Maths Curriculum Intent

Academy Values & Ethos

Every child deserves an education. Our primary aim is to support and re-engage young people, enabling them to think positively about their future pathway, and life after our academy, whether that be re-integration into mainstream, Further Education or employment. Our Vision is "Inspire, Achieve, Exceed".

Our Pupils will:

- Feel safe, valued and trusted
- Recognise and achieve their full potential
- Take responsibility for their behaviour, and make healthy lifestyle choices
- Be positive about themselves and their future
- Be tolerant of others, and of the beliefs and views of others
- Be successful learners, both independently and when working with others
- Be self-motivated and have high expectations

 We will achieve this by:

- Creating a safe learning environment, free of stigma and negativity
- Celebrating the success and achievements of every member of the learning community
- Establishing nurturing and supportive relationships between staff and pupils
- Setting high expectations for behaviour and academic success
- Providing a broad, balanced and relevant curriculum that provides the skills, confidence and qualifications to access opportunities in life
- Innovating learning, to engage and inspire
- Promoting tolerance and mutual respect
- Providing opportunities for pupils, parents and carers to voice opinions which form part of the decision-making process
- Providing an inclusive programme of learning opportunities and experiences that promote engagement.

Intent of the Maths Curriculum

Maths can be challenging for pupils who have missed opportunities to consolidate knowledge and understanding. Often hindered by a lack of success in the subject, many pupils across all Key Stages, arrive with a fear of failure in maths. Our aim is to provide pupils with the opportunity to reengage in maths lessons and achieve individual success. We aim for pupils to develop appropriate maths skills to be able to function as full members of a modern society and in the future. Pupils are able to develop mental discipline, resilience and confidence through logical and effective thinking. We aim for pupils to understand the

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purpose of learning about maths and developing their numeracy skills. They will learn that making mistakes is often key to developing the ability to reason and analyse which is a fundamental part of personal growth and an opportunity to learn.

Our curriculum ensures that pupils are ready for their future education, whether this is to return to mainstream, to study qualifications at our academy, to access Further Education or employment. We aim for pupils to have the necessary numeracy skills that they will need in their lives beyond our academy.

Our Maths curriculum enables pupils to:

- Experience individual success in maths
- Build independence and confidence in numeracy
- Develop problem solving and reasoning skills
- Make mistakes and build resilience
- Learn about the role that maths plays in the wider world
- Leave our academy with relevant maths skills so that they can be functional in their next setting and the world.

Implementation of the Maths Curriculum

Maths is delivered through our Continuous Curriculum Provision at our Primary site. At KS3 & KS4 our Long Term Plan is divided into 6 Half Terms. Curriculum content is taken from elements of the National Curriculum. The sequencing of Maths ensures that content is taught in a logical order so that pupils build on knowledge. The curriculum is designed to allow for revisiting of content and transfer of knowledge into subsequent topics. This allows pupils to utilise knowledge and skills and make cross-curricular links. We aim for pupils to build a solid foundation and build confidence in their abilities.

At Key Stage 3 we offer a cyclical pattern of Blue Year, Green Year. Both years cover all the assessment objectives required to prepare for Functional Skills / Foundation Level GCSE. The sequence of learning, including revisiting topics, is planned to take account for the transient nature of our academy population. There is a repetition of skills during each cycle, whilst giving the opportunity for each pupil to build depth and mastery, which are delivered through a variety of activities and tasks.

Outcomes

Pupils are able to experience progress in a short time period through the individual baseline assessments and bespoke support strategies implemented. We aim for all pupils to experience individual success in Maths through individual target setting and use of high expectations.

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- Regular assessment using Reflection Time Marking Sheets
- Reintegration to mainstream education
- Progress against our Junior Steps assessment framework (Continuous Curriculum Provision)
- The Multiplication Tables Check (MTC) for Y4 pupils
- KS1 & KS2 SATs for those pupils for whom it is appropriate
- Progress against our 14 Steps assessment framework (KS3)
- AQA Entry Level
- Edexcel Functional Skills (Level 1 / Level 2)
- AQA GCSE English Language

Personal Development

The Maths Long Term Plan for KS3 and 4 has a careers focus for each half term which links the topic to careers where numeracy skills are vital. Throughout the curriculum, there are opportunities to link numeracy skills to real life applications and build foundations for pupils' next steps. They are encouraged to be aspirational and are exposed to a wide variety of careers.

Maths Medium Term Plans create explicit opportunities for the promotion of fundamental British Values. Examples include:

British Value	Scheme of Learning: Lesson Content
Democracy	**Term 1** - Fractions, decimals and percentages – referendums and the results of democratic votes. - Sampling and the average (Mode, median and range) – Pupils are taught about how representative a sample is. - Rounding and estimating – Pupils will be expected to round and estimate. This can be liked to the number of ballot papers received, the number of people that voted, the results from a referendum. Pupils could also analysis data from public opinion surveys. **Term 2** - Four operations and use of a calculator – Pupils will be expected to use operations to calculate the answers to questions, these questions could link to questions about society, voting, public opinion etc… - Probability – voting systems – single transferable votes – how many MPs there are, what is the current majority – turn out of elections.

- Probability – the likelihood of a specific outcome
- Approximations – Pupils can approximate the number of people that will turn up to vote for a referendum.

Term 3
- Algebra – sequences – pupils could look at local voting patterns.
- Pie charts – pupils to create pie charts from data collected during lessons from the class.

Term 4
- Sets & Venn diagrams – pupils could create Venn diagrams based on democratic issues and public opinions.
- Sets and Venn diagrams – Pupils could look at the democratic voters and use Venn diagrams to group voters.

Term 5
- Ratio and proportion – Pupils could look at the ratio and proportion of the population that vote or don't vote, pupils can look at the likely hood of results, and pupils could look at the proportion of people to voter a specific way.

Term 6
- Scales and bearing – Pupils can look at the democratic scale of their home counties,
- Collecting data (tables, charts, and graphs) - Pupils will learn that all democratic decisions are made based on data. They will look at data and be asked to make a decision based on the data that they have been provided. Pupils s will be given the opportunity to collect their own data through voting.
- Graphs – Pupils to look at ballot data, including the number of people that voted during different election years. Looking for correlations between data to state trends and links.
- Scatter graphs – pupils can use scatter graphs to establish trends and opinions of society, for example age and likely hood of voting.

General
- Pupils will have the opportunities to work in groups and develop their teamwork skills.
- Pupils will take it in turns to listen to everyone speaking and giving the answers and explanations.
- Pupils know that their views count and we encourage everyone to value each other's opinions and values.

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Rule of law	**Term 1** • Sampling and the average (Mode, median and range) – Pupils could analysis crime data from the national statistics website. • Rounding and estimating – Pupils could look at crime figures to round to the nearest 10, 100 and 1000. • Fractions, decimals and percentages – For percentages pupils could look at the percentage of crime in specific areas and establish the safety places to live. • Percentages – Pupils could look at taxation and percentage calculations that need to be made to ensure that industry complies with health and safety regulations. **Term 2** • BIDMAS – Pupils are taught the order of operations and that if you don't the operation in the wrong order then you will get an incorrect answer. • Transformations – Pupils have to follow the instructions to implement the 4 transformations (reflection, translation, rotation and enlargement) in order to form a word. **Term 3** • Pie Charts – Opportunities to study numerical data that is part of law. For example, to use statistics from the office of National statistics to find data on crime in the local area. **Term 4** • Transformations – Pupils will have to follow the rules from transformations, or the shape won't be transformed into a new place correctly, for example when using vectors to translate shapes, pupils will have to remember that the top integer is for left and right and the bottom integer is for up or down. • Angles – Pupils will develop an understanding about angle rules to calculate the degrees of angles. **Term 5** • Ratio and proportion – Pupils could look at crime rates ratios. • Angles – Pupils will develop an understanding about angle rules to calculate the degrees of angles. **Term 6** • Collecting data (tables, charts and graphs) – Pupils could complete questionnaires and collect data about things they would like to implement that would benefit the school and their peers.

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	• Scatter graphs – Pupils to look at trend and correlations between crime rates and other factors, for example pupils could look at time and number of crimes committed to see if there is a correlation. . **General** • Pupils follow the class rules and understand the consequences for not following the class rules. • Pupils will be expected to follow the rules when playing maths games.
Individual liberty	**Term 1** • Percentages – Pupils look at taxation of their incomes. **Term 2** • Probability - Voting systems – which MP is in which seat – who you can vote for • Mental arithmetic – Pupils will be ensured to calculate the answers to questions without the use of a calculator, this will encourage pupils to take risks and make mistakes so that they can learn from them and build their confidence. **Term 3** • Algebra – Pupils will be given equations with the working out and must determine the mistake. This will encourage pupils to make mistakes and to learn from them. **Term 4** • Sets and Venn Diagrams – Pupils will arrange data referring to freedom of speech, and the right to make choices about our education, food, belief, opinion, work, and family. • Volume and surface area – pupils to make choices based on the volume and surface area of objects. For example which bottle of juice is better value. **Term 5** • Ratio and proportion – Pupils will look at their understanding of making choices through looking at probability to predict outcomes. **Term 6** • Collecting data (tables, charts and graphs) – Pupils will collect class/school data based on individual opinions about education, food, belief, opinion, work and family.

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• Real life graphs – pupils will develop their understanding of journeys that people have chosen to take using time-distance graphs.

General
- Pupils will be allowed to make mistakes and learn from them.
- Pupils will be encouraged to use problem solving skills to take risks and build self-confidence.
- Pupils will be encouraged to devise their own ways to present ideas and solutions.
- Differentiated questions on worksheets and the interactive whiteboard ensure that pupils have choice about their own learning and progress.

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<td>Mutual respect</td>
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Term 1
- FDP – same number but different representations – link to different types of people but all people.
- Percentages – Answer question regarding the percentage of the population.
- Sampling – Pupils will look at how samples are made do that data is representative of the whole population.

Term 2
- Co-ordinates – pupils can work together displaying teamwork and fair play to complete a co-ordinates battleship game, where they use co-ordinates to try and sink each other ships.

Term 3
- Algebra (sequencing, expressions and substitutions) – pupils will check each other calculations and peer assess each other's working out.

Term 4
- Pie Charts – Pupils to look at data involving moral issues, such as smoking/alcohol and the association between ill health through correlations.
- Area and Perimeter – Pupils will be encouraged to build/create their own theme park by following rules and the distance between rides.

Term 5
- Ratio and proportion – pupils will develop their understanding about fair shares and equal chances.

Term 6

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	• Graphs – Pupils to look at data involving moral issues, such as smoking/alcohol and the association between ill health through correlations. **General** • Pupils will have the opportunities to work as part of a team during group work. • Pupils are given opportunities to peer assess each other's work in a respectful and structured way.
Tolerance	**Term 1** Shapes – Pupils to look at patterns/shapes within Islam/Hindu religions. Sampling – Pupils to look at fair samples that are representative of the population. **Term 2** Co-ordinates and midpoint – pupils could look at maps of different countries or finding countries on a world map. Approximations – Pupils could look at the approximations of the different faiths, ethnicities and cultures in the UK. **Term 3** Pie charts – pupils could interpret and draw pie charts based on data from different cultures. **Term 4** Transformations – teaching about a shape changing, link to transgender and people changing. **Term 5** Angles – When measuring and drawing angles you are allowed a tolerance for your angles to vary from the stated degrees. **Term 6** Collecting data (tables, charts, and graphs), Real life graphs and scatter graphs – Pupils to look at data and collect data that is representative of the population. **General** • Pupils code of conduct. Good working relationships in the classroom and around the school that promote effective learning. • Ensuring that behaviour in the classroom demonstrates respect for those with different faiths and beliefs and those with the protected characteristics set out in the Equality duty.

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Maths Medium Term Plans create explicit opportunities for pupils' SMSC education, including Religious Education. Examples include:

SMSC	Scheme of Learning: Lesson Content
Social	**Term 1** • Problem solving – working together – interactive engaging tools – accepting winning and losing. **Term 2** • Mental arithmetic – Pupils will be encouraged to support each other with mental arithmetic problems and participate in team Maths games. **Term 3** • Sequencing - Pupils investigating different number sequences and where they occur in the real world. **Term 4** • Transformation – Pupils work in pairs to solve transformation problems that spell out a word when the correct transformation in preformed. • Volume and surface area – Pupils create a theme park based on specific parameters. **Term 5** • Ratio – Pupils could look at how ratio is used within society for example with health and safety. **Term 6** • Statistics - Analysing social data e.g. on health care, poverty, bullying General • Teamwork - Working in pairs or groups to solve problems.

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	• Personal qualities - Perseverance when struggling to answer questions; not being afraid to try – it's ok to be wrong, it's not ok not to try; taking turns when playing maths games. Participating, co-operating and resolving conflicts: as above, but also 'X thinks ___, Y thinks ___, who is right?' type questions. • Pupils are regularly asked to work in pairs or small groups during experimental or investigative work where they are able to develop both their problem solving and teamwork skills. • Pupils are given many opportunities to discuss their ideas and are encouraged to develop their mathematical reasoning through communication with others. • Through the use of peer- assessment pupils are able to improve their use of language and better understand how to give constructive criticism.
Moral	**Term 1** • Sampling - All pupils are made aware of the fact that the choices they make lead to various consequences. • Fractions - for example, in unequal shares of resources, why might someone be upset if they received less than other people? **Term 2** • Approximations – Pupils can approximate moral issues, for example the amount donated to charities, such as water aid. **Term 3** • Pie charts – Pupils to look compare data represented in pie charts, including data on moral issues such as the amount donated to different charities or the cost of loving crisis. **Term 4** • Area and surface area – Pupils will look at planning a housing estate or a theme park. **Term 5** • Ratios – Pupils to develop an understanding about how amounts can be shared by ratios. This can be linked to moral issues by discussing with winnings from a lottery ticket should be divided equally even if the people paid different amounts to purchase the ticket. **Term 6** • Collecting data - pupils are encouraged to analyse data and consider the implications of misleading or biased statistical calculations.

	• Statistics – Pupils will complete opinion surveys on moral issues, discussion and debate on the use and abuse of statistics in the media. For example: pupils might consider the difference in amounts of money spent on non-essentials compared with food. **General** • Understanding the consequences of actions: E.g. If you perform a particular action to one number, will the same outcome apply to other numbers? Is it always the case? 'Sometimes, always, never' statements.
Spiritual	**Term 1** • Rounding and estimating - Making connections between pupils' numeracy skills and real life. **Term 2** • Probability – Pupils to develop an understanding about luck and how it links to probability, for example winning the lottery. • Algebra - Develops the type of intuitive logic in pupils that equips them to recognise when an argument (e.g. political, religious, social) is valid or nonsensical. • Pi is a number that goes on forever in a non-repeating and unpredictable way. As such, your birthday WILL be in the decimal digits of pi. **Term 3** • Sequencing – Pupils are encouraged to see the sequences, patterns, symmetry and scale both in the manmade and the naturel world. • pie charts - could compare how a child in Africa spends her day with how children in the UK spend their time. **Term 4** • Pi day – link to other special days like Christmas and Easter • Pupils could look at the area and perimeter of places of worship. **Term 5** • Angles - our pupils learn geometrical reasoning through knowledge and application of angle rules. **Term 6** • Scales – Pupils to develop their understanding of both manmade and the natural world. • Data collection, graphs - Making connections between pupils' numeracy skills and real life.

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	General • Use imagination and creativity to explore ideas while learning mathematics by identifying and applying patterns and rules to everyday problem-solving; writing own problems and challenges that use those patterns or rules.
Cultural	**Term 1** • Sampling – Pupils to look at fair samples that are representative of the population. • Problem solving – comes from farming originally. **Term 2** • Four operations – Pupils to develop an understanding of different multiplication methods from Egypt, Russia and China, • Algebra – Pupils develop an understanding that algebra originated in the Middle East **Term 3** • Sequencing – Pupils considering the development of pattern in different cultures including work on tessellations. • Patterns - Pupils discussing the use of mathematics in cultural symbols and patterns. **Term 4** • Transformations – lines of symmetry and reflection – Pupils to discover lines of symmetry on flags and whether a flag has been reflected or not. **Term 5** • Pythagoras' Theorem - Pupils to develop the understanding that Pythagoras originated from Greece. **Term 6** • Scales and bearing – Pupils to look at travel and travelling from one destination to another use a map scale and bearing to navigate. **General** • Understanding and appreciating personal influences: taking into account other people's views and understanding how to express own views. E.g. How to explain to someone where they may have gone wrong in a question. • Allowing discussion on the cultural and historical roots of mathematics

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Related Documents in the Teacher's Subject Folder

- Long Term Plan
- Medium Term Plans
- Subject marking expectations
- Pupil progress data