Y11H ROADMAP - Mathematics

Subject Aim: The Year 11 Higher Maths curriculum aims to deepen students' understanding of advanced mathematical concepts required for success at GCSE Higher level. It focuses on developing fluency, reasoning, and problem-solving skills through personalised practice tailored to individual needs. The curriculum encourages application of maths in both real-life and abstract contexts, preparing students thoroughly for their exams and further study.

TERM 1

Can algebra be used to calculate area?

Students open the term by sharpening their surd skills—simplifying radical expressions and rationalising denominators—before moving on to algebraic fractions, where they practise simplifying, adding, subtracting, multiplying, and dividing with growing confidence. In the equations unit they revisit quadratic methods such as factorising and completing the square, then advance to simultaneous equations, including systems containing quadratic components. Together these topics deepen algebraic fluency and equip students for the multi-step problems they will meet in their GCSE exams.

TERM 2

How is trigonometry used to build cities?

In these units, students revisit their Year 10 work on Pythagoras, trigonometry, and surds, extending it to include exact trigonometric values, graphs of the sine, cosine, and tangent functions, and non-right-angled trigonometry—including applications of Pythagoras and trigonometry in 3-D shapes. Building on prior knowledge of circle geometry and angle rules, Higher-tier learners are introduced to the full set of circle theorems and their proofs. The term finishes with histograms, completing students' GCSE coverage of statistical diagrams.

TERM 3

Can a mathematician predict the future?

Students begin by revisiting tables and Venn diagrams before expanding their understanding of probability through tree diagrams, with a focus on conditional probability for Higher tier students. They then explore inequalities, learning to represent solutions graphically and solve quadratic inequalities. Next, formal function notation is introduced alongside a review of substitution and formula rearrangement. The unit concludes by combining previous knowledge of function notation, trigonometric graphs, and transformations to study how graphs change through shifts, stretches, and reflections.

TERM 4

How do vectors represent direction?

Students build on their knowledge of substitution and rearranging formulae to solve equations using iteration. They further develop algebraic reasoning by tackling more complex problems and exploring formal algebraic proof. Drawing on prior experience with enlargement and similarity, students study the perimeter, area, and volume of similar shapes. Their understanding of vectors is also extended to include geometric applications and proofs.

TERM 5

Can you respond to feedback to make progress?

Higher-tier students deepen their understanding of gradients by examining instantaneous rates of change, exploring the gradient of a curve at a point. They investigate areas under curves and derive equations of tangents and circles. As exams approach, students are encouraged to work independently and seek help proactively. They will receive regular feedback and opportunities to practise exam questions and papers, culminating in their first GCSE paper before the end of term.

TERM 6

Can you respond to feedback to make progress?

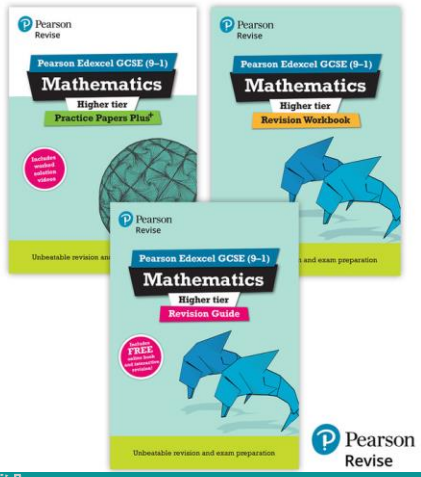
Students will continue to revise and practise exam-style problems, preparing thoroughly before sitting the remaining GCSE papers.

ASSESSMENT

All lessons will assess understanding through a range of activities, including diagnostic questions, mini whiteboard tasks, and find-and-fix activities. Lessons are regularly punctuated with hinge questions, key statements, and opportunities for discussion. PPE exams will take place in November and February.

INDEPENDENT LEARNING

Knowledge Organisers are expected to be used weekly to support the learning and recap of key vocabulary as the course progresses.
Sparx Maths will be used as an online resource to aid independent learning.
Recommended revision guides are below.



ENRICHMENT

- Maths challenge activities.
- Maths' relays allowing opportunity for problem solving.
- Term 5 well-being and revision trip to Playzone Lincoln

What Next? You should work independently to address gaps identified by your teacher while completing revision activities during lessons. This may include using practice papers, Sparx Maths, and Question Level Analyses (QLAs) to support your learning.

North Kesteven Academy
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