At St. Barnabas and St. Paul's, we are guided by our Christian Values and we endeavour to 'Be the best for God you can be.'

Mission Statement:

'Love the Lord your God with all your heart, with all your soul and with all your mind. And love your neighbour as yourself' - Matthew 22:37

Trust:
'Trust in the Lord with all your heart and lean not on your own understanding'
Proverbs 3:5

Compassion:
'Love the Lord your God with all your heart, with all your soul and with all your mind. And love your neighbour as yourself'
Matthew 22:37

Thankfulness:
'Be thankful in all circumstances. This is what God wants from you in your life'
Thessalonians 5:18

Hope:
'But those who hope in the Lord will renew their strength'
Isaiah 40:31

Perseverance:
'I know your deeds, your love and faith, your service and perseverance'
Revelations 2:19

Forgiveness:
'For if you forgive other people when they sin against you, your heavenly father will also forgive you'
Matthew 6:14

Maths Policy

Date Agreed by Governors: February 2024

1. Statement of intent

St Barnabas and St Paul's recognises that maths is both a key skill within school, and a life skill to be utilised through everyday experiences. A high-quality maths education provides a firm foundation for understanding how maths is used in everyday life and develops a pupils' ability to reason mathematically and solve problems.

1.1 Aims

Through the teaching of maths, we aim to develop:

- A positive attitude towards maths and an awareness of the relevance of maths in the real world.
- A process of enquiry and experiment.
- An ability to solve problems and think logically in order to work systematically and accurately.
- An ability to work both independently and in cooperation with others.
- Competence and confidence in pupils' maths knowledge, concepts and skills.

2. Roles and responsibilities

The **subject leader** is responsible for:

- Preparing policy documents, curriculum plans and schemes of work for the subject, liaising at all times with SLT.
- Reviewing changes to the national curriculum and advising on their implementation.
- Monitoring the teaching and learning of maths, providing support and training for staff where necessary.
- Ensuring the continuity and progression from year group to year group.
- Helping to develop colleagues' expertise in the subject.
- Organising the deployment of resources and carrying out an **annual** audit of all maths-related resources.
- Communicating developments in the subject to all teaching staff.
- Organising, providing and monitoring CPD opportunities in the subject.
- Advising on the contribution of maths to other curriculum areas, including cross-curricular and extra-curricular activities.

- Collating assessment data and setting new priorities for the development of maths in subsequent years.

The **classroom teacher** is responsible for:

- Acting in accordance with this policy.
- Ensuring progression of pupils' mathematical skills in lessons, with due regard to the national curriculum.
- Planning and teaching lessons effectively, ensuring a range of teaching methods are used to cover the content of the national curriculum.
- Liaising with the **subject leader** about key topics, resources and support for individual pupils.
- Monitoring the progress of pupils in their class and intervening when concepts are not understood by pupils
- Reporting assessment data to parents three times a year, giving clear targets and next steps
- Undertaking any training that is necessary in order to effectively teach the subject.
- Mark books in-line with the marking policy

The **special educational needs coordinator (SENCO)** is responsible for:

- Liaising with the subject leader in order to implement and develop maths for children on the SEN register
- Organising and providing training for staff regarding the maths curriculum for pupils with special educational needs and disabilities (SEND).
- Advising staff how best to support pupils' needs.
- Advising staff on the inclusion of mathematical objectives in pupils' individual education plans.
- Advising staff on the use of 1:1s in order to meet pupils' needs.

3. Early years provision

Activities and experiences for pupils will be based on the seven areas of learning and development, as outlined in the DfE's 'Statutory framework for the early years foundation stage'.

A break-down of maths taught in the EYFS can be found in appendix 1 section 1.1. Activities will provide pupils with the opportunity to develop and improve their skills in counting, understanding and using numbers, calculating simple

addition and subtraction problems, and describing shapes, spaces and measurements.

4. The National Curriculum

The national curriculum for mathematics aims to ensure that all pupils:

1) Become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils have conceptual understanding and are able to recall and apply their knowledge rapidly and accurately to problems

2) **Reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language

3) Can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

The national curriculum for Key Stage 1 and 2 is followed and appendix 1 section 1.2 provides a full breakdown of the statutory content to be taught within each unit.

4.1 Cross-curricular links

Wherever possible, the maths curriculum will provide opportunities to establish links with other curriculum areas. Spelling tests in **English** should include spellings of key mathematically terminology and mathematical vocabulary should be used when applicable. Pupils' data collection and analysis skills can be further developed through the conduction of physical experiments in **Science**, using units of measurement, calculating averages and interpreting results. Pupils should record their finding using charts, tables and graphs. Data analysis, pattern seeking and problem-solving skills should also be developed through the teaching of **Geography** while pupils' understanding of time and measurements of time can be developed through discussions of historical events in **History**. **ICT** will be used to enhance pupils' maths skills through the use of online resources. Technology can also be used to record findings, data and tables.

5. Planning

All relevant staff members are briefed on the school's planning procedures as part of their staff training and induction. Throughout St Barnabas and St Paul's,

maths is taught as a discrete lesson and as part of cross-curricular themes when appropriate.

5.1 Long Term Plans and Medium Term Plans

Long Term Plans and Medium Term Plans have been taken from the White Rose Maths schemes of learning. The LTPs give the main overview of the coverage for each year group while the MTPs break this overview down into smaller steps and include key vocabulary that needs to be taught alongside it. These overviews are designed to support a mastery approach to teaching and learning and have been designed to support the aims and objectives of the new National Curriculum. They have number at their heart and a large proportion of time is spent reinforcing number to build competency.

The overviews are designed to:

- ensure teachers stay in the required key stage and support the ideal of depth before breadth.
- ensure students have the opportunity to stay together as they work through the schemes as a whole group
- provide plenty of time to build reasoning and problem solving elements into the curriculum.

The LTPs and MTPs are used as a guidance tool in order to pace out coverage of the curriculum throughout the year. Teachers are encouraged to use professional discretion when deciding on how long is needed on particular curriculum area whilst ensuring all objectives are covered by the end of the academic year.

5.2 Short term planning

While teachers will need to think carefully about their daily lesson plans, there is no formal format for this. Teachers must ensure that their lessons demonstrate a balance of interactive and independent elements, ensuring that all pupils engage with their learning.

In line with White Rose Maths training, teaching staff should use a concrete, pictorial, abstract approach to teaching number; should include an element of reasoning a problem solving in each lesson; should plan effectively for precise questioning; should expose children to conceptual and procedural variation; and should plan for depth.

5.3 Homework

Maths homework will be set on a **weekly** basis and should build on that week's lesson objectives or be used as a revision tool.

6. Teaching and learning

At the beginning of each lesson, the lesson objective should be shared with the children. Each lesson should have three-parts:

- A mental or oral starter (5-10mins)
- A teaching input which should teach concepts and vocabulary through modelled examples (15 - 20mins) and children task time (20-25mins)
- Plenary (5-10mins)

Teachers should demonstrate, explain and illustrate mathematical ideas to fully involve pupils and maintain their interest through appropriately demanding work. The emphasis on pupil's learning begins with practical examples leading onto informal jottings and mental strategies, and finally to formal representations as laid out for year groups in the calculation policy. Eventually, children should be encouraged to develop their own mathematical strategies as well as learning standard methods.

Lessons should allow a wide range of mathematical, enquiry-based research activities, including the following:

- Questioning, predicting and interpreting
- Pattern seeking
- Collaborative work
- Reasoning and Problem-solving activities
- Classifying and grouping

Teachers are to use, and expect pupils to use, correct mathematical notation and vocabulary in line with the MTPs. Mathematical errors and misconceptions should be dealt as soon as possible through mini-plenaries and marking.

Pupils should complete work using a balance of independent, group and paired working. Where appropriate, lessons can be fully practical with evidence collected on iPads or working walls but teachers should still assess the children's understanding using appropriate assessment methods.

The **classroom teacher**, in collaboration with the **subject leader**, will ensure that the needs of all pupils are met by:

- Set tasks which can have a variety of responses.
- Providing resources of differing complexity, according to the ability of the pupils, to support understanding of concepts being taught
- Set tasks of varying difficulty in the creation of maths worksheets
- Utilising teaching assistants to ensure that pupils are effectively supported.

Focus is placed on the development of deep structural knowledge and the ability to make connections, with the aim of ensuring that what is learnt is sustained over time. At St Barnabas and St Paul's, we do not prioritise between technical proficiency and conceptual understanding, and we aim to develop these in parallel.

7. Assessment and Reporting

Maths should be assessed both formally and informally, using a mixture of summative and formative assessment techniques.

7.1 Formative and Summative assessment

Formative assessment should be used throughout the year in order to monitor children's understanding of mathematical concepts on a day to day basis and address misconceptions immediately. This type of assessment should inform a teacher's immediate lesson plans.

Throughout the year, teachers will plan on-going formative assessment opportunities in order to gauge whether pupils have achieved the key learning objectives which can include:

- Talking to pupils and asking questions
- Discussing pupils' work with them
- Marking work against the learning objectives
- Pupils' self-evaluation of their work
- Classroom quizzes

Summative assessments can measure progress and attainment. Children in KS1 and KS2 will take formal tests at three stages of the year:

- Autumn 2

- Spring 2
- Summer 2

The progress and development of pupils within the EYFS is assessed against the early learning goals outlined in the 'Statutory framework for the early years foundation stage'.

Maths data throughout the school will be monitored by the maths lead and SLT and used to inform future areas for development to drive progress in the subject.

7.2 Statutory testing

From Autumn 2020, reception children will take part in a statutory baseline assessment in which areas of maths will be assessed. The assessment is clearly linked to the learning and development requirements of the EYFS. Mathematics tasks which the children will be expected to complete on a 1:1 basis includes:

- Early number
- Early calculation (early addition and subtraction)
- Mathematical language
- Early understanding of pattern.

Until the academic year 2022/23, Year 2 children are expected to take end of KS1 SATs Tests developed by the Standards and Testing Agency.

The Multiplication Timestables Check has been designed to determine whether pupils can recall their times tables fluently, which is essential for future success in mathematics. It is to be taken by Year 4 pupils and will help schools to identify pupils who have not yet mastered their times tables, so that additional support can be provided

Year 6 children are expected to take end of KS2 SATs tests which are also developed by the Standards and Testing Agency. These are to measure attainment and progress. Progress is currently measured from the end of KS1 tests but this will move to the EYFS baseline assessments in the academic year 2027/28.

7.3 Reporting to Parents

Parents will be provided with a written report about their child's progress during the Autumn, Spring and Summer term every year. These will include a

grade regarding their child's attitude to maths, information about whether their child is working towards, below, at or above the expected standard and a clear target to support the child in their next stages of learning.

Verbal reports will also be provided at parent-teacher evenings during the Autumn and Summer terms which will go into more detail regarding their child's understanding of maths.

8. Monitoring and review

This policy will be reviewed on an annual basis by the subject leader.

The subject leader will monitor teaching and learning in the subject at St Barnabas and St Paul's school, ensuring that the content of the national curriculum is covered across all phases of pupils' education.

Members of the governing body meet at least annually with the subject leader to review progress in the teaching of maths. Any changes made to the policy will be communicated with staff.

Appendix 1

1.1

During the early years foundation stage, pupils will be taught to:

- Count with numbers from 1 to 20, placing them in order and naming the number that is one more or less than a given number.
- Use quantities and objects to add and subtract two single-digit numbers, and count forwards or backwards to find the answer.
- Solve problems, including doubling, halving and sharing.
- Use everyday language to talk about size, weight, capacity, position, distance, time and money in order to compare quantities and objects, and solve problems.
- Recognise, create and describe patterns.
- Use mathematical language to describe everyday objects and shapes.

1.2

In Year 1, pupils will be taught to:

- **Number and place value**

- Count to 100, forwards and backwards, beginning with 0 or 1, from any number.
- Count, read, and write numbers from 1 to 100.
- Count in multiples of 2, 5, and 10.
- Identify one more and one less from a number.
- Identify and represent numbers using objects and pictures (using a number line) and use language of: equal to, more than, less than (fewer), most, least.
- Read and write numbers from 1 to 20 in numerals and words.

- **Addition and subtraction**

- Read, write, and interpret statements involving addition, subtraction, and equals signs.
- Represent and use number bonds and related subtraction facts within 20.
- Add and subtract one and two-digit numbers to 20, including 0.
- Solve one-step problems which involve addition and subtraction.

- **Multiplication and division**

- Solve one-step problems using multiplication and division, calculating the answer using concrete objects and pictorial representations.

- **Fractions**
- Recognise, find and name a half as 1 of 2 equal parts.
- Recognise, find and name a quarter as 1 of 4 equal parts.

- **Measurement**
- Compare, describe and solve practical problems for lengths and heights, weight, time, capacity and volume.
- Measure and begin to record lengths and heights, weight, time, capacity and volume.
- Recognise and know the value of different denominations of coins and notes.
- Sequence events in chronological order using language.
- 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.

- **Properties of shapes**
- Recognise and name common 2D and 3D shapes.

- **Position and direction**
- Describe position, direction and movement, including whole, half, quarter and three-quarter turns.

In Year 2, pupils will be taught to:

- **Number and place value**
- Count in steps of two, three and five from 0, and in 10s from any number, forwards and backwards.
- Recognise the place value of each digit in a two-digit number.
- Identify, represent and estimate numbers using different depictions, including the number line.
- Compare and order numbers from 0 to 100, using <, > and = signs.
- Read and write numbers 1 to 100 in numerals and words.
- Use place value and number facts to solve problems.

- **Addition and subtraction**

- Solve problems with addition and subtraction using concrete objects and pictorial representations.
- Apply increasing knowledge of mental and written methods.
- Recall and use addition and subtraction facts to 20, 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 1s, a two-digit number and 10s, two two-digit numbers, and adding three one-digit numbers.
- Show that the addition of two numbers can be done in any order and subtraction of one number from another cannot.
- Recognise and use the inverse relationship between addition and subtraction, and use this to check calculations and solve missing number problems.

- **Multiplication and division**

- Recall and use multiplication and division facts for the 2, 5, and 10 multiplication tables.
- Recognise odd and even numbers.
- Calculate mathematical statements for multiplication and division within the multiplication tables and write them using x, ÷, and = signs.
- Show that multiplication of two numbers can be done in any order, 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.

- **Fractions**

- Recognise, find, name, and write fractions of a length, shape, set of objects or quantity.
- Write simple fractions and recognise their equivalence, e.g. $\frac{1}{2}$ and $\frac{2}{4}$.

- **Measurement**

- Choose and use appropriate standard units to estimate and measure length/height in any direction, mass, temperature, and capacity to the nearest appropriate unit.
- Compare and order lengths, heights, mass, volume/capacity, and record the results using >, < and =.
- Recognise and use symbols for pounds (£) and pence (p), and 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, e.g. giving change.
- Compare and order 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.

- **Properties of shapes**
- Identify and describe the properties of 2D shapes, including the number of sides, and line symmetry in a vertical line.
- Identify and describe the properties of 3D shapes, including the number of edges, vertices and faces.
- Identify 2D shapes on the surface of 3D shapes.
- Compare and sort common 2D and 3D shapes using everyday objects.

- **Position and direction**
- 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, distinguishing between rotation as a turn, and in terms of right angles for quarter, half and three-quarter turns.

- **Statistics**
- Interpret and construct simple pictograms, tally charts, block diagrams and 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 data.

In Year 3, pupils will be taught to:

- **Number and place value**
- Count from 0 in multiples of 4, 8, 50 and 100, finding 10 or 100 more or less than a given number.
- Recognise the place value of each digit in a 3-digit number (100s, 10s, 1s).
- Compare and order numbers up to 1,000.
- Identify, represent and estimate numbers using different representations.
- Read and write numbers up to 1,000 in numerals and in words.

- Solve number problems and practical problems involving these concepts.

- **Addition and subtraction**
- Add and subtract numbers mentally, including a three-digit number and 1s, a three-digit number and 10s, and a three-digit number and 100s.
- 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 reverse operations to check answers.
- Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.

- **Multiplication and division**
- 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, including for two-digit numbers times one-digit numbers, using mental maths 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.

- **Fractions**
- Distinguish what tenths are.
- Count up and down in tenths.
- Distinguish, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.
- Distinguish and use fractions as numbers: unit fractions and non-unit fractions with small denominators.
- Distinguish 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**
- Measure, compare, add and subtract lengths, mass, volume/capacity.
- Measure the perimeter of simple 2D shapes.

- Add and subtract amounts of money to give change.
- 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, record, compare and read times, with increasing accuracy to the nearest minute.
- Use vocabulary such as o'clock, am/pm, morning, afternoon, noon, and midnight.
- Distinguish the number of seconds in a minute and the number of days in each month, year and leap year.
- Compare the durations of events.

- **Properties of shapes**
- Draw 2D shapes and make 3D shapes using modelling materials; recognise 3D shapes in different orientations and describe them.
- Recognise angles as a property of a shape or a description of a turn.
- Identify right angles and distinguish 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.

- **Statistics**
- Show data using bar charts, pictograms and tables.
- Solve one and two-step data using bar charts, pictograms and tables.

In Year 4, pupils will be taught to:

- **Number and place value**
- Count in multiples of 6, 7, 9, 25 and 1,000.
- Find 1,000 more or less than a chosen number.
- Count negative numbers from 0.
- Recognise place value of each digit of a four-digit number.
- Recognise, represent and estimate numbers using different representations.
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- Round any number to the nearest 10, 100 or 1,000.
- Solve number and practical problems that involve all of the above, and with increasingly large numbers.
- Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of 0 and place value.

- **Addition and subtraction**

- Add and subtract numbers with up to four digits using formal written methods, and columnar addition and subtraction where necessary.
- Estimate and use inverse operations to check the answers to a calculation.
- Solve addition and subtraction two-step problems in different contexts, deciding which operations to use and why.

- **Multiplication and division**

- Use multiplication and division facts for tables up to 12x12
- Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and one; dividing by one; multiplying together three numbers.
- Recognise and use factor pairs and commutativity in mental calculations.
- 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 connected to 'm' objects.

- **Fractions (including decimals)**

- 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 100 and dividing tenths by 10.
- 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.
- Identify 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**

- Convert between different units of measurement.
- Measure and calculate the perimeter of a rectilinear figure 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.
- Solve problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days.

- **Properties of shapes**

- Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes.
- Recognise acute and obtuse angles, and compare and order angles – up to two right angles – by size.
- Recognise lines of symmetry in 2D shapes presented in different orientations.
- Complete a simple symmetric figure with respect to a specific line of symmetry.

- **Position and direction**

- Describe positions on a 2D 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.

- **Statistics**

- 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.

In Year 5, pupils will be taught to:

- **Number and place value**

- 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 0.
- Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000.
- Solve number problems and practical problems that involve all of the above.
- Read Roman numerals to 1,000 (M) and recognise years written in Roman numerals.

- **Addition and subtraction**

- Add and subtract whole numbers with more than four digits, including using formal written methods.
- Add and subtract numbers mentally using 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 context, deciding which operations and methods to use and why.

- **Multiplication and division**

- Recognise 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 non-prime numbers.
- Establish whether a number up to 100 is prime and recall prime numbers up to 19.
- Multiply numbers up to four 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.
- Divide numbers up to four 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 1,000.
- Identify and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3}).

- Solve problems involving multiplication and division, including using 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 rates.

- **Fractions (including decimals and percentages)**

- 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, know how to convert from one form to the other, and write mathematical statements greater than one as a mixed number.
- 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 numbers with up to three decimal places.
- Recognise the percent symbol (%) and understand that percent relates to 'number of parts per 100,' writing percentages as a fraction with a denominator of 100, and as a decimal fraction
- Solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$'$\frac{1}{4}$'$\frac{1}{5}$'$\frac{2}{5}$', $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25.

- **Measurement**

- Convert between different units of metric measurement.
- 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, including using standard units, square centimetres (cm^2) and square metres (m^2), and estimate the area of irregular shapes.
- Estimate volume and capacity.
- Solve problems involving converting between units of time.
- Use all four operations to solve problems involving measure using decimal notation, including scaling.

- **Properties of shapes**
- Identify 3D shapes, including cubes and other cuboids, from 2D representations.
- Know that angles are measured in degrees, and estimate and compare acute, obtuse and reflex angles.
- Draw given angles, and measure them in degrees (°).
- Identify angles at a point and 360° (one whole turn), angles at a point on a straight line and 180° (half a turn), and other multiples of 90°.
- 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.

- **Position and direction**
- 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.

- **Statistics**
- Solve comparison, sum and difference problems using information presented in a line graph.
- Complete, read and interpret information in tables, including timetables.

In Year 6, pupils will be taught to:

- **Number and place value**
- 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 0.
- Solve numerical and practical problems that involve all of the above.

- **Addition, subtraction, multiplication and division**

- Multiply multi-digit numbers of up to four digits by a two-digit whole number using the formal written method of long multiplication.
- Divide numbers of up to four 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 of up to four 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.
- Identify common factors, common multiples and prime numbers.
- Use 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.

- **Fractions (including decimals and percentages)**

- Use common factors to simplify fractions, and use common multiples to express fractions in the same denomination.
- Compare and order fractions, including fractions greater than one.
- 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 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 1,000 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.

- **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 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**
- 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.

- **Measurement**
- 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 the volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3), and extend to other units.

- **Properties of shapes**
- Draw 2D shapes using given dimensions and angles.
- Recognise, describe and build simple 3D 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.

- **Position and direction**
- Describe positions on the full coordinate grid.
- Draw and translate simple shapes on the coordinate grid, and reflect them in the axes.

- **Statistics**
- Interpret and construct pie charts and line graphs, and use these to solve problems.
- Calculate and interpret the mean as an average.