two sets and re-combine • Model + and = signs • Model reading , writing and interpreting addition sentences • Add 1, 2, 3 ,4 or 5 to number less than 6 by counting on • Add 1 or 2 to numbers 6-8 by counting on • Add zero to numbers • Use inverse to check answers to calculations • Solve simple one-step problems that involve addition and subtraction, using concrete objects and pictorial representations
Week 3	Measures -Money to solve problems • Recognise coinage 1 p and 2 p • Pay for items using 1 p and 2 p coins • Add combinations of 1 p and 2 p coins to make 10p. • Solve simple one-step problems that involve addition and subtraction, using coins, objects and pictorial representations • Use inverse to check answers to calculations
Week 4	Measures-length and height to solve problems • Estimate and measure lengths and heights using non-standard but uniform unit • Compare and order lengths and heights • Compare and describe lengths and heights (for example, long/short, longer/shorter, tall/short, double/half). • Measure and begin to record lengths and heights, using non-standard measures within the range of numbers the children understand • Solve practical problems for lengths and heights

Week 5	Addition and subtraction within 10 to solve problems • Model +, – and = signs • Model reading , writing and interpreting subtraction sentences (take away) • Subtract 1, 2, 3 ,4 or 5 from a number up to 10 by counting back on a number track • Subtract zero • Represent and use number bonds and related subtraction facts within 10 • Use inverse to check answers to calculations • Solve simple one-step problems that involve addition and subtraction within 10, using concrete objects and pictorial representations, • Solve missing number problems, such as 7 = □ – 5.
Week 6	Number and place value 0-20 to solve problems • Order numbers 1-20 on track and bead string • Make teen numbers with apparatus • Partition teen numbers in 10 and rest • Compare 2 numbers-which is more or less? • Explore reading ,writing and ordering "teen " numbers • Begin to recognise the place value of numbers beyond 20 (tens and ones). • Solve problems involving ordering and comparing numbers
Week 7	Addition and subtractions bonds to 10 to solve problems • Partition 3 into two groups and model recording the resulting addition and related subtraction number sentences 3+0=3,2+1=3,1+2=3 and 3-0=3, 3-1=2,3-2=1 • Repeat with other numbers to 10 • Use inverse to check answers to calculations • Solve missing number problems such as 3 = □ – 2.
Week 8	Shape, Position and direction to solve problems • Recognise ,visualise, name and describe squares, circles, rectangles and triangles • Vary size and orientation of shapes • Make pictures with shapes • Follow and then devise repeating patterns with shapes • Practical activities linked to position
Week 9	Addition and subtraction within 20 to solve problems • Order numbers to 20 • Find 1 more /1 less for numbers to 20 • Find 2 more /2 less for numbers to 20 • Use inverse to check answers to calculations • Solve problems practically using addition and subtraction bonds and facts up to 10 including missing number problems

Week 10	Multiplication and division and fractions to solve problems • Practical grouping and sharing of quantities to 20 • Practical doubling 1-5 • Practical sharing (halving) numbers to 10.
Week 11	Assess and review

Year 1	
Terms 3 & 4	
Oral and Mental calculation • Recite numbers to 100 forwards and backwards from 0 or 1 • Recite numbers to 10 as first, second , third • Read and write numbers to 100 in numerals • Read and write numbers 20 in words • Recite multiples of 10 to 100 • Order random numbers to 100 • Compare numbers within 100 • Find 1 more/ 1 less of any number to 1- 99 • Find numbers between 2 given numbers • Count on or back from a given number with 100 • Recite days of the week • Recall addition and subtraction facts for each number up to 10. • Recall doubles of numbers to 10 + 10 • Recall halves of even numbers to 20. • Name 2-D shapes and describe them	
Week 1	Number and place value to solve problems • Count up to 100 objects accurately • Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. • Order numbers to 100 on a track /number line • Model 1 more /1 less (before /after) and 10 more /10 less given number to 100 • Place other numbers onto washing line marked with multiples of 5 and 10 • Identify missing numbers on washing line/number line • Reinforce reading ,writing and ordering "teen" numbers • Read and write numbers from 1 to 20 in numerals and words. • Begin to recognise the place value of numbers beyond 20 (tens and ones). • 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. • Solve problems and practical problems involving all of the above

2	Addition within 20 • Model + and = signs • Model reading , writing and interpreting addition sentences • Add by counting on from the larger number within 20 • Add 2 or more 1 digit numbers within 20 • Represent –with concrete apparatus- and use number bonds within 20. • Add one-digit and two-digit numbers to 20 including zero (using concrete objects and/or pictorial representations) • Use inverse to check answers to calculations • Solve problems involving addition and subtraction
3	Measures -Money to solve problems • Recognise coinage 1 p, 2 p, 5 p and 10 p • Count in multiples of, twos, fives and tens. • Pay for items using 1 p, 2 p, 5 p and 10 p coins • Add combinations of known coins to make 20 p • Model giving change from 20p using coins and a number line • Solve problems involving money
4	Measures-mass or weight and time to solve problems MASS/WEIGHT • Estimate and measure mass and weight using non-standard but uniform units within children's range of known numbers • Compare and order mass and weight • Describe mass/weight for example, heavy/light, heavier than, lighter than. • Solve practical problems for masses/weights. TIME • Tell the time to the hour and half past the hour • Draw the hands on a given clock face to show these times. • Compare, describe and solve practical problems for time (quicker, slower, earlier, and later). • Sequence events • Solve problems involving time
5	Addition and subtraction within 20 to solve problems • Model – and = signs • Model reading , writing and interpreting subtraction sentences (difference) • Find the difference practically by comparing two towers or lengths • Add and subtract one-digit and two-digit numbers to 20 including zero (using concrete objects and/or pictorial representations) • Use inverse to check answers to calculations • Solve problems involving addition and subtraction within 20

6	Number and place value to solve problems • Order numbers 1-100 on track and bead string • Partition teen numbers in 10 and rest • Partition other two –digit numbers into tens and ones • Compare 2 numbers between 0 and 100 -which is more or less? • Solve problem involving ordering numbers or more/less
7	Addition and subtractions bonds to 10 and to 20 to solve problems • Link bonds for 20 to bonds for 10 • Partition 13 to find all the addition pairs that total 13 0+13 , 1+12 etc • Partition 13 into two groups and model recording the resulting addition and related subtraction number sentences 6+5=13, 5+6=13 , 13-6=5, 13-5=6 • Solve missing number problems 13+?= 5 • Repeat with other numbers to 20 • Add and subtract one-digit and two-digit numbers to 20 including zero (using concrete objects and/or pictorial representations) • Use inverse to check answers to calculations • Solve problems involving addition and subtraction within 20 including missing number problems
8	Shape, Position and direction to solve problems • Recognise ,visualise, name and describe 3D shapes cuboids , cubes , pyramids and spheres • Vary size and orientation of shapes • Make models with shapes • Follow and then devise repeating patterns with shapes • Practical activities linked to position • Practical activities linked to whole and half turns • Solve problems involving shape • Solve problems involving position and /or direction.
9	Fractions to solve problems • Recognise , find and name a half of an object , number , shape or quantity practically • Recall and use doubles of all numbers to 10 and corresponding halves • Solve one-step problems involving fractions by calculating the answer using concrete objects and pictorial representations

10	Multiplication and division to solve problems • Count in 2s, 5s and 10 s from zero • Use practical apparatus to show groups of 2, 5, and 10 • Share and group quantities practically • Solve one-step problems involving multiplication by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher. • Solve one-step problems involving division by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher. Understand that a fraction can describe part of a whole • Use inverse to check the answers to calculations .
11	Assess and review

Year 1	
Terms 5 & 6	
Oral and Mental calculation • Recite numbers to 100 forwards and backwards from any number • Read and write numbers to 100 in numerals • Read and write numbers to 20 in words • Order numbers to 100 • Compare numbers within 100 • Count on and back in 1s from any one or two-digit number including across 100 • Count in multiples of 2, 5 and 10 • Begin to recall multiplication facts for the 2, 5 and 10 times tables • Find 1 more/ 1 less or 10 more / 10 less of any number to 1- 100 • Find numbers between 2 given numbers • Recall addition and subtraction facts for each number up to 20. • Recall doubles of numbers to 10 + 10 • find doubles +1 • Recall halves of even numbers to 20. • Add a single digit number to any number up to 20. • Take away a single digit number from any number up to 20. • Recite days of the week and months of the year • Tell the time on an analogue clock to the hour and half past the hour. • Revise the names and properties of 2D and 3D shapes	
Week 1	Number and place value to solve problems • Continue to count up to 100 objects accurately • Place two digit numbers onto washing line marked with multiples of 5 and 10 to and across 100 • Identify missing numbers to and across 100 on washing line/number line • Partition two –digit numbers into tens and ones and begin to recognise place value (tens and ones). • Reinforce reading, writing and ordering "teen "numbers • 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. • Solve practical problems involving all of the above.

Week 2	Addition within 20 to solve problems • Model reading , writing and interpreting addition sentences • Add 2 or more one numbers to 20 • Add by counting on from the larger number • Solve missing number problems using number bonds within 20. such as 8 = □ + 2 • Add one-digit and two-digit numbers to 20, including zero using concrete objects and pictorial representations • Use inverse to check the answers to calculations • Solve simple one-step problems that involve addition using concrete objects and pictorial representations
Week 3	Measures -Money to solve problems • Recognise all coinage • Pay for items using a mixture of coinage • Add combinations of known silver coins to make 100 p /£1 • Model giving change from 50p • Solve problems involving money
Week 4	Measures-capacity and time to solve problems CAPACITY • Estimate and measure capacity using non-standard but uniform unit using number within the children experince • Compare and order capacity). • Compare, describe and solve practical problems with capacity/volume (full/empty, more than, less than, quarter) TIME • Tell the time to the hour and half past the hour • Draw hands on a given clock face to show known times • Compare, describe and solve practical problems for time (quicker, slower, earlier, later). • sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening. • use language relating to dates, including days of the week, weeks, months and years • Solve problems involving time .
Week 5	Subtraction within 20 to solve problems • Model reading , writing and interpreting subtraction sentences (take away and difference) • Solve missing number problems using number bonds and related subtraction facts such as 13 = □ – 2 • Subtract one-digit and two-digit numbers to 20, including zero using" take away " to find out how many are left (using concrete objects and pictorial representations). • Subtract one-digit and two-digit numbers to 20 using 'difference' as finding how many more to make (using concrete objects and pictorial representations). • Use inverse to check the answers to calculations • Solve simple one-step problems that involve subtraction, using concrete objects and pictorial representations.

Week 6	Multiplication and Division to solve problems • Count in 2s, 5s and 10s • Link counting in twos to doubling • Link dividing by two to halving • Make arrays or patterns to show "groups of "such as 2 lots of 3 and count in groups (multiples) not ones • Group and share small quantities • Use inverse to check the answers to calculations • 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.
Week 7	Addition and subtractions bonds to 10 and to 20 to solve problems • Explore inverse practically • Link addition and subtraction bonds for 10 to those for 20 • Re visit the four related addition and subtraction facts for every number 2-20 • Solve problems practically using addition and subtraction bonds and facts up to 10 and then 20 • Use inverse to check the answers to calculations • Solve problems involving multiplication and division including finding missing numbers
Week 8	Fractions to solve problems • recognise , find and name a half as one of two equal parts of an object , number , shape or quantity • Recognise , find and name a quarter as one of four equal parts of an object , number , shape or quantity • Understand that a fraction can describe part of a whole. • Understand that a unit fraction $\frac{1}{2}$ or $\frac{1}{4}$ represents one equal part of a whole. • Solve practical problems involving halves and quarters using concrete objects and pictorial representations.
Week 9	Properties of Shape and position and direction to solve problems • Recognise and name common 2-D shapes, including rectangles (including squares), circles and triangles. • Recognise and name common 3-D shapes, including cuboids (including cubes), pyramids and spheres. • Solve practical problems involving shapes using concrete objects and/or pictorial representations • Describe position, directions and movements, including half, quarter and three-quarter turns. • Solve practical problems involving position or direction, by following or giving instructions
Week 10	Assess and review

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 1	
Suggested Activities	
NUMBER	**Children should have opportunities to**
Number and place value	• Develop successful strategies for counting objects, actions and sounds • See numerals displayed i.e. how many children can use the sand tray • Read and write numbers as words and numerals • Count forwards and backwards in different context (including actions , number rhymes and games)with particular emphasis on crossing 10's and 100's boundary • Count forwards and backwards for different starting numbers • Spot counting errors mistakes made a puppet • See zero as a number and as a place holder • link the reciting of number names to counting by using visual images of numbers – number tracks and lines-and groups of objects, pictures and manipulatives • visualise a number track in their head and use it when calculating • Add numbers to a partially completed number track or washing line • Count in multiples of 2s , 5s and 10 s -link to money • Using manipulatives to make groups of ten and count tens and ones to tell the number • Use concrete objects and estimate the number of objects in a set before counting • use concrete objects and manipulatives to represent and compare numbers in terms of tens and ones, and use language such as 'more than', 'fewer than', 'equal to ' , 'most ' and 'least" to describe the comparison. • Make up a pattern has a repeat of 4 items where the 11th shape is a blue circle • describe a given number pattern using language such as '1 more/less' before continuing the pattern or finding the missing number(s) • use manipulatives or money to represent a number that is 1 more than/less than a 2-digit number. • Make sense of 100 using 100 squares, number line, counting stick, bead strings, 10 m rope- place numbers and identify numbers. • Create all the dominoes with 7 spots. • Look at these numbers 2 6 5 3 4 • Use two to make number more than 50 …less than 20 etc
Addition and subtraction	• Become familiar with, use and understand vocabulary such as add, plus, sum, total, take away, difference, subtract, on, back and equals to. • make addition and subtraction stories using concrete objects, manipulatives or pictures and write the whole addition or subtraction number sentence for each story. • Use number lines and tracks to support calculations • write two addition facts and two subtraction facts for a given number bond within 10 and then 20. • use strategies such as 'count on', 'count back', 'make ten' and 'subtract from 10' for addition and subtraction within 10 and

	then 20 • compare two numbers within 10 to tell how much one number is greater (or smaller) than the other by subtraction. • Begin to recall basic addition and subtraction facts within 10 and then 20. • Use straws and then other manipulatives to illustrate number beyond ten
Multiplication and division	• make equal groups using concrete objects and count the total number of objects in the groups by repeated addition using language such as '2 groups of 5' and '2 fives'. • share a given number of concrete objects/pictures and explain how the sharing is done and whether the objects can be shared equally. • divide a set of concrete objects into equal groups, and discuss the grouping and sharing concepts of division. • Link counting in 2s , 5s and 10s arrays and number pattern
Fractions	• Practical work with objects , play dough, rice , string, jugs of water , pieces of fruit , meter sticks, shapes , strips of paper and measurements to find half and then quarter • Understand the difference between find half of a quantity and a half of one • Read fractions in practical situations • Write fractions in practical situations
MEASUREMENT	• Measure using non-standard units – the width of the book using lots of cubes, the width of the book using one cube over and over again and final a strip of paper marked in "cubes". • Realise that objects must be lined up a on common base on order to compare their length or height. • Measure length using a variety of non-standard units such as body parts, paper clips, and match sticks, canes, pencils explain their choices of units and how the measurement is done. • estimate the length of an object before measuring it and use the word 'about' to describe the measurement • compare the weight of two objects using a balance scale and understand that the object that sits lower is the heavier • compare the capacity of containers by pouring liquid or sand between them • count money from the highest to the lowest denomination- link to counting in 2s, 5s and 10s • write amounts of money using £ and p symbols. • match a coin of one denomination to an equivalent set of coins of another denomination • realise that a greater number of coins is not necessarily a greater amount of money • compare amounts of money and realise that when comparing two sets of or coins, it is their values that are being compared and not the number of coins • find a variety of ways of using coinage to make a given amount • add, subtract and find change during practical activities • record number sentences involving calculations with money • Explore key features of a clock face – the position of the numbers ,significance of the 6, when past becomes to and the position of the hour hand as the changeover occurs • tell time from a clock face and relate time to the events of a day using 'o'clock' and 'half past' • sequence events according to time and explain the appropriateness of events at different times of the day, e.g. bed time at 3 o'clock in the afternoon.

	• Use ITP Tell the Time
GEOMETRY	
Properties of shapes	• Use language of shape • recognise, name and describe rectangle, square, circle and triangle using real objects and pictures • Realise that 2D shapes can come in different sizes, colours and orientations-concrete apparatus and ICT. • Realise that not all shapes are regular. • Visualise shapes – barrier or reveal games • Make shapes from straws or ropes and describe • Re make a 2D shape from cut-out pieces of the shape. • Identify a 2D shape from a description of the shape. • recognise and describe the differences/similarities between two 2D shapes e.g. a large square and a smaller long , thin rectangle according to attributes such as sides, corners, sizes and colours. • sort 2D shapes in different ways and explain how the shapes are sorted-Venn and Carroll diagrams. • use 2D shapes to create patterns according to one or two attributes (size, shape, colour and orientation) and describe the patterns. • create a pattern and invite others to guess the missing shape(s) in the pattern and explain the pattern. • Identify shapes in the classroom: for example, -find a cuboid (box) -find a cylinder (baked beans tin). • recognise, name and describe 3D shapes found in their environment- boxes and architecture . • make a guess of the 3D shapes-cuboids including cubes, spheres ad pyramids in a bag by touch and feel only. • Make models from 3D shapes and describe them • sort 3D shapes in different ways and explain how the shapes are sorted. • make/complete patterns with 3D shapes according to one or two attributes (size, shape, colour and orientation) and explain the patterns. • create a pattern and invite other groups to guess the missing shape(s) and explain the pattern. • Odd one out activities
Position and direction ▪ describe position, directions and movements, including half, quarter and three-quarter turns	• Follow instruction to position themselves or objects • Place a large teddy with 4 toys around him (in N, S, E and W positions). Make teddy do quarter turns, half turns or whole turns and see which toy he is facing. • Use Bee-Bots and remote control toys to turn as well. • understand what happens when they do whole, half or quarter turns as well. • Follow or give instructions to move along a route