Mathematics KS4 Policy

The aim of the Mathematics curriculum across all sites within the Raedwald Trust is to ensure that all learners develop their mathematical fluency, are able to reason using this fluency and apply their knowledge to solve a wide range of practical/functional problems.

As an alternative provision, we believe that all students should have the same opportunities that mainstream students would experience so we cater for students working at Entry Level up to the GCSE Higher Tier. Alongside these courses, students will have the opportunity to sit Functional Skills qualifications that will highlight our learners' understanding of transferable practical mathematical knowledge.

Students that work within our sites have all experienced a varied education. Many students have experienced interrupted education both short and long term. A large investment of time is spent reviewing and improving gaps in knowledge.

In addition to consolidating subject content from Key stage 3, the statutory areas that are covered across our curriculum are:
- Number
- Algebra
- Ratio, proportion and rates of change
- Geometry and measures
- Probability
- Statistics

Courses
Due to the wide variety of learners that attend our varied provisions we do not apply a one size fits all model. Many students have missed large gaps in their education and students also join us at various points across the academic year. We have a number of distinctive Programmes of Study that cater for students dependent upon their need, ability and gaps in learning.

Entry Level
We deliver the AQA Entry Level Certificate to students that need to develop and gain confidence within the core strands of mathematics. The specification we use is co-teachable with the GCSE course. The assessments are on demand so students can complete assignments when they are ready which helps to maintain their motivation.

GCSE
All students will follow the 9-1 Edexcel courses. The majority of students will begin the foundation course within Year 10 and work through the following units of work across the two years:

Foundation	Autumn	Spring	Summer
Year 10	-Fractions,Decimals and Percentages -Mensuration -Ratio and proportion -Approximation/estimation	-Algebra part 1 -Graphs of equations/functions -Statistics	-Basic Geometry inc Angles -Number operations -Congruence and similarity -Probability

Year 11	-Algebra part 2 -Indices -Review of mensuration -Review of approximation	-Geometry-Pythagoras theorem/Trigonometry -Review of graphs, statistics and probability	-Loci and Construction *Consolidation of topics through targeted revision programme

For students that arrive in Year 11 a condensed Programme of Study would deliver the following topics across the three terms:

Foundation	Autumn	Spring	Summer
Year 11	-Fractions, Decimals and Percentages -Mensuration -Ratio and proportion -Approximation/estimation	-Algebra part 1 and 2 -Indices -Graphs of equations/functions -Statistics	-Geometry including Pythagoras/Trigonometry -Congruence and similarity -Probability *Consolidation of topics through targeted revision programme

Students performing at or above GCSE Grade 5 on arrival will be given a bespoke offer which will allow them to reach grades 6, 7, 8 and 9. This will be achieved through additional 1-2-1 sessions and targeted resources. A distinct Higher Programme of Study has been created to allow students to achieve the higher tiered grades.

Higher	Autumn	Spring	Summer
Year 10	-Fractions, Decimals and Percentages -Mensuration extended -Ratio and proportion -Surds -Statistics	-Algebra inc solving, factorising, simultaneous and quadratics -Indices -Probability	-Graphs of equations/functions - Geometry inc Pythagoras' theorem and Trigonometry - Data presentation including cumulative and Histograms
Year 11	-Further algebra -Extended Trigonometry -Growth and decay -Direct and inverse proportion	-Vectors -Graphs -Functions -Iterations -Geometry inc Circle theorems	-Gradients and rates of change *Consolidation of topics through targeted revision programme

*Although the Higher paper is demanding on time and coverage it is achievable through small group teaching and additional sessions provided.

The above course outlines are based on students attending a full-time offer and will be made bespoke for pupils that have interim part time timetables or have joined at different points across the year.

Topics are revisited at the start of lessons that review and recap knowledge from last lesson, last week and last month. We use this format to allow us to improve retention of key knowledge. We also ensure that lessons place a high emphasis on fractions, decimals, percentages and ratio as these topics are fundamental topics that are tested within many other topic areas.
Functional Skills

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All KS4 Raedwald Trust schools run Functional skills qualifications which run alongside the GCSE course. The qualification compliments the topics taught within the GCSE and allow students to relate Mathematics to real life contexts. Functional Skills cover the following areas:

- Number
- Measure, shape and space
- Handling information and data

Students have the opportunity to achieve Level 1 and 2 qualifications. Students can sit the Functional Skills examinations at four points of the year and will only sit the exam when they are ready. The Functional Skills qualifications are recognised by employers and post-16 providers.

Assessment in Mathematics

We assess pupils for three key reasons:

a. To find out what they do and do not know so that we can plan next steps in their learning journey.
b. To understand their patterns of progress.
c. To make judgements about their progress towards key markers in their education.

Ultimately, good assessment will add value to pupil outcomes by helping teachers and leaders to understand what is having good impact and what needs to be refined or addressed for individual pupils.

We use subject specific moderated assessments to baseline student understanding against standardised GCSE/Functional Skills /Entry level assessments. We use this information to capture what the students know within each subject and most importantly any gaps in their knowledge. We use this information to inform future planning to ensure students make progress within each subject.

Assessment is ongoing and individual teachers record current working grades at the end of each half term. Using subject specific moderated assessments, subject teachers assess all students by using GCSE, Functional Skills and Entry Level questions. The assessments mirror the level of challenge that they will face when they reach their final examinations. We discuss current attainment with students in relation to their acquisition and mastery of skills as well as GCSE/Functional skills Level. At each stage we look at gaps in learning and adapt lessons to improve these areas.

Mathematics and the wider curriculum

Cultural Capital

Within the Trust we believe that it is important for all students to develop cultural skills, knowledge and behaviours that will allow them to thrive in society and the world of work. The Mathematics curriculum sets out to develop our learners' cultural capital to make them ready for their next stage in their lives. This is achieved in many ways including teaching students real life skills related to reading timetables, budgeting, finance, recipes, speed/distance, etc.

SMSC

Mathematics enables students to make sense of the world around them and we strive to enable each of our students to explore the connections between their numeracy skills and every-day life.Students are provided with opportunities to use their maths skills within real life contexts, applying and exploring the skills required in solving various problems.

Problem solving skills and teamwork are fundamental to mathematics through creative thinking, discussion, explaining and presenting ideas. Students are always encouraged to explain their understanding to each other and support each other in their learning. Through teamwork, students are able to gain confidence which should lead to them becoming independent learners.

Within the curriculum we look at various approaches to Mathematics from around the world and use this to discuss their origins. This includes different multiplication methods from around the world and also the origins of Pythagoras' theorem. We try to develop an awareness of both the history of maths alongside the realisation that many topics we still learn today have travelled across the world and are used internationally.

British values

The Mathematics curriculum promotes the British values of tolerance and resilience each lesson through problem solving and understanding of complex concepts. Students are encouraged to learn from mistakes and are supported to improve their understanding. Within the statistics modules students are encouraged to evaluate data and look for bias.

Careers

Within lessons pathways for future study of STEAM subjects is promoted. When looking at topics students are encouraged to see how these might be used in the real world and within vocational contexts. Lessons are linked to developing vocational and functional understanding of IT, Construction, Cooking, Sport, Science, Transport planning, Finance, etc. Staff will make every attempt to link mathematics into the vocational interests of individual students.

Reading

Every opportunity is taken within the classroom to allow students to develop their reading. Many forms of text are actively shared with students to prepare them for independence within society including reading menus, timetables, recipes, advertisements, construction plans, etc.

Students are actively encouraged to read and are supported to understand key words. Shared reading and choral reading often occurs when looking at texts as a class.

Staff explicitly teach the meaning of command words to aid students' understanding of mathematical questions. Within lessons staff promote high standards of literacy, articulacy and the correct use of standard English. Displays engage students to support them with the understanding of key command words.