

# Rossmere Primary School Long Term Planning for mathematics



Key information for delivering the National Curriculum 2014 in all year groups

Maths is a creative and highly interconnected discipline; it is essential to every day life.

A high quality maths education provides a foundation for:

- ◆ understanding the world;
- ◆ the ability to reason mathematically;
- ◆ a sense of enjoyment and curiosity.

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

- ◆ become fluent in the fundamentals of maths, through varied and frequent practice with increasingly complex problems over time;
- ◆ have a quick recall and solid conceptual understanding to enable them to apply their knowledge rapidly and accurately;
- ◆ can reason mathematically following a line of enquiry, conjecturing relationships and generalisations;
- ◆ are able to develop an argument, justification or proof using mathematical language;
- ◆ can solve problems by applying their mathematics to routine and non routine problems; persevering in seeking solutions.

The National Curriculum for Mathematics highlights the importance of spoken language in pupils' development in order to develop cognitively, socially and linguistically. Pupils should:

- ◆ hear and speak quality and varied language in order to develop their own mathematical vocabulary;
- ◆ confidently present mathematical justification, argument and proof;
- ◆ be assisted in making their thinking clear to themselves as well as to others;
- ◆ build firm foundations for learning through being probed by skilled teacher questioning;
- ◆ have misconceptions remedied by teachers quickly.

Y1 Progression across the year							
Mental and Oral	Number and place value	Addition and Subtraction	Multiplication and Division	Fractions	Measures	Geometry: properties of shape	Geometry: position, direction, motion
<p><b>Addition and subtraction</b></p> <ul style="list-style-type: none"> <li>◆ know number pairs with a total of 10</li> <li>◆ know what to add to a single digit to make 10</li> <li>◆ know addition facts for totals to at least 5</li> <li>◆ know addition doubles for all numbers to at least 10</li> <li>◆ know that addition can be reordered</li> </ul> <p><b>Multiplication and division</b></p> <ul style="list-style-type: none"> <li>◆ know doubles of all numbers to 10</li> <li>◆ know odd and even numbers to 20</li> <li>◆ know multiplication facts for 10 x tables and corresponding division facts</li> </ul> <p><b>Counting</b></p> <ul style="list-style-type: none"> <li>◆ Count forward &amp; backwards in 1s within 100</li> <li>◆ Count forward &amp; backwards in 2s within 100</li> <li>◆ Count forward &amp; backwards in 10s within 100</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can count to and across 100 beginning with 0 or 1</li> <li>◆ I can count read and write numbers to 100 in numerals</li> <li>◆ I can count in different multiples including 1s, 2s, 5s and 10s to 100</li> <li>◆ I can give one more or less than a given number</li> <li>◆ I can identify and represent numbers using concrete objects and pictorial representations, including the number line</li> <li>◆ I can use the language of equal to, more than, less than, fewer, most, least</li> <li>◆ I can read and write numbers from 1-20 in digits and words</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can read, write and understand mathematical statements involving addition (+), subtraction(-), equals (=)</li> <li>◆ I can represent and use number bonds to 20 and related subtraction facts within 20</li> <li>◆ I can add and subtract one digit and two digit numbers to 20, including zero</li> <li>◆ I can solve simple one step problems involving addition and subtraction, using concrete objects and pictorial representations</li> <li>◆ I can solve missing number calculations</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can group and share small quantities</li> <li>◆ I can understand multiplication as doubling and division as halving</li> <li>◆ I can find simple fractions of objects, numbers and quantities</li> <li>◆ I can use an array and link it to a number pattern and counting in 2s, 5s and 10s</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can recognise a half of two equal parts of a whole object, shape or quantity</li> <li>◆ I can recognise a quarter of four equal parts of a whole object, shape or quantity</li> <li>◆ I can combine halves and quarters to make a whole</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can compare, describe and solve problems for heights and lengths</li> <li>◆ I can compare, describe and solve problems for mass or weight</li> <li>◆ I can compare, describe and solve problems for capacity or volume</li> <li>◆ I can compare, describe and solve problems for time</li> <li>◆ I can use the language to compare (long, longer, short, shorter, tall, double, half, heavy, light, heavier than, lighter than, full, empty, more than, less than, quarter, quicker, slower, earlier, later)</li> <li>◆ I can measure and begin to record using standard units for length, height, mass, capacity and time (hours, minutes, seconds)</li> <li>◆ I can tell the time to the hour and half hour</li> <li>◆ I can recognise and know the value of different denominations of coins and notes</li> <li>◆ I can sequence events in chronological order using before, after, next, first, today, yesterday, tomorrow, morning, afternoon and evening, weeks, months, years</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can recognise and name common 2D and 3D shapes</li> <li>◆ I can relate shapes in the environment to my knowledge of 2D and 3D shape</li> <li>◆ I can recognise shapes in different orientations and sizes</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can order and arrange objects and shapes in patterns</li> <li>◆ I can copy patterns</li> <li>◆ I can describe patterns</li> <li>◆ I can describe position, direction and movement including half, quarter and three quarters</li> <li>◆ I can make turns in a clockwise direction</li> <li>◆ I can use the language of left, right, top, middle, bottom, on top of, in front of, above, between, around, near, close, far, up, down, forwards, backwards, inside, outside</li> </ul>

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Y2 Progression across the year							
Mental and Oral	Number and place value	Addition and Subtraction	Multiplication and Division	Fractions	Measures	Geometry: properties of shape	Statistics
<p><b>Addition and subtraction</b></p> <ul style="list-style-type: none"> <li>◆ know addition and subtraction facts for all numbers to at least 10</li> <li>◆ know number pairs with totals to 20</li> <li>◆ know all pairs of multiples of 10 with totals to 100</li> <li>◆ know what needs to be added to any 2 digit number to make the next multiple of 10</li> <li>◆ know addition doubles for all numbers to 20</li> <li>◆ reorder addition to be successful</li> </ul> <p><b>Multiplication and division</b></p> <ul style="list-style-type: none"> <li>◆ know doubles of all numbers to 20 and corresponding halves</li> <li>◆ know doubles of multiples of 10 to 50 and corresponding halves</li> <li>◆ know multiplication facts for 2 and 5 x tables and corresponding division facts</li> <li>◆ know odd and even numbers to 100</li> </ul> <p><b>Counting</b></p> <ul style="list-style-type: none"> <li>◆ Count forward &amp; backwards in 5s within 60</li> <li>◆ Count forward &amp; backwards in 2s within 100</li> <li>◆ Count forward &amp; backwards in 10s within 200</li> <li>◆ Count forward &amp; backwards in 3s within 36</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can count in steps of 2,3 and 5 from 0 across 100</li> <li>◆ I can recognise odd and even numbers</li> <li>◆ I can count in tens from any number, forwards and backwards</li> <li>◆ I can recognise the place value of each digit in a two digit number (tens and ones)</li> <li>◆ I can identify, represent and estimate numbers using different representations, including a number line</li> <li>◆ I can compare and order numbers from 0 to 100 using &lt; &gt; = signs</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can solve simple one step problems with addition and subtraction</li> <li>◆ I can use concrete objects and pictorial representations including those involving numbers, quantities and measures</li> <li>◆ I can use mental and written methods to solve problems</li> <li>◆ I can recall and use addition and subtraction facts to 20 fluently and derive and use related facts to 100.</li> <li>◆ I can add and subtract a two digit number and ones</li> <li>◆ I can add and subtract a two digit number and tens</li> <li>◆ I can add and subtract two two digit numbers</li> <li>◆ I can add three one digit numbers</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can calculate x and ÷ within the times tables and write the calculation using the x, ÷ and = signs</li> <li>◆ I can recognise and use the inverse of x and ÷</li> <li>◆ I can show that multiplication is commutative, done in any order, and that division is not.</li> <li>◆ I can solve simple single step problems using arrays, repeated addition, mental methods, multiplication and division facts</li> <li>◆ I can use division and multiplication to find more complex fractions of objects, numbers and quantities</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can recognise, find name and write fractions <math>\frac{1}{2}</math>, <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math>, <math>\frac{3}{4}</math> of a length, shape, set of objects or quantity</li> <li>◆ I can write simple fractions eg <math>\frac{1}{2}</math> of 6 = 3</li> <li>◆ I know that <math>\frac{2}{4} = \frac{1}{2}</math></li> <li>◆ I can count in fractions up to 10 from any number, using the <math>\frac{1}{2}</math> and <math>\frac{2}{4}</math> equivalence on the number line eg <math>1\frac{1}{4}</math>, <math>1\frac{2}{4}</math> (<math>1\frac{1}{2}</math>), <math>1\frac{3}{4}</math>, 2</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can choose equipment to measure with</li> <li>◆ I can choose units to measure in</li> <li>◆ I can order and compare lengths, mass, volume/capacity and record the results using &lt;, &gt; =</li> <li>◆ Read relevant scales to the nearest numbered unit</li> <li>◆ I can use the symbols for (£)pounds and pence (p)</li> <li>◆ I can combine amounts to make a total and match different combinations of coins to the same amounts</li> <li>◆ I can add and subtract money of the same units</li> <li>◆ I can give change</li> <li>◆ I can solve problems in the context of money</li> <li>◆ I can combine and sequence intervals of time</li> <li>◆ I can tell and write the time in 5 minute intervals; including quarter to and past</li> </ul>	<p>Geometry: properties of shape</p> <ul style="list-style-type: none"> <li>◆ I can order and create patterns</li> <li>◆ I can use language to describe position, direction and movement, distinguishing between a rotation and right angle turns, clockwise and anticlockwise and movement in a straight line</li> </ul> <p>Geometry: properties of shape</p> <ul style="list-style-type: none"> <li>◆ I can identify and describe the properties of 2D shapes, including number of sides and symmetry</li> <li>◆ I can identify and describe properties of 3D shapes including edges, vertices and faces</li> <li>◆ I can identify 2D shapes on the surface of 3D shapes</li> <li>◆ I can compare and sort common 2D and 3D shapes and everyday objects</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can interpret and construct simple pictograms, tally charts, block diagrams and simple tables</li> <li>◆ I can ask and answer simple questions about the data</li> </ul>

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Y3 Progression across the year

Mental and Oral	Number, place value and rounding	Addition and Subtraction	Multiplication and Division	Fractions	Measures	Geometry: properties of shape	Statistics
<p><b>Addition and subtraction</b></p> <ul style="list-style-type: none"> <li>◆ know addition and subtraction facts for all numbers to 20</li> <li>◆ know sums and differences of multiples of 10</li> <li>◆ know pairs of two digit numbers with a total of 100</li> <li>◆ know addition doubles for multiples of 10 to 100</li> <li>◆ recognise doubles in calculations where there are more than 2 numbers to total</li> </ul> <p><b>Multiplication and division</b></p> <ul style="list-style-type: none"> <li>◆ Know multiplication facts for 3, 4 and 8 x table and corresponding division facts</li> <li>◆ Know doubles of multiples of 10 to 100</li> </ul> <p><b>Counting</b></p> <ul style="list-style-type: none"> <li>◆ Count forward &amp; backwards in 5s within 100</li> <li>◆ Count forward &amp; backwards in 2s within 1000</li> <li>◆ Count forward &amp; backwards in 10s within 1000</li> <li>◆ Count forward &amp; backwards in 3s within 100</li> <li>◆ Count forward &amp; backwards in 4s within 48</li> <li>◆ Count forward &amp; backwards in 8s within 96</li> <li>◆ Count forwards and backwards in halves</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can count from 0 in 4s, 8s, 50s, and 100</li> <li>◆ I can find 10 more or less</li> <li>◆ I can find 100 more or less</li> <li>◆ I can recognise the place value in a three digit number</li> <li>◆ I can compare and order numbers to 1000</li> <li>◆ I can identify, represent and estimate numbers using different representations</li> <li>◆ I can read and write numbers to at least 1000 in numerals and words</li> <li>◆ I can solve number problems and practical problems</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can add and subtract numbers mentally including a 3digit plus ones number</li> <li>◆ I can add and subtract numbers mentally including a 3digit plus tens number</li> <li>◆ I can add and subtract numbers mentally including a 3digit plus hundreds number</li> <li>◆ I can add and subtract numbers with up to 3 digits, using an efficient method such as column addition and subtraction</li> <li>◆ I can estimate the answer to a calculation and use the inverse to check answers</li> <li>◆ I can solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can recall multiplication facts for the 3, 4 and 8 times table</li> <li>◆ I can write and calculate mathematical statements for multiplication and division using the multiplication tables that they know</li> <li>◆ I can work out new facts from given facts</li> <li>◆ I can calculate a two digit x a single digit mentally</li> <li>◆ I can divide a two digit by a single digit</li> <li>◆ I can use a written method for multiplication and division, progressing to short multiplication and division</li> <li>◆ I can solve missing number problems using multiplication and division including scaling problems</li> <li>◆ I can solve correspondence problems eg 3 hats and 4 coats...how many outfits</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can count up and down in tenths</li> <li>◆ I understand that a tenth is the part derived from dividing a whole into 10 equal parts</li> <li>◆ I can recognise, find and write fractions with small denominators</li> <li>◆ I can make links with simple equivalent fractions and compare size of simple fractions between 0 and 1</li> <li>◆ I understand the relationship between unit fractions as an operator and division by integers</li> <li>◆ I can add and subtract fractions with the same denominator within a whole eg <math>\frac{5}{7} + \frac{1}{7}</math></li> <li>◆ I can recognise fractions in the context of parts of a whole, numbers, measurements, a shape as well as a division of a quantity</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can measure, compare, add and subtract lengths(m,cm,mm), mass (kg/g) and volume and capacity (l/ml)</li> <li>◆ I can measure the perimeter of simple 2D shapes</li> <li>◆ I can add and subtract amounts of money to give change, using £ and p</li> <li>◆ I can tell and write the time from an analogue clock, including Roman numerals from 1 to X11, and 12/ 24 hr clock</li> <li>◆ I can estimate and read time with increasing accuracy to the nearest minute</li> <li>◆ I can record and compare time in seconds, minutes, hours and o clock</li> <li>◆ I can use the vocabulary of am/pm/morning, afternoon, noon and midnight</li> <li>◆ I know the number of seconds in a minute and the number of days in each month, year and leap year</li> <li>◆ I can compare duration of events to calculate word problems</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can 2D shapes and make 3D shapes using modelling materials</li> <li>◆ I can recognise 3D shapes in different orientations and describe them with increasing accuracy</li> <li>◆ I can recognise angles as a property of shape and as a way of turning</li> <li>◆ I can identify right angles, recognising that 2 right angles make a half turn and three make <math>\frac{3}{4}</math> of a turn and 4 make a full turn.</li> <li>◆ I can identify where angles are greater than or less than a right angle</li> <li>◆ I can identify horizontal, vertical, perpendicular and parallel lines</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can interpret and present data using bar charts, pictograms and tables</li> <li>◆ I can solve one step and two step problems using information in the charts</li> <li>◆ I can interpret simple scales in 2,5 and 10 units with increasing accuracy</li> </ul>

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Y4 Progression across the year

Mental and Oral	Number, place value and rounding	Addition and Subtraction	Multiplication and Division	Fractions	Measures	Geometry: properties of shape	Statistics
<p><b>Addition and subtraction</b></p> <ul style="list-style-type: none"> <li>◆ know sums and differences of pairs of multiples of 10, 100 and 1000</li> <li>◆ know addition doubles of numbers 1-100</li> <li>◆ recognise near doubles in calculations and use them</li> <li>◆ know what must be added to any three digit number to make the next multiple of 100</li> <li>◆ know pairs of fraction that total 1</li> </ul> <p><b>Multiplication and division</b></p> <ul style="list-style-type: none"> <li>◆ Know multiplication facts for 7, 8 and 9 x and corresponding division facts</li> <li>◆ Know doubles of numbers 1 to 100</li> <li>◆ Know doubles of multiples of 10 and 100 and corresponding halves</li> <li>◆ Know fractions and decimal equivalents of one half, quarters, tenths and hundredths</li> <li>◆ Know factor pairs for known multiplication facts</li> </ul> <p><b>Counting</b></p> <ul style="list-style-type: none"> <li>◆ Count forward &amp; backwards in 3s within 1000 and beyond 0</li> <li>◆ Count forward &amp; backwards in 4s within 100 and beyond 0</li> <li>◆ Count forward &amp; backwards in 6s within 100 and beyond 0</li> <li>◆ Count forward &amp; backwards in 7s within 84 and beyond 0</li> <li>◆ Count forward &amp; backwards in 8s within 96 and beyond 0</li> <li>◆ Count forward &amp; backwards in 9s within 108 and beyond 0</li> <li>◆ Count forwards and backwards in unit fractions</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can count in multiples of 6,7 9, 25 and 1000</li> <li>◆ I can find 1000 more and 1000 less than a given number</li> <li>◆ I can count backwards through 0 to include negative numbers</li> <li>◆ I can recognise the place value in a four digit number</li> <li>◆ I can order and compare numbers beyond 1000</li> <li>◆ I can identify, represent and estimate numbers using different representations</li> <li>◆ I can round any number to nearest 10,100, 1000</li> <li>◆ I can solve number and practical problems that involve all of the above and with increasingly large numbers</li> <li>◆ I can read Roman numerals to 100 (C)</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can add and subtract numbers up to 4 digits using the efficient methods of column method</li> <li>◆ I can estimate and use inverse operations to check answers to a calculation</li> <li>◆ I can solve addition and subtraction two step problems in contexts, deciding which operation and methods to use and why</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can recall multiplication and division facts for multiplication tables up to 12 x 12</li> <li>◆ Use place value, known and derived facts to multiply and divide mentally including multiplying by 1 and 0, dividing by 1 and 0, multiplying together three numbers</li> <li>◆ I can recognise and use factor pairs and commutativity in mental calculations</li> <li>◆ I can multiply and divide two and three digit numbers by a single digit number using a formal written method</li> <li>◆ I can solve problems using multiplication and division including the distributive law ie <math>39 \times 7</math> is the same as <math>30 \times 7</math> and <math>9 \times 7</math> and harder problems eg where 10 cakes would be shared between 3 children equally</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can count up and down in 100ths and know how a 100<sup>th</sup> is derived</li> <li>◆ I can solve problems using fractions of measures and wholes</li> <li>◆ I can identify and name and write equivalent fractions including tenths and hundredths</li> <li>◆ I can add and subtract fractions with the same denominator</li> </ul> <p><b>Decimals &amp; Fractions</b></p> <ul style="list-style-type: none"> <li>◆ I can recognise and write decimal equivalents of any tenths or hundredths number</li> <li>◆ I can recognise and write decimal equivalents to <math>\frac{1}{4}</math>, <math>\frac{1}{2}</math>, <math>\frac{3}{4}</math></li> <li>◆ I can 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 units, tenths and hundredths</li> <li>◆ I can round decimals with one decimal place to the nearest whole number</li> <li>◆ I can compare numbers with the same number of decimal places up to two decimal places</li> <li>◆ I can solve simple measure and money problems involving fractions and decimals to two dp</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can convert between units of metric measure</li> <li>◆ I can measure &amp; calculate perimeter of a rectilinear shape</li> <li>◆ I can find the area by counting</li> <li>◆ I can estimate, compare and calculate different measures including money in pounds and pence</li> <li>◆ I can read, write and convert time between analogue and digital 12 and 24 hr clocks</li> <li>◆ I can solve problems converting time to minutes, minutes to seconds, years to months, weeks to days</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can compare and classify geometric shapes, including quadrilaterals and triangles, based on size and properties</li> <li>◆ I can identify acute and obtuse angles and compare and order angles up to two right angles by size</li> <li>◆ I can identify lines of symmetry in 2D shapes presented in different orientations</li> <li>◆ I can complete a simple symmetric figure with respect to a line of symmetry</li> </ul> <p><b>Geometry: position, direction, motion</b></p> <ul style="list-style-type: none"> <li>◆ I can describe positions on a 2D grid as coordinates in the first quadrant</li> <li>◆ I can describe movements between positions as translations of a given unit to the left/right, up/down</li> <li>◆ I can plot specified points and draw sides to complete a given polygon</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can interpret and present discrete data using bar charts and continuous data using line graphs</li> <li>◆ I can compare data using sum, difference etc using information presented in bar charts, pictograms, tables and simple line graphs</li> <li>◆ I can read a range of scales</li> </ul>

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**Y5 Progression across the year**

Mental and Oral	Number, place value and rounding	Addition and Subtraction	Multiplication and Division	Fractions	Measures	Geometry: properties of shape	Statistics
<p><b>Addition and subtraction facts</b></p> <ul style="list-style-type: none"> <li>know sums and differences of decimals</li> <li>know doubles and halves of decimals</li> <li>know what must be added to any four digit number to make the next multiple of 1000</li> <li>know what must be added to a decimal with units and tenths to make the next whole number</li> </ul> <p><b>Multiplication and division</b></p> <ul style="list-style-type: none"> <li>know squares of numbers to 10 x 10</li> <li>know division facts corresponding to known multiplication facts and related unit fractions eg 1/9 of 63 =7 and 1/7 of 63 =9</li> <li>know percentage equivalents of one half, one quarter, three quarters, tenths and hundredths</li> <li>know factor pairs to 100</li> </ul> <p><b>Counting</b></p> <ul style="list-style-type: none"> <li>count forwards and backwards in decimals to one dp and fractions</li> <li>count forwards and backwards in mixed numbers</li> <li>Count forwards and backwards in all regular steps beyond 0</li> </ul>	<ul style="list-style-type: none"> <li>I can read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit</li> <li>I can count forwards and backwards in steps of powers of 10 for any given number up to 1 000 000</li> <li>I can interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers through zero</li> <li>I can round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000</li> <li>I can solve number problems involving the above</li> <li>I can read Roman numerals to 1000 (M) and recognise years written in Roman numerals</li> </ul>	<ul style="list-style-type: none"> <li>I can add and subtract whole numbers with more than 4 digits, including efficient column methods</li> <li>I can add and subtract mentally, with increasingly large numbers</li> <li>I can use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy</li> <li>I can solve addition and subtraction multi step problems making decisions about which method and why</li> </ul>	<ul style="list-style-type: none"> <li>I can identify multiples and factors including all factor pairs</li> <li>I can solve problems involving multiplication and division where larger numbers are used by decomposing them into factors</li> <li>I know and use the vocabulary of prime numbers, prime factors and composite (non prime ) numbers</li> <li>I can establish whether a number less than 100 is prime and recall number to 19 that are prime</li> <li>I can multiply numbers up to 4 digits by single or two digit number using an efficient method, including long multiplication</li> <li>I can multiply and divide mentally, drawing on known facts</li> <li>I can divide up to 4 digits by a single digit using an efficient method of short division, interpreting remainders contextually</li> <li>I can multiply and divide whole numbers and decimals by 10, 100, and 1000</li> <li>I can recognise squared numbers and cubed numbers and recognise the associated notation</li> <li>I can solve problems using division and multiplication, addition and subtraction, recognising the true meaning of the equals sign</li> <li>I can use multiplication and division for scaling and simple rates problems</li> </ul>	<ul style="list-style-type: none"> <li>I can compare and order fractions whose denominators are all multiples of the same number</li> <li>I recognise mixed numbers and improper fractions and convert from one to another</li> <li>I can add and subtract fractions with the same denominator and related fractions</li> <li>I can write mathematical statements &gt;1 as a mixed number</li> <li>I can multiply proper fractions and mixed numbers by whole numbers, supported by diagrams and materials</li> </ul> <p><b>Decimals &amp; Fractions</b></p> <ul style="list-style-type: none"> <li>I can read and write decimal numbers as fractions</li> <li>I can recognise and use thousandths and relate to tenths, hundredths and decimal equivalents</li> <li>I can round decimals with two decimal places to the nearest whole number and to one dp</li> <li>I can read, write, order and compare numbers with up to 3dp</li> <li>I can solve problems with up to 3dp</li> </ul> <p><b>Percentages, Decimals &amp; Fractions</b></p> <ul style="list-style-type: none"> <li>I can recognise the % symbol and understand what a percent is</li> <li>I can write a % as a fraction with a denominator of 100 and as a decimal fraction</li> <li>I can solve problems with percentages and decimal equivalents of <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{5}</math>, <math>\frac{2}{5}</math> and <math>\frac{4}{5}</math></li> </ul>	<ul style="list-style-type: none"> <li>I can convert between different units of metric measure</li> <li>I can understand and use basic equivalences between metric and common imperial</li> <li>I can measure and calculate the perimeter of composite rectilinear shapes in cm and m</li> <li>I can calculate and compare the area of squares and rectangles using standard units and estimate the area of irregular shapes</li> <li>I can recognise and estimate volume and capacity</li> <li>I can solve problems involving converting between units of time</li> <li>I can solve problems using addition and subtraction of measures using decimal notation</li> </ul>	<ul style="list-style-type: none"> <li>I can identify 3D shapes including cubes and cuboids from 2D representations</li> <li>I know angles are measured in degrees; I can estimate, measure, draw and compare angles and use the °degrees sign.</li> <li>I can identify multiples of 90°</li> <li>I can identify angles at a straight line as being 180° and a full turn as 360°</li> <li>I can recognise reflex angles</li> <li>I can draw shapes using given dimensions and angles</li> <li>I can state and use the properties of a rectangle, including squares</li> <li>I can distinguish between regular and irregular polygons based on reasoning about equal sides and angles</li> </ul> <p><b>Geometry: position, direction, motion</b></p> <ul style="list-style-type: none"> <li>I can identify, describe and represent the position of a shape following a reflection or translation and know that the shape hasn't changed</li> </ul>	<ul style="list-style-type: none"> <li>I can solve comparison, sum and difference problems using information presented in line graphs</li> <li>I can complete, read and interpret information in tables, including timetables</li> </ul>

Key information for delivering the National Curriculum 2014 in all year groups

Maths is a creative and highly interconnected discipline; it is essential to every day life.

A high quality maths education provides a foundation for:

- ◆ understanding the world;
- ◆ the ability to reason mathematically;
- ◆ a sense of enjoyment and curiosity.

The National Curriculum for Mathematics aims to ensure that all pupils;

- ◆ become fluent in the fundamentals of maths, through varied and frequent practice with increasingly complex problems over time;
- ◆ have a quick recall and solid conceptual understanding to enable them to apply their knowledge rapidly and accurately;
- ◆ can reason mathematically following a line of enquiry, conjecturing relationships and generalisations;
- ◆ are able to develop an argument, justification or proof using mathematical language;
- ◆ can solve problems by applying their mathematics to routine and non routine problems; persevering in seeking solutions.

The National Curriculum for Mathematics highlights the importance of spoken language in pupils' development in order to develop cognitively, socially and linguistically. Pupils should:

- ◆ hear and speak quality and varied language in order to develop their own mathematical vocabulary;
- ◆ confidently present mathematical justification, argument and proof;
- ◆ be assisted in making their thinking clear to themselves as well as to others;
- ◆ build firm foundations for learning through being probed by skilled teacher questioning;
- ◆ have misconceptions remedied by teachers quickly.

**Y6 Progression across the year**

Mental and Oral	Number, place value and rounding	Addition and Subtraction Multiplication and Division	Fractions	Measures	Geometry: properties of shape	Statistics
<p><b>Addition and subtraction</b></p> <ul style="list-style-type: none"> <li>◆ know addition and subtraction facts for multiples of 10 to 1000 and decimal numbers with one decimal place</li> <li>◆ know what must be added to a decimal with units, tenths and hundredths to make the next whole number</li> </ul> <p><b>Multiplication and division</b></p> <ul style="list-style-type: none"> <li>◆ know squares to 12 x 12</li> <li>◆ know squares of the corresponding multiples of 10</li> <li>◆ Know prime numbers less than 100</li> <li>◆ Know equivalent fractions, decimals and percentages for hundredths</li> </ul> <p><b>Counting</b></p> <ul style="list-style-type: none"> <li>◆ count forwards and backwards in decimals to two dp and fractions</li> <li>◆ count forwards and backwards in mixed numbers with increasing confidence</li> <li>◆ Count forwards and backwards in all regular steps beyond 0</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can read, write, order and compare numbers up to 10 000 000 and determine the value of each digit</li> <li>◆ I can round any number to a degree of accuracy</li> <li>◆ I can use negative numbers in context and calculate intervals across 0</li> <li>◆ I can solve number problems and practical problems that involve the above</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can multiply multi digit numbers up to 4 digits x 2 digits using the efficient written method of long multiplication</li> <li>◆ I can divide numbers up to 4 digits by a whole 2 digit number using the efficient written method of long division and interpreting the remainder as a fraction or rounding or in context as appropriate</li> <li>◆ I can perform mental calculations with mixed operations and large numbers</li> <li>◆ I can identify common factors, common multiples and prime numbers</li> <li>◆ I can use the knowledge of the order of operations to carry out a calculation</li> <li>◆ I can solve addition and subtraction problems deciding which operations to use and why</li> <li>◆ I can solve problems using addition, subtraction, multiplication and division</li> <li>◆ I can estimate to check answers to calculations and determine levels of accuracy</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can use common factors to simplify fractions; use common multiples to express fractions in the same denomination</li> <li>◆ I can compare and order fractions including fractions greater than 1</li> <li>◆ I know fractions are linked to division and can change a fraction to a decimal fraction through division</li> <li>◆ I can add and subtract fractions with different denominators and mixed numbers</li> <li>◆ I can multiply simple pairs of proper fractions, writing the answer in it's lowest terms e.g <math>\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}</math></li> <li>◆ I can divide proper fractions by whole numbers e.g <math>\frac{1}{3} \div 2 = \frac{1}{6}</math></li> </ul> <p><b>Decimals &amp; Fractions</b></p> <ul style="list-style-type: none"> <li>◆ I can identify the value of each digit to three decimal places</li> <li>◆ I can multiply and divide numbers by 10,100,1000 where the answers are up to three decimal places</li> <li>◆ I can multiply one digit numbers with up to two decimal places by whole numbers</li> <li>◆ I can use written division methods in cases where the answer has up to two decimal places</li> <li>◆ I can solve problems which require answers to be rounded to specified degrees of accuracy</li> </ul> <p><b>Percentages, Decimals &amp; Fractions</b></p> <ul style="list-style-type: none"> <li>◆ I can solve problems involving the calculation of percentages of whole numbers or measures such as 15% of 360</li> <li>◆ I can use percentages to compare</li> <li>◆ I can recall and use equivalences between simple fractions, decimals and percentages, including in different contexts</li> </ul> <p><b>Ratio and proportion</b></p> <ul style="list-style-type: none"> <li>◆ I can solve problems involving the relative sizes of two quantities, including similarities</li> <li>◆ I can solve problems involving unequal sharing and grouping</li> </ul> <p><b>Algebra</b></p> <ul style="list-style-type: none"> <li>◆ I can express missing number problems algebraically</li> <li>◆ I can use simple formulae expressed in words</li> <li>◆ I can generate and describe linear number sequences</li> <li>◆ I can find pairs of numbers that satisfy number sentences involving two unknowns</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can solve problems involving the calculation and conversion of units of measure, using decimal notation to three dp where appropriate</li> <li>◆ I can 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 to three dp</li> <li>◆ I can convert between KM and miles</li> <li>◆ I can recognise that shapes with the same areas can have different perimeters and vice versa</li> <li>◆ I can calculate the area of parallelograms and triangles</li> <li>◆ I can use the formulae for finding the area and volume of shapes</li> <li>◆ I can calculate, estimate and compare volume of cubes and cuboids using standard units (cm<sup>3</sup>), (m<sup>3</sup>), (mm<sup>3</sup>), (km<sup>3</sup>)</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can recognise, describe and build simple 3D shapes, including making my own nets</li> <li>◆ I can compare and classify geometric shapes based on their properties, size and angles</li> <li>◆ I can find missing angles in any triangle, quadrilateral and regular polygon</li> <li>◆ I can illustrate all the parts of a circle, e.g radius, diameter and circumference</li> <li>◆ I can find unknown angles where they meet at a point, on a straight line and are vertically opposite</li> </ul> <p><b>Geometry: position, direction, motion</b></p> <ul style="list-style-type: none"> <li>◆ I can describe positions on the full coordinate grid (all four quadrants)</li> <li>◆ I can draw and translate simple shapes on the coordinate plane and reflect them in the axes</li> </ul>	<ul style="list-style-type: none"> <li>◆ I can interpret and construct pie charts and line graphs and use these to solve problems</li> <li>◆ I can calculate and interpret the mean as an average</li> </ul>

**Long term overview**  
**for**  
**Mathematics**  
**based on**  
**Curriculum 2014**

