Beech Academy
Turning 'I can't' into 'I can'

nexus Multi Academy Trust
Learning together to be the best we can be

# Mathematics 5-year Curriculum Plan

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# Our Vision

*"Turning I can't into I can"*

# Our Values


# Curriculum Intent

"At The Beech Academy, we are committed to ensuring that all of our pupils engage in a curriculum that develops **interest, curiosity,** and **creativity**, and **removes barriers**. There is a strong emphasis on developing fundamental skills in **literacy** and **numeracy** alongside developing **conceptual understanding** and **rich knowledge** across a broad range of subjects. The curriculum is enhanced by **high quality experiences** that aim to develop pupils' **cultural capital** and give them first hand experiences that otherwise might not be possible.

Every pupil is recognised as a unique individual and the **curriculum is designed to meet their individual needs**. All of our pupils will develop the skills to become contributing citizens to society and live out our **core values** of, Ambition, Integrity, Inclusivity, Endeavour, and Resilience on a daily basis. Our curriculum will enhance the social mobility chances of all our pupils to ensure they make lasting contributions to society and enable them to turn "I can't" into "I can".

# Curriculum Vision for Mathematics

Our vision for the students at Beech Academy is that they leave numerate, competent in calculation, fluent in their explanation of mathematical ideas, and able to apply use mathematical concepts to solve every-day problems. Thereby given them the skills to navigate the modern world and succeed in their chosen pathway.

For the students to fulfil their mathematical potential they will work towards appropriate qualifications with follow National Curriculum expectations while also exploring the mathematical world. The nature of our students is such that they may not be working at their age-related expectations and our delivery of topics and content reflects this. Furthermore, we recognise that while some learners are able to complete GCSE and Level 1 qualifications others may demonstrate progress in achieving Entry Level Certificates.

We understand the mathematics exists beyond the constrains of assessment criteria and stive to give the students a diverse and rich understanding of the mathematical world, this maybe a deeper understanding of personal finance or a simple reflection on how numbers are used in the real world. We embed this understanding at all stages and abilities allowing all learners to answer the question "Why do I need to know this?"

The learning of mathematics allows for the developing of a range of skills; we encourage problem solving (explicitly though the teaching of Functional Skills but also throughout the Key Stage 3 and 4 curriculum) allowing students to combine different elements of mathematics to solve a problem. Through solving problems, the students also grow in resilience; being able to approach a multi-step problem or one in an unfamiliar context and persevere until an outcome is found.

Mathematics takes the concrete forms such as counting blocks and develops them to represent the abstract, for example numerals on a page. We endeavour to use this method of mathematical communication in our teaching practice using Numicon shapes and representations promoted by WhiteRose. Thereby encourage this process in our learners, creating individuals who understand what the how a calculation works rather than remembering a method.

At Beech Academy, we are committed to ensuring that all of our pupils engage in a curriculum that develops interest, curiosity, and creativity, and removes barriers. We make sure that we turn "I can't" into "I can".

At the end of Year 11 students in Maths will…….

## Know how to…

- Communicate fluently and mathematically; able to use subject specific vocabulary accurately to explain to another how to solve a problem
- Think mathematically; understanding the basic axioms of mathematics, what functions can be performed and how
- Write mathematically; able to express their ideas and calculations in a clear and coherent manner (including with the use of diagrams) to communicate what mathematics has taken place
- Work collaboratively; share ideas and methods with others (using the skills above) to solve unfamiliar problems
- Calculate using the four functions and interpret data; students will be able to calculate within their expected skill level both with and without a calculator and be able to interpret their answer. They will also be able to interpret data and form conclusions
- Apply the skills they have learnt to a range of problems (suitable to their skill level) in a rage of contexts including those in the wider world
- Express and interpret the abstract nature of mathematics

## Understand…

- How to apply mathematics to everyday life (tell the time, measure quantities, increase recipes)
- How to show methods of solving problems in the context of assessment; use recognised method of calculation (at an appropriate level)
- That mathematical calculations are an abstract representation of a real problem and can interpret the answer (rounding, adding units etc)

- How to decompose a problem (including through use of a diagram) to find a method to solve it
- How to seek help and share ideas; rather than say "I'm stuck" be able to articulate which part is tricky and listen to others (including peers) when they offer a solution
- The relevant elements of the curriculum pertinent to their level of study including:
    - Properties of number
    - Calculation
    - Fractions, proportions, and parts of whole (including ratio, decimals and percentages)
    - Time
    - Money
    - Shape (including 2D and 3D representations)
    - Measure (including length, mass and volume)
    - Mathematical movement (including compass directions and coordinates)
    - Data representations and interpretation
    - Probability
    - Algebra (including representing algebra graphically)

## Be able to…

- Solve a range of problems in both familiar and unfamiliar contexts
- Demonstrate resilience in the face of complex problems
- Check work for errors in calculation and interpretation
- Interpret results to for a meaningful conclusion
- Attain a qualification a suitable level to their ability
- Apply mathematical concepts in the wider world to thrive in later life
- Discuss their qualifications and skills with a post-16 provider or employer to determine their future pathway and next steps

| 5 Year Curriculum Plan | Autumn Term | Spring Term | Summer Term |
|---|---|---|---|
| Year 7<br>**Bold – numeracy topics** | **Place value**<br>**Addition and Subtraction**<br>Position and direction<br>Properties of shapes | **Multiplication and division**<br>**Fractions**<br>Money<br>Length and perimeter<br>Area | **Decimals**<br>Statistics<br>Time |
| Year 8 | **Place value**<br>**Addition and subtraction**<br>Properties of shapes<br>Position and direction | **Multiplication and division**<br>**Fractions**<br>Perimeter and area<br>Converting units | **Decimals and percentages** Statistics<br>Volume |
| Year 9 | **Place value**<br>**Calculation**<br>Properties of shapes<br>Position and direction | **Fractions, decimals, and percentages**<br>Ratio<br>Converting units | **Fractions, decimals, and percentages**<br>**Algebra**<br>Statistics<br>Area, perimeter, and volume |
| Year 10<br>Green –Entry Level pathway<br>Black – GCSE pathway | Number and place value<br>Calculations<br>Money<br>Basic Calculations<br>Calculations and accuracy<br>Integers, Powers, and Roots<br>Fractions | Time<br>Fractions and proportion<br>Shape<br>Simplifying and substituting<br>Lines and angles<br>Fractions, decimals, and percentages | Direction<br>Statistics<br>Solving equations<br>Measure<br>Statistical inquiry<br>Sequences and functions |
| Year 11<br>Green –Entry Level pathway<br>Black – GCSE pathway | Basic Calculations<br>Calculations and accuracy<br>Integers, Powers, and Roots<br>Fractions<br>Simplifying and substituting<br>Lines and angles<br>Fractions, decimals, and percentages<br>Solving equations<br>Measure<br>Area and Perimeter, Volume and surface area, Functions and Graphs, Data and interpretation<br>Constructions and Loci | Statistical inquiry<br>Sequences and functions<br>Area and Perimeter<br>Volume and surface area<br>Functions and Graphs<br>Data and interpretation<br>Constructions and Loci<br>Inequalities<br>Transformations<br>Ratio and proportion<br>Probability | Exam revision |

**Ambition** **Integrity** **Inclusivity** **Resilience** **Endeavour**

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# 5 Year Curriculum Plan – the rationale

## Year 7 Maths at Beech Academy

The Beech Academy Year 7 Maths curriculum recognises that the students come from a diverse background with a range of experiences on maths and mathematical education. Many students arrive at Beech working below their age-related expectations in maths, furthermore many are not familiar with working within a structured classroom environment. The aim of this year is to instil good mathematical practices, promote wonder of the world of maths by seeing its presence in the everyday and ensuring that all students have a firm mathematical base on which to build. The curriculum focuses in consolidating primary learning and mathematical fluency, developing a breadth of knowledge where students can explain 'why' and build links between the classroom and real world.

## Year 8 Maths at Beech Academy

The Beech Academy Year 8 Maths curriculum seeks to accelerate the progress made in year 7 and promote the development of age-related expectations. Students continue to explore links with the real world, strengthen basic skills with numeracy lessons and develop a greater understanding of the world of mathematics

## Year 9 Maths at Beech Academy

The Beech Academy Year 9 Maths curriculum exposes students to more complex ideas and abstract levels of mathematics. It introduces students to GCSE level content and aims to raise aspirations by demonstrating that students can achieve in mathematics. Key skills and knowledge are revised and consolidated while also exploring concepts like ratio and algebra.

## Year 10 Maths at Beech Academy

The Beech Academy Year 10 Maths curriculum pathways may diverge depending on the cohort. All students will complete the Entry Level components however some may do so at an accelerated pace and begin GCSE specific content, while others may need to complete the eight components across 2 years.

## Year 11 Maths at Beech Academy

The Beech Academy Year 11 Maths curriculum consolidates and develops the work from the previous year. Students will either work on GCSE content in preparation for the national assessment or continue to build Entry Level skills by completing and improving the necessary components. Students prepare for their Post-16 pathway attaining the necessary qualifications for further study