



**St John's Church of England
Academy**

Belonging Believing Becoming



Mathematics Policy

Date of Review: April 2020

Date of Next Review: July 2021

Responsible Group: School Policy



Mathematics Policy

‘Whether you think you can, or you think you can’t you’re right.’ Henry Ford

Curriculum Intent

Through the delivery of our curriculum, we want our children to be ready for life beyond St John’s. We aspire for them to be:

- **Articulate**
- **Aspirational**
- **Curious**
- **Appreciative**

Subject Intent

St John’s Academy 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 activities, developing pupils’ ability to reason mathematically.

Aims

At St John’s Academy, we deliver the national curriculum for mathematics that aims to ensure that all pupils:

- become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can **solve problems** by applying their mathematics to a variety of routine and nonroutine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Legal Framework

This policy has due regard to statutory guidance including, but not limited to, the following:

- DfE (2013) ‘National curriculum in England: Mathematics programmes of study’
- DfE (2017) ‘Statutory framework for the early years foundation stage’

Roles and responsibilities

The headteacher is responsible for:

- Holding the subject leader to account for pupils' attainment.
- Assisting the subject leader in reviewing and updating this policy annually.
- Supporting the subject leader in identifying CPD opportunities for themselves and classroom teachers.
- Promoting the needs of all pupils and ensuring they can access a well-rounded and inclusive curriculum.

The subject leader is responsible for:

- Preparing policy documents, curriculum plans and schemes of work for the subject.
- Attending training courses and undertaking CPD opportunities for themselves.
- Reviewing changes to the national curriculum and advising staff on new developments and assisting in their implementation.
- Working with classroom teachers to plan lessons and ensure continuity and progression from year group to year group.
- Monitoring the learning and teaching, providing support for staff where necessary.
- Encouraging staff to provide effective learning opportunities for pupils.
- Helping to develop colleagues' expertise in the subject.
- Organising the deployment of resources and carrying out an annual audit of all resources.
- Liaising with teachers and holding them to account for the attainment achieved.
- Communicating developments in the subject to all teaching staff.
- Leading staff meetings and providing staff members with the appropriate training.
- Organising, providing and monitoring CPD opportunities in the subject.
- Ensuring common standards are met for recording and assessment.
- Advising on cross-curricular and extra-curricular activities.
- Collating assessment data and setting new priorities for development in subsequent years.
- Identifying areas for improvement and ensuring these are included in a subject specific action plan and form part of the SDP.
- Liaising with subject leaders from local Primary and Secondary Schools.

The classroom teacher is responsible for:

- Working with the subject leader to ensure the high-quality delivery of the curriculum and continuity between year groups.
- Acting in accordance with St John's Church of England Academy's Policies.
- Ensuring progression of pupils' skills with due regard to the national curriculum.
- Planning engaging and interesting lessons, ensuring a range of teaching methods are used to cover the content of the national curriculum.
- Monitoring the progress of pupils in their class and reporting this on a termly and annual basis.
- Reporting any concerns regarding the teaching of the subject to the subject leader or a member of the senior leadership team (SLT).
- Undertaking any training that is necessary in order to effectively teach the subject and improve practice.

- Reporting on pupils' progress at parents' evenings and in end of year reports.

The Specialist Educational Needs and Disabilities Co-ordinator (SENDCO) is responsible for:

- Liaising with the subject leader in order to implement and develop the subject throughout the school.
- Organising and providing training for staff for pupils with special educational needs and disabilities (SEND).
- Advising staff how best to support pupils' needs.
- Advising staff on the inclusion of objectives in pupils' individual education plans.
- Advising staff on the use of teaching assistants in order to meet pupils' needs.

The Curriculum

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'. All areas of learning and development are important and inter-connected. Three areas are particularly crucial for igniting children's curiosity and enthusiasm for learning, and for building their capacity to learn, form relationships and thrive. These three areas, the prime areas, are:

- communication and language
- physical development
- personal, social and emotional development

Children will also be supported in four specific areas, through which the three prime areas are strengthened and applied. The specific areas are:

- Literacy
- Maths
- Understanding the world
- Expressive arts and design

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.

All activities will adhere to the objectives set out in the framework.

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.

The National Curriculum

The national curriculum is followed and provides a full breakdown of the statutory content to be taught within each unit.

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 \times , \div , 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.
- 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 (cm²) and square metres (m²), 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 (cm³) and cubic metres (m³), 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.

Cross-curricular links

Wherever possible, the maths curriculum will provide opportunities to establish links with other curriculum areas. This is developed through our 'Enquiry Curriculum'.

English

- Pupils are encouraged to use their speaking and listening skills to describe what is happening.
- Pupils' writing skills are developed through recording their planning, what they observe and what they found out.
- Mathematical terminology is used, where appropriate.
- Correct spelling of mathematical vocabulary
- Use of synonyms (eg add, plus, altogether, greater etc)
- Reading and comprehension skills are used to problem solve and reason

Science

- Pupils' data collection and analysis skills are further developed through the conduction of physical experiments, using units of measurement, calculating averages and interpreting results.
- Pupils record their finding using charts, tables and graphs.

Computing

- Pupils are encouraged to use calculators and other electronic devices, gaining confidence throughout their school experience.

- ICT will be used to enhance pupils' maths skills through the use of online resources and the creation of spreadsheets.
- ICT will be used to record findings, using text, data and tables.
- Pupils' understanding of position and direction is developed through the teaching of programming.

Geography

- Data analysis, pattern seeking and problem-solving skills are developed through the teaching of geography.
- Pupils' understanding of position and direction is developed through the teaching of map reading skills.

History

- Pupils' understanding of time and measurements of time are developed through discussions of historical events and use of chronological frameworks.

Art

- Pupils' understanding of geometry is developed by creating repeated patterns, describing how artists have used pattern and shape and showing reflections in their art.

Design and Technology (DT)

- Pupils use their knowledge of measurement, angles and shapes when designing and making different products.

Music

- Pupils' understanding of number, specifically counting, is developed through identifying the rhythm and pulse of different styles of music.

Physical Education (PE)

- Pupils' understanding of measurement is developed through the use of stop watches, recording and comparing time in seconds and minute, measuring and recording distances and using terminology like clockwise and anticlockwise through dance and gymnastics.
- Pupils' understanding of fractions is developed through games. For example – "You are playing on this half of the court. Your group are performing in this quarter."
- Pupils' understanding of geometry is developed through use of and exploration of PE equipment. For example, a ball is a sphere.

Teaching and Learning

At St Johns Academy we follow '**CanDoMaths**' following the belief that everyone can enjoy and achieve in mathematics with:

- Teaching for Understanding
- Belief
- Hard Work

Five Essentials for a CanDoMaths Classroom:

Convince – Convincing, justifying and explaining to others. The answer is only the beginning.

Apply – Applying to different contexts, solving problems and making connections.

No – Understanding what it's 'not' as well as what it is.

Draw – Drawing the concept to 'see' structures and relationships.

Ok – It's ok not to be able to do it...yet. It's ok to make mistakes.

A maths mastery approach is taken to the curriculum, in which fluency comes from deep knowledge and practice. This means that structured questioning is used to ensure that pupils develop fluent technical proficiency and think deeply about the underpinning mathematical concepts.

Focus is put 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**.

All children have a daily maths lesson that focuses on a manageable step from the age related expectation of that year group.

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

- Ensuring new learning is presented in manageable steps
- Ensuring new learning is supported by concrete and pictorial representations (If appropriate)
- Concrete resources are available
- Utilising teaching assistants to ensure that pupils are effectively supported
- Ensuring all lessons provide opportunities to develop the aims of the National Curriculum (Fluency, reasoning and problem solving)

Typical Lesson Design (Year 1-6)

Each lesson focuses on a manageable step of new learning based on the NC statements	
Hook	What do you notice? Do you agree? Mathematical Talk
I do	Live modelling of the new learning with explicit use of potential misunderstandings Key Vocabulary and STEM Sentence
We do	All children practise together Support & Challenge
Hinge	Children are given a multiple-choice question Check Understanding
Try it	Up to 5 examples – 5 ‘What it is’ or ‘3+2 ‘What it is/What it’s also’ Challenge 1: Procedural Fluency
Use it	1 or 2 Misunderstandings (True/false, Spot the mistake) Challenge 2: Conceptual Understanding
Prove it	Apply understanding to solve new problems Challenge 3: Mathematical Thinking
Review it	Lesson Recap: Key Concept Statement and Key Vocabulary

Maths On Track (MOT) Meeting

Years 1 – 6 have an additional, shorter session, known as a Maths On Track (MOT) Meeting, every Monday, Tuesday, Thursday and Friday. The focus of the MOT Meeting will change depending on the needs of the class and in some cases, individual children. A typical MOT Meeting week may look like this:

Day 1 : Arithmetic

Day 2 : Deliberate Practice: Past and Present

Day 3: Deliberate Practice: Past and Present

Day 4: Fact Day

Planning

- All relevant staff members are briefed on the school's planning procedures as part of staff training.
- Throughout St John's Church of England Academy, mathematics is taught as a daily discrete lesson and as part of cross-curricular themes when appropriate.
- Teachers will use the key learning content in the DfE's statutory guidance that is outlined in the Rhombus Curriculum Intent CanDoMaths document.
- Long-term planning, presented as a whole school road map, will be used to outline the order of the units to be taught within each year group.
- Medium-term planning will be used to outline the manageable steps that will be taught in each unit of work, as well as highlighting the opportunities for assessment.
- All staff have access to CanDoMaths Subject Expertise Tutorials and are expected to watch the videos prior to teaching a new area of mathematics.
- Short-term planning to deliver the agreed lesson structure is the responsibility of the individual teacher.
- Lesson plans (Lynx slides and lesson resources) will demonstrate the lesson structure, including a balance of interactive and independent elements that promote all pupils to engage with their learning.
- Lesson resources will identify manageable step and opportunities to improve fluency, reasoning and problem solving.
- All lessons will have a clear learning journey and manageable steps which are shared and reviewed with pupils.

Assessment and Reporting

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'. An EYFS Profile will be completed for each pupil in the final term of the year in which they reach age five.

Throughout the year, teachers will use on-going assessment opportunities in order to gauge whether pupils have achieved the objectives from the National Curriculum.

- Formative assessment, which is carried out informally throughout the year, enables teachers to identify pupils' understanding and informs their immediate lesson planning.
- In terms of summative assessments, the results of end of year assessments will be passed to relevant members of staff, such as the pupil's future teacher.

- Parents will be provided with a written report about their child's progress during the summer term every year.
- Verbal reports will be provided at parent-teacher interviews during the Autumn and Spring terms.
- Pupils with special educational needs and disabilities (SENDCo) will be monitored by the Special Educational Needs and Disabilities Coordinator.

Assessment in mathematics will be undertaken in various forms, including the following:

- Talking to pupils and asking questions
- Observing practical tasks and activities
- Discussing pupils' work with them
- Hinge question in each lesson
- Marking work against the manageable step
- *Remember It* tests for individual pupils
- Unit quizzes
- Formal exams

Equipment and Resources

- The subject leader is responsible for ensuring that all resources and equipment are sufficiently maintained as well as for liaising with the school business manager in order to purchase further resources.
- Necessary maths resources will be stored in each classroom. Resources which are not required regularly, and those in relation to key whole-school topics, will be stored in the Maths resources cupboard.
- Working walls will be utilised and updated daily, in accordance with the area of maths being taught at the time.
- Maths equipment and resources will be easily accessible to pupils during lessons.
- The subject leader is responsible for maintaining an inventory of resources.
- Staff members must inform the subject leader of any changes regarding mathematics resources, such as broken items or when new resources are required.
- The subject leader will undertake an audit of maths equipment and resources on an annual basis.
- Class teachers can discuss the need for new resources with the subject leader.
- Class teachers to check they have the resources needed for a unit of work in a reasonable time before starting the learning.

Equal opportunities

- All pupils will have equal access to the maths curriculum.
- Gender, learning ability, physical ability, ethnicity, linguistic ability and/or cultural circumstances will not impede pupils from accessing all maths lessons.
- Where it is inappropriate for a pupil to participate in a lesson because of reasons related to any of the factors outlined above, the lessons will be adapted to meet the pupil's needs and alternative arrangements involving extra support will be provided where necessary.
- All efforts will be made to ensure that cultural and gender differences will be positively reflected in all lessons and teaching materials used.

Monitoring and review

- This policy will be reviewed on an annual basis by the subject leader, in collaboration with the headteacher.
- The subject leader will monitor teaching and learning in mathematics at St John's Church of England Academy, ensuring that the content of the national curriculum is covered.
- Any changes made to this policy will be communicated to all teaching staff.