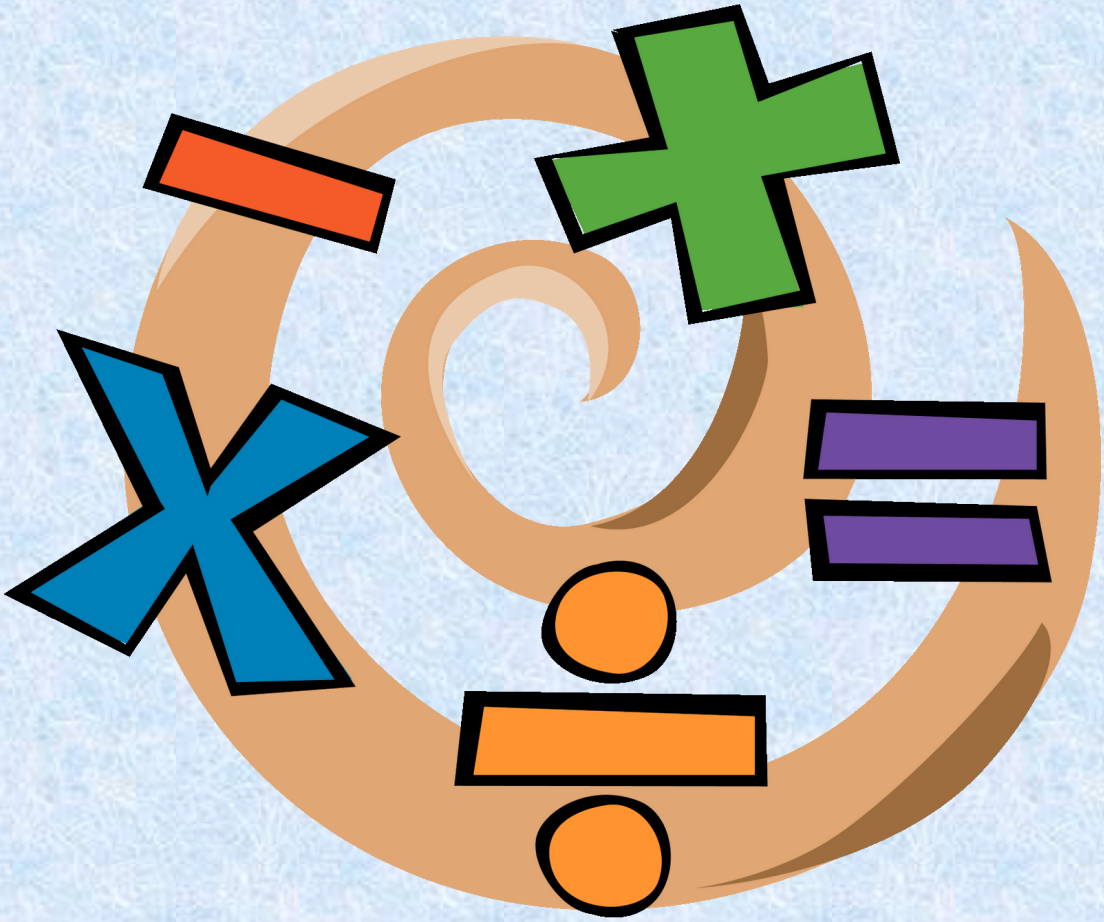
Our Curriculum



Newton Hill Community School

Ready For Learning - Ready For Life

Rationale & Intent

The purpose of maths in our school is to develop:

- positive attitudes towards the subject and awareness of the relevance of maths in the real world
- competence and confidence in using and applying mathematical knowledge, concepts and skills
- an ability to solve problems, to reason, to think logically and to work systematically and accurately
- initiative and motivation to work both independently and in cooperation with others
- confident communication of maths where pupils ask and answer questions using precise mathematical language, openly share work and learn from mistakes
- an ability to use and apply maths across the curriculum and in real life
- an understanding of maths through a process of enquiry and investigation

We aim to provide a stimulating and exciting learning environment that takes account of different learning styles and uses appropriate resources to maximise teaching & learning.

Careful planning and preparation ensures that throughout the school children engage in:

- practical activities and games using a variety of resources
- problem solving to challenge thinking
- individual, paired, group and whole class learning and discussions
- purposeful practise where time is given to apply their learning
- open and closed tasks
- a range of methods of calculating

Intent, Implementation & Impact

In all lessons, learning objectives and success criteria are clearly displayed and discussed. Teachers differentiate according to the needs of the pupils.
The emphasis in lessons is to engage all children, encouraging them to talk about maths and use mathematical language confidently to help solve and give reasoning to a wide range of problems. Lessons involve elements of:

- Instruction – giving information and structuring it well;
- Modelling – showing, describing and modelling maths using appropriate resources and visual displays;
- Questioning and discussing – allowing time to use mathematical language to discuss contextual problems;
- Group and Independent responses to a wide range of problems;
- Reflecting, evaluating and improving – identifying mistakes and using them as positive teaching points;
- Summarising – reviewing maths that has been taught enabling children to focus on next steps.

Starting points for every child are identified using assessment for learning and pre-assessment tasks where appropriate.

Intent, Implementation & Impact

Assessment is an integral part of teaching and learning and is a continuous process. Teachers make assessments of children daily through;

- regular marking of work (which is in line with the school feedback policy. During feedback children are told about what they need to improve on during lessons to make sure they progress towards the national curriculum objective);
- analysing errors and picking up on misconceptions;
- asking questions and listening to answers;
- facilitating and listening to discussions;
- making observations;
- end of unit assessments.

These ongoing assessments inform future planning and teaching. Lessons are adapted readily and short term planning evaluated in light of these assessments.

Year 1 Journey

Autumn Term	Number: Place Value (within 10)		Number: Addition and Subtraction (within 10)		Geometry: Shape	Number: Place Value (within 20)		
Spring Term	Consolidation	Number: Addition and Subtraction (within 20)	Number: Place Value (within 50)		Measurement: Length and Height	Measurement: Weight and Volume		Consolidation
Summer Term	Consolidation	Number: Multiplication and Division	Number: Fractions	Geometry: Position and Direction	Number: Place Value (within 100)	Measurement : Money	Measurement: Time	

Year 2 Journey

Autumn Term	Number: Place Value	Number: Addition and Subtraction	Measurement: Money	Number: Multiplication and Division	Consolidation
Spring Term	Number: Multiplication and Division	Statistics	Geometry: Properties of Shape	Number: Fractions	
Summer Term	Measurement: Length and Height	Geometry: Position and Direction	Consolidation and Problem Solving	Measurement: Time	Measurement: Mass, Capacity and Temperature	Consolidation

Year 3 Journey

Autumn Term	Number: Place Value	Number: Addition and Subtraction		Number: Multiplication and Division		
Spring Term	Number: Multiplication and Division	Measurement: Money	Statistics	Measurement: Length and Perimeter	Number: Fractions	Consolidation
Summer Term	Number: Fractions	Measurement: Time	Geometry: Properties of Shape		Measurement: Mass and Capacity	Consolidation

Year 4 Journey

Autumn Term	Number: Place Value	Number: Addition and Subtraction		Measurement: Length and Perimeter	Number: Multiplication and Division	
Spring Term	Number: Multiplication and Division	Measurement: Area	Number: Fractions		Number: Decimals	Consolidation
Summer Term	Number: Decimals	Measurement: Money	Measurement: Time	Statistics	Geometry: Properties of Shape	Geometry: Position and Direction	Consolidation

Year 5 Journey

Autumn Term	Number: Place Value		Number: Addition and Subtraction	Statistics	Number: Multiplication and Division	Measurement: Perimeter and Area
Spring Term	Number: Multiplication and Division		Number: Fractions		Number: Decimals and Percentages	Consolidation
Summer Term	Consolidation	Number: Decimals	Geometry: Properties of Shape	Geometry: Position and Direction	Measurement: Converting Units	Measurement: Volume

Year 6 Journey

Autumn Term	Number: Place Value		Number: Addition, Subtraction, Multiplication and Division		Number: Fractions	Geometry: Position and Direction	
Spring Term	Number: Decimals	Number: Percentages	Number: Algebra	Measurement: Converting Units	Measurement: Perimeter, Area and Volume	Number: Ratio	Consolidation
Summer Term	Statistics		Geometry: Properties of Shape		Consolidation		

Place Value Progression

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Place Value: Counting	• Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. • Count numbers to 100 in numerals; count in multiples of twos, fives and tens.	• Count in steps of 2, 3 and 5 from 0, and in tens from any number, forward and backward.	• Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number.	• Count in multiples of 6, 7, 9, 25 and 1000. • Count backwards through zero to include negative numbers.	• Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000. • Count forwards and backwards with positive and negative whole numbers, including through zero.	•
Place Value: Represent	• Identify and represent numbers using objects and pictorial representations. • Read and write numbers to 100 in numerals. • Read and write numbers from 1 to 20 in numerals anf words.	• Read and write numbers to at least 100 in numerals and words. • Identify, represent and estimate numbers using different representations including the number line.	• Identify, represent and estimate numbers using different representations. • Read and write numbers up to 1,000 in numerals and in words.	• Identify, represent and estimate numbers using different representations. • Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.	• Read, write (order and compare) numbers to at least 1,000,000 and determine the value of each digit. • Read Roman numerals to 1,000 (M) and recognise years written in Roman numerals.	• Read, write, (order and compare) numbers up to 10,000,000 and determine the value of each digit.

Place Value Progression

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Place Value: Use Place Value and Compare	• Given a number, identify one more and one less.	• Recognise the place value of each digit in a two-digit number (tens, ones) • Compare and order numbers from 0 up to 100; use <, > and—signs.	• Recognise the place value of each digit in a three-digit number (hundreds, tens, ones). • Compare and order numbers up to 1,000.	• Find 1,000 more or less than a given number. • Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, ones) • Order and compare numbers beyond 1,000	• (read, write) order and compare numbers to at least 1,000,000 and determine the value of each digit.	• (read, write), order and compare numbers up to 10,000,000 and determine the value of each digit.
Place Value: Problems and Rounding		• Use place value and number facts to solve problems.	• Solve number problems and practical problems involving these ideas.	• Round any nmber to the nearest 10, 100 or 1,000. • Solve number and practical problems that involve all of the above and with increasingly large positive numbers.	• Interpret negative numbers in context. • Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000. • Solve number problems and practical problems that involve all of the above.	• Round any whole number to a requited degree of accuracy. • Use negative numbers in context, and calculate intervals across zero. • Solve number and practical problems that involve all of the above.

Addition and Subtraction Progression

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Addition and Subtraction: Calculations	• Add and subtract one-digit and two-digit numbers to 20, including zero.	• Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: ⇒ A two-digit number and ones. ⇒ A two-digit number and tens. ⇒ Two two-digit numbers. ⇒ Adding three one-digit numbers.	• Add and subtract numbers mentally including: ⇒ A three-digit number and ones. ⇒ A three-digit number and tens. ⇒ A three-digit number and hundreds. • Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction.	• Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate.	• Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction). • Add and subtract numbers mentally with increasingly large numbers.	• Perform mental calculations, including with mixed operations and large numbers. • Use their knowledge of the order of operations to carry out calculations involving the four operations.

Addition and Subtraction Progression

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Addition and Subtraction: Solve Problems	• Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = __ - 9	• Solve problems with addition and subtraction: ⇒ Using concrete objects and pictorial representations including those involving numbers, quantities and measures. ⇒ Applying their increasing knowledge of mental and written methods.	• Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.	• Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.	• Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. • Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.	• Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.

Multiplication and Division Progression

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Multiplication and Division: Recall, Represent, Use	•	• Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers. • Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.	• Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.	• Recall multiplication and division facts for multiplication tables up to 12x12. • Use place value known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers. • Recognise and use factor pairs and commutativity in mental calculations.	• Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. • Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. • Establish whether a number up to 100 is prime and recall prime numbers up to 19. • Recognise and use square numbers and cube numbers, and the notation for squared and cubed.	• Identify common factors, common multiples and prime numbers. • Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

Multiplication and Division Progression

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Multiiplication and Division: Calculations	•	• Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication, division and equals signs.	• Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.	• Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.	• Multiply numbers up two 4 digits by one- or two-digit number using a formal written method, including long multiplication for two-digit numbers. • Multiply and divide numbers mentally drawing upon known facts. • Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.	• Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long division. • Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions or by rounding, as appropriate for the context. • Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context. • Perform mental calculations, including with mixed operations and large numbers.

Multiplication and Division Progression

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Multiplication and Division: Solve Problems	• 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.	• Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods and multiplication and division facts, including problems in contexts.	• Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.	• Solve problems involving multiplying and adding, including the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.	• Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes. • Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.	• Solve problems involving addition, subtraction, multiplication and division.
Multiplication and Division: Combined Operations.	•	•	•	•	• Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.	• Use their knowledge of the order of operations to carry out calculations involving the four operations.

Fractions, Decimals and Percentages Progression

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Fractions: Recognise and Write	• Recognise, find and name a half as one of two equal parts of an object, shape or quantity. • Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.	• Recognise, find name and write fractions 1/3, 1/4, 2/4 and 3/4 of a length, shape, set of objects or quantity.	• Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10. • Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. • Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators.	• Count up and down in hundredths: recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.	• Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths. • Recognise mixed numbers and improper fracgtions and convert from one form to the other and write mathematical statements > 1 as a mixed number (for example, 2/5 + 4/5 = 6/5 = 1 1/5.	•
Fractions: Compare	•	• Recognise the equivalence of 2/4 and 1/2.	• Recognise and show, using diagrams, equivalent fractions with small denominators. • Compare and order unit fractions, and fractions with the same denominators.	• Recognise and show, using diagrams, families of common equivalent fractions.	• Compare and order fractions whose denominators are all multiples of the same number.	• Use common factors to simplify fractions: use common multiples to express fractions in the same denomination. • Compare and order fractions, including fractions > 1.

Fractions, Decimals and Percentages Progression

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Fractions: Calculations	•	• Write simple fractions, for example, 1/2 of 6 = 3.	• Add and subtract fractions with the same denominator within one whole (for example, 5/7 + 1/7 = 6/7).	• Add and subtract fractions with the same denominator.	• Add and subtract fractions with the same denominator and denominators that are mulitples of the same number. • Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.	• Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. • Multiply simple pairs of proper fractions, writing the answer in its simplest form. • Divide proper fractions by whole numbers.
Fractions: Solve Problems	•	•	• Solve problems that involve all of the above.	• Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number.	•	•

Fractions, Decimals and Percentages Progression

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Decimals: Recognise and Write	•	•	•	• Recognise and write decimal equivalents of any number of tenths or hundredths. • Recognise and write decimal equivalents to 1/4, 1/2, 3/4.	• Read and write decimal numbers as fractions (for example, 0.71 = 71/100). • Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.	• Identify the value of each digit in numbers given to three decimal places.
Decimals: Comapre	•	•	•	• Round decimals with one decimal place to the nearest whole number. • Compare numbers with the same number of decimal places up to two decimal places.	• Round decimals with two decimal places to the nearest whole number and to one decimal place. • Read, write, order and compare numbers with up to three decimal places.	•

Fractions, Decimals and Percentages Progression

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Decimals: Calculations and Problems	•	•	•	• Find the effect of dividing a one- or two- digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths.	• Solve problems involving number up to three decimal places.	• Multiply and divide numbers by 10, 100 and 1000 giving the answers up to three decimal places. • Multiply one-digit numbers with up to two decimal places by whole numbers. • Use written division methods in cases where the answer has up to two decimal places. • Solve problems which require answers to be rounded to specified degrees of accuracy.

Fractions, Decimals and Percentages Progression

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Fractions, Decimals and Percentages	•	•	•	• Solve simple measure and money problems involving fractions and decimals to two decimal places.	• Recognise the percent symbol and understand that percent relates to number of parts per hundred, and write percentages as a fraction with denominator 100 and as a decimal. • Solve problems which require knowing percentage and decimal equivalents or 1/2, 1/4, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25.	• Associate a fraction with division and calculate decimal fraction equivalents (for example, 0.375 for a simple fraction for example 3/8). • Recall and use equivalences between simple fractions, decimals and percentage, including in different contexts.

Ration and Proportion Progression

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Ratio and Proportion	•	•	•	•	•	• Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts. • Solve problems involving the calculation of percentages (for example, measures, and such as 15% of 360) and the use of percentages for comparison. • Solve problems involving similar shapes where the scale factor is known or can be found. • Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples

Algebra Progression

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Algebra	• Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = __ - 9.	• Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	• Solve problems including missing number problems.	•	•	• Use simple formulae. • Generate and describe linear number sequences. • Express missing number problems algebraically. • Find pairs of numbers that satisfy an equation with two unknowns. • Enumerate possibilities of combinations of two variables.

Although algebraic notation is not introduced until Y6, algebraic thinking starts much earlier as exemplified by the 'missing number' problems from Y1, 2 and 3.

Measurement Progression

Measurement: Using Measures

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
• Compare, describe and solve practical problems for: ⇒ Lengths and heights (for example, long/ short, longer/ shorter, tall/short, double/half). ⇒ Mass/weight (for example, heavy/ light, heavier than, lighter than). ⇒ Capacity and volume (for example, full., empty, more than/ less than, half, half full, quarter). ⇒ Time (for example, quicker, slower, earlier, later). • Measure and begin to record the following: ⇒ Lengths and heights ⇒ Mass/weight ⇒ Capacity and volume ⇒ Time (hours, minutes, seconds).	• Choose and use appropriate standard units to estimate and measure length/ height in any direction (m/cm); mass (kg/g), temperature; capacity (litres/ml) to the nearest appropriate unit using rulers, scales, thermometers and measuring vessels. • Compare and order lengths, mass, volume/ capacity and record the results using <,> and =.	• Measure, compare, add and subtract: lengths (m/ cm/mm); mass (kg/g); volume/ capacity (l/ ml)	• Convert between different units of measure (for example, kilometre to metre; hour to minute). • Estimate, compare and calculate different measures.	• Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre). • Understand and use appropriate equivalences between metric units and common imperial units such as inches, pounds and pints. • Use all four operations to solve problems involving measure (for example, length, mass, volume, money) using decimal notation, including scaling.	• Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate. • Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation up to three decimal places. • Convert between miles and kilometres.

Measurement Progression

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Measurement: Money	• Recognise and know the value of different denominations of coins and notes.	• Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value. • Find different combinations of coins that equal the same amounts of money. • Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.	• Add and subtract amounts of money to give changes, using both £ and p in practical contexts.	• Estimate, compare and calculate different measures including money in pounds and pence	• Use all four operations to solve problems involving measure (for example, money).	•