St Vincent De Paul R.C. Primary School, Knutsford

Mission Statement:

Believe, Trust and Be Ready

"That they may have life, and to the full" John 10:10

Maths Curriculum

Maths Curriculum Design

This document should be read alongside the Maths policy, Calculation policy, Maths Handbook and pages 59-62 of Teacher Handbook: SEND.

Rationale

Mathematics equips pupils with the uniquely powerful set of tools to understand and change the world. These tools include logical reasoning, problem solving skills and the ability to think in abstract ways. Mathematics is important in everyday life. It is integral to all aspects of life and, with this in mind, we endeavour to ensure that children develop a positive and enthusiastic attitude towards Mathematics that will stay with them.

Intent

- To foster within children, a positive attitude to Mathematics as an interesting and attractive part of the curriculum.
- For children to develop the ability to think clearly and logically, with confidence, flexibility and independence of thought, and to express their understanding both in written form and orally.
- For children to develop a deeper understanding of Mathematics through a process of enquiry and investigation, with specific focus on the skills of reasoning and problem solving.
- For children to develop an understanding of the connectivity of patterns and relationships within Mathematics.
- For children to develop the ability to apply knowledge, skills and ideas in real life contexts outside the classroom, and become aware of the uses of Mathematics in the wider world.
- For children to develop the ability to use Mathematics as a means of communicating ideas.
- For children to develop an ability and inclination to work both alone and cooperatively to solve mathematical problems by choosing the most effective and efficient strategies.
- To develop within our children, personal qualities such as perseverance, independent thinking, cooperation and self -confidence through a sense of achievement and success.
- To develop within our children, an appreciation of the creative aspects of Mathematics and an awareness of its aesthetic appeal.
- For teachers to provide a stimulating environment and adequate resources so that pupils can engage with the subject matter and develop their mathematical skills to their full potential.
- For teachers and children to be aware of Mathematics in other areas of the curriculum.

Implementation

Our objectives are in line with the key objectives outlined in the Early Years Outcomes and the National Curriculum Mathematics Document 2014. Whilst we do not follow a particular scheme of work in terms of materials and coverage, the NCETM spine documents underpin our pedagogical approach and offer guidance so that teachers can plan and write engaging lessons that meet the needs of our children. Our medium and short term planning is supported by White Rose, Abacus and Scholastic schemes of work. Teachers will also use a variety of other resources to further enhance their teaching of specific lesson objectives.

As with any guidance, this leaves the teachers free to extend the time period over which a topic is taught should they feel that a depth of understanding has not been achieved. However, we expect all topics within the National Curriculum to have been covered to some degree over the year. Gaps will be identified in a timely manner by class teachers so that they can be addressed through same day intervention, or even by the next teacher.

How Maths is structured throughout the School

The school uses a variety of teaching styles to cater for the variety of learning styles of pupils in Mathematics lessons. Our principle aim is to develop children's knowledge, skills and understanding in Mathematics. We do this through a daily lesson that has a high proportion of whole-class and group-direct teaching. During these lessons, we encourage children to ask as well as answer mathematical questions and explain their thinking both verbally and in writing. To support children with this, teachers model the use of stem sentences for the children to use in their discussions and in their recording of work.

Children have the opportunity to use a wide range of concrete and abstract resources such as number lines, number squares, digit cards and small apparatus to support their work. Mathematical dictionaries are available in all classrooms. Children use ICT in Mathematics lessons where it will enhance their learning, as in modelling ideas and methods.

In all classes there are children of differing mathematical ability. We recognise this fact and provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this through a range of strategies – in some lessons through differentiated group work; in others through providing more concrete or pictorial resources for learners requiring more support; and in other lessons by organising the children to work in pairs on open-ended problems or games.

We use Teaching Assistants to provide appropriate support to individuals or to groups of pupils – this also includes challenging our most able pupils through 'Challenge Group' interventions. Teaching Assistants within St Vincent's are viewed as an important 'asset' to the

school and, as such, are appropriately involved in the planning and delivery of the Mathematics curriculum. Their knowledge, skills and understanding are constantly updated through involvement in school-based INSET and other training opportunities.

At St. Vincent's we believe that good mathematics teaching is when teachers (and other school staff):

- Demonstrate secure subject and pedagogical knowledge in order to inspire children and build on their understanding;
- Plan lessons effectively taking children's prior learning and current assessment into account;
- Include elements of fluency, reasoning and problem solving in every lesson;
- Adapt their teaching in response to a variety of assessment information;
- Have a good knowledge of the common misconceptions and plan to address them through daily planning;
- Introduce subject content progressively and have high expectations of the pupils;
- Provide adequate time for practice to embed the pupils' knowledge, understanding and skills securely;
- Use manipulatives appropriately, with all children, with a clear rationale for why the manipulative will support pupils to understand mathematics;
- Create lessons that are designed to consolidate, build upon and extend learning for all children;
- Emphasise the connections between different aspects of mathematics;
- Use questioning effectively to gauge and extend children's skills, knowledge and understanding;
- Orchestrate productive classroom discussions by including regular opportunities for pupils to explain their approaches to mathematical tasks to themselves, the teacher and other pupils;
- Ensure that effective support is given in order that the children make good progress;
- Whilst we try to foster a 'keep up not catch up' mentality, we work rigorously to identify and support any pupil who is falling behind and enable almost all to catch up;
- Use precise mathematical language when examining mathematical structures;
- Use resources effectively, including other adults, to support children's learning;
- Use technology effectively in order to support children's learning;
- Mark work, identifying successes and next steps where appropriate so that children can improve their knowledge, understanding and skills. A good balance between oral and written feedback allows the children to effectively improve their learning;
- Link mathematics to other areas of the curriculum where appropriate;

Impact

As a result of our Maths teaching at St. Vincent's you will see:

- Children with a positive and enthusiastic attitude towards Mathematics.
- Children who can apply knowledge, skills and ideas in real life contexts outside the classroom, and are aware of the uses of Mathematics in the wider world.
- Happy, confident and engaged children who are challenged appropriately.
- Children who can talk about their learning and knowledge in this subject.
- Lessons that use a variety of resources to support learning.
- Learning that is tracked and monitored to ensure all children make good progress.

MATHS LONG TERM OVERVIEW

EYFS LONG TERM PLAN

Numbers and the Number System		Addition and Subtraction		Multiplication and Division	
Year 1 National Curriculum	**Minimum Reception Expectations**	**Year 1 National Curriculum**	**Minimum Reception Expectations**	**Year 1 National Curriculum**	**Minimum Reception Expectations**
• count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number • count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens • given a number, identify one more and one less • 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 • read and write numbers from 1 to 20 in numerals and words.	• Rote counting forwards and backwards including actions/sounds to 20 and beyond. • Know 5 Number songs (e.g. 5 Little Speckled Frogs) • Understand the 'one more than/one less than' relationship between consecutive numbers. • Subitise to at least 5 – make a sensible guess within numbers to 10. • Use number in everyday contexts. • Cardinality to 20. • Link the number symbol/numeral to 10+ with its cardinal number value. • Exploring the composition of number up to 10. • Writing numbers to 10, using school formation rhymes.	• read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs • represent and use number bonds and related subtraction facts within 20. • add and subtract one-digit and two-digit numbers to 20, including zero. • solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ?– 9.	• Children recognise the symbols for addition and subtraction. • Children to begin to record their own "sums". • Understand the 'one more than/one less than' relationship between consecutive numbers. • Comparing sets of numbers to identify which is greater than, less than or the same as. • Can recall number bonds 0 to 10 including some double facts. • Children to add two single digit numbers to 10. • Subtracts single digit number from a larger number up to 20. • Solves real life Maths problems using both number and manipulatives.	• 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.	• Children to verbally count beyond 20, recognising the pattern of the counting system. • Children to know some double facts to 10. • Children to recognise odds and even numbers. • To understand how quantities can be distributed equally.

MATHS LONG TERM OVERVIEW

Fractions and Decimals		Measurement		Geometry – properties of shapes	
Links to KS1 Curriculum	**Minimum Reception Expectations**	**Links to KS1 Curriculum**	**Minimum Reception Expectations**	**Links to KS1 Curriculum**	**Minimum Reception Expectations**
• 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.	• To understand how quantities can be distributed equally (sharing, halving) • Children to know some double facts to 10. • Children to recognise odds and even numbers. • Begin to develop the language of 'whole' when talking about objects which have parts.	• 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 [eg. quicker, slower, earlier, later] • measure and begin to record the following: • lengths and heights • mass/weight • capacity and volume • time (hours, minutes, seconds) • recognise and know the value of different denominations of coins and notes • sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening] • recognise and use language relating to dates, including days of the week, weeks, months and years • tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.	• Can order three items by length/height using non-standard measures. • Uses language such as big, little, small, large, tall, long and short to describe objects in the classroom. • Can order three items by weight using non-standard measure. • Uses language such as heaviest, lightest and balance when comparing weight of objects. • Compare two or three items by their capacity. • Uses language of full, empty, half full/half empty, nearly empty and nearly full when discussing capacity. • Children to learn songs to support learning of days of the week/months of the year. • Children to talk about which day comes before/after a given day. • To talk about significant times of the day and be able to sequence them, e.g. home time, lunch time etc. • Children to compare the timing of activities using language of shorter and longer. • Children to use money in role play and start to identify that coins are worth different amounts. • Children to have experiences of sequencing familiar stories and events. • Children to have an awareness of "time" within the class environment e.g. stories that include time, key times during the school day and visual timetable.	• recognise and name common 2-D and 3-D shapes, including: 2-D shapes [for example, rectangles (including squares), circles and triangles] • 3-D shapes [for example, cuboids (including cubes), pyramids and spheres].	• Children to recognise and name 2D shapes (minimum of circle, triangle, rectangle and square) and their properties – sides and corners. • Children to be introduced to 3D shapes and begin to look at their properties.
				Geometry – position and direction	
				• describe position, direction and movement, including whole, half, quarter and three-quarter turns.	• Children to use language linked to positional language including next to, in between, behind, in front of etc. • Children to use ordinal language. • Children to select, rotate and manipulate shapes in order to develop spatial reasoning skills. • Continue, copy and create repeating patterns. • Children to design obstacle courses and use positional language to guide other children.

MATHS LONG TERM OVERVIEW

YEAR 1

Numbers and the Number System	Addition and Subtraction	Multiplication and Division	Fractions and Decimals
• count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number • count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens • given a number, identify one more and one less • 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 • read and write numbers from 1 to 20 in numerals and words.	• read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs • represent and use number bonds and related subtraction facts within 20 • add and subtract one-digit and two-digit numbers to 20, including zero • solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ?– 9.	• 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.	• 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.
Measurement	**Geometry – properties of shapes**	**Geometry – position and direction**	
• 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 [eg. quicker, slower, earlier, later] • measure and begin to record the following: • lengths and heights • mass/weight • capacity and volume • time (hours, minutes, seconds) • recognise and know the value of different denominations of coins and notes • sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening] • recognise and use language relating to dates, including days of the week, weeks, months and years • tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.	• recognise and name common 2-D and 3-D shapes, including: 2-D shapes [for example, rectangles (including squares), circles and triangles] • 3-D shapes [for example, cuboids (including cubes), pyramids and spheres].	• describe position, direction and movement, including whole, half, quarter and three-quarter turns.	

MATHS LONG TERM OVERVIEW

YEAR 2

Numbers and the Number System	Addition and Subtraction	Multiplication and Division	Fractions and Decimals
• count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward • recognise the place value of each digit in a two-digit number (tens, ones) • identify, represent and estimate numbers using different representations, including the number line • compare and order numbers from 0 up to 100; use <, > and = signs • read and write numbers to at least 100 in numerals and in words • use place value and number facts to solve problems.	• 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 • Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 • 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 • Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot • Recognise and use the inverse relationship between addition and subtraction to check calculations and solve missing number problems	• Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers • Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs • Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot • Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	• recognise, find, name and write fractions 1/3, ¼, 2/4,and ¾ of a length, shape, set of objects or quantity • write simple fractions for example, ½ of 6 = 3 and recognise the equivalence of 2/4 and ½
Measurement	**Geometry – properties of shapes**	**Geometry – position and direction**	**Statistics**
• choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); 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 = • 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 • compare and sequence intervals of time • tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times • know the number of minutes in an hour and the number of hours in a day.	• identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line • identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces • identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid] • compare and sort common 2-D and 3-D shapes and everyday objects.	• order and arrange combinations of mathematical objects in patterns and sequences • use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise).	• interpret and construct simple pictograms, tally charts, block diagrams and simple tables • ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity • ask and answer questions about totalling and comparing categorical data

MATHS LONG TERM OVERVIEW

YEAR 3

Numbers and the Number System	Addition and Subtraction	Multiplication and Division	Fractions and Decimals
• count from 0 in multiples of 4, 8, 50 and 100 • find 10 or 100 more or less than a given number • recognise the place value of each digit in a three-digit number (hundreds, tens, ones) • compare and order numbers up to 1000 • identify, represent and estimate numbers using different representations • read and write numbers up to 1000 in numerals and in words • solve number problems and practical problems involving these ideas.	• 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 • estimate the answer to a calculation and use inverse operations to check answers • Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.	• recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables • 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 • 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.	• 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, ¼, 2/4,and ¾ of a length, shape, set of objects or quantity • write simple fractions for example, ½ of 6 = 3 and recognise the equivalence of 2/4 and ½ • 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 • recognise and show, using diagrams, equivalent fractions with small denominators • add and subtract fractions with the same denominator within one whole • compare and order unit fractions, and fractions with the same denominators • Solve problems that involve all of the above.
Measurement	**Geometry – properties of shapes**	**Geometry – position and direction**	**Statistics**
• measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) • measure the perimeter of simple 2-D shapes • add and subtract amounts of money to give change, using both £ and p in practical contexts • tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks • estimate and read time with increasing accuracy to the nearest minute; record and	• draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them • recognise angles as a property of shape or a description of a turn • identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle • identify horizontal and vertical lines and pairs of perpendicular and parallel lines.	Some overlap with properties of shape	• interpret and present data using bar charts, pictograms and tables • Solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.

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compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight • know the number of seconds in a minute and the number of days in each month, year and leap year • compare durations of events			

MATHS LONG TERM OVERVIEW

YEAR 4

Numbers and the Number System	Addition and Subtraction	Multiplication and Division	Fractions and Decimals
• count in multiples of 6, 7, 9, 25 and 1000 • find 1000 more or less than a given number • count backwards through zero to include negative numbers • recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) • order and compare numbers beyond 1000 • identify, represent and estimate numbers using different representations • round any number to the nearest 10, 100 or 1000 • solve number and practical problems that involve all of the above and with increasingly large positive numbers • 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.	• add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate • estimate and use inverse operations to check answers to a calculation • solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.	• recall multiplication and division facts for multiplication tables up to 12 × 12 • multiply two-digit and three-digit numbers by a one-digit number using formal written layout • solve problems involving multiplying and adding, including using 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. • 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 commutatively in mental calculations	• recognise and show, using diagrams, families of common equivalent fractions • count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. • 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 • add and subtract fractions with the same denominator • recognise and write decimal equivalents of any number of tenths or hundredths • recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ • 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 • 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 • solve simple measure and money problems involving fractions and decimals to two decimal places.
Measurement	**Geometry – properties of shapes**	**Geometry – position and direction**	**Statistics**
• Convert between different units of measure [for example, kilometre to metre; hour to minute] • measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres • find the area of rectilinear shapes by counting squares • estimate, compare and calculate different measures, including money in pounds and pence • read, write and convert time between analogue and digital 12- and 24-hour clocks	• compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes • identify acute and obtuse angles and compare and order angles up to two right angles by size • identify lines of symmetry in 2-D shapes presented in different orientations • complete a simple symmetric figure with respect to a specific line of symmetry.	• describe positions on a 2-D grid as coordinates in the first quadrant • describe movements between positions as translations of a given unit to the left/right and up/down • plot specified points and draw sides to complete a given polygon.	• interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. • solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.

MATHS LONG TERM OVERVIEW

• solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.			

MATHS LONG TERM OVERVIEW

YEAR 5

Numbers and the Number System	Addition and Subtraction	Multiplication and Division	Fractions and Decimals and Percentages
• read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit • count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 • interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero • 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 • read Roman numerals to 1000 (M) and recognise years written in Roman numerals.	• 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 • use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy • solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.	• 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 • multiply numbers up to 4 digits by a 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 and divide whole numbers and those involving decimals by 10, 100 and 1000 • recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3) • solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes • solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign • solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple ratio	• compare and order fractions whose denominators are all multiples of the same number • identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths • recognise mixed numbers and improper fractions 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 • add and subtract fractions with the same denominator and denominators that are multiples of the same number • multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams • read and write decimal numbers as fractions • recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents • 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 • solve problems involving number up to three decimal places • recognise the per cent symbol (%) and understand that per cent 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 of and those fractions with a denominator of a multiple of 10 or 25

MATHS LONG TERM OVERVIEW

Measurement	Geometry – properties of shapes	Geometry – position and direction	Statistics
• 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 approximate equivalences between metric units and common imperial units such as inches, pounds and pints • measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres • calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes • estimate volume [for example, using 1 cm3 blocks to build cuboids (including cubes)] and capacity [for example, using water] • solve problems involving converting between units of time • use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.	• identify 3-D shapes, including cubes and other cuboids, from 2-D representations • know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles • draw given angles, and measure them in degrees • identify angles at a point and one whole turn (total 360) • angles at a point on a straight line and a turn (total 180) • other multiples of 90o • use the properties of rectangles to deduce related facts and find missing lengths and angles • distinguish between regular and irregular polygons based on reasoning about equal sides and angles.	• Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.	• solve comparison, sum and difference problems using information presented in a line graph • complete, read and interpret information in tables, including timetables.

MATHS LONG TERM OVERVIEW

YEAR 6

Numbers and the Number System	Addition and Subtraction	Multiplication and Division	Fractions and Decimals and Percentages
• read, write, order and compare numbers up to 10 000 000 and determine the value of each digit • round any whole number to a required degree of accuracy • use negative numbers in context, and calculate intervals across zero • solve number and practical problems that involve all of the above.	• perform mental calculations, including with mixed operations and large numbers • identify common factors, common multiples and prime numbers • use their knowledge of the order of operations to carry out calculations involving the four operations • 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 • use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.	• multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication • 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 • solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. • perform mental calculations, including with mixed operations and large numbers • identify common factors, common multiples and prime numbers • use their knowledge of the order of operations to carry out calculations involving the four operations • solve problems involving addition, subtraction, multiplication and division • use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.	• use common factors to simplify fractions; use common multiples to express fractions in the same denomination • compare and order fractions, including fractions > 1 • 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 • associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction • identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving 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 • recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

MATHS LONG TERM OVERVIEW

Measurement	Geometry – properties of shapes	Geometry – position and direction	Statistics
• 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 to up to three decimal places • convert between miles and kilometres • recognise that shapes with the same areas can have different perimeters and vice versa • recognise when it is possible to use formulae for area and volume of shapes • calculate the area of parallelograms and triangles • calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3), and extending to other units [for example, mm3 and km3].	• draw 2-D shapes using given dimensions and angles • recognise, describe and build simple 3-D shapes, including making nets • compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons • illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius • recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.	• describe positions on the full coordinate grid (all four quadrants) • draw and translate simple shapes on the coordinate plane, and reflect them in the axes.	• interpret and construct pie charts and line graphs and use these to solve problems • calculate and interpret the mean as an average.
Ratio and proportion	**Algebra**		
• 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, of 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.	• 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.		

Progression

See Maths Yearly Objective Maps

See Progression Maps for different areas of Maths: [Progression Maps for Key Stages 1 and 2 | NCETM]