Subject: Mathematics

Year 10 Higher

OVERVIEW

Students study topics in each of the five key strands in mathematics: Number, Algebra, Geometry, Ratio & Proportion and Statistics & Probability. Each strand builds on their prior learning from Years 7, 8, and 9.

We focus on developing knowledge and skills in each of the five strands which students will then build on to solve problems and reason mathematically.

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Unit 1: Rearranging – one step rearranging, multi step rearranging, rearranging with fractions, with negative unknowns and with unknowns on both sides

Unit 2: Linear Graphs – coordinates, midpoint, horizontal and vertical lines, drawing straight line graphs, real life graphs

Unit 3: Gradient and y-intercept – identifying gradients and y-intercepts, finding the equation from a graph, finding the equation from gradient and coordinates, parallel and perpendicular lines

Unit 4: Compound Measures – calculating speed distance and time, calculating average speed, distance time graphs, calculating density mass and volume, calculating force pressure and area

Unit 5: Quadratic graphs – drawing quadratics, identifying roots solutions and turning points, finding roots, lines of symmetry, finding turning points

Unit 6: Further algebra – expanding triple brackets, factorizing quadratics with a coefficient greater than 1, solving algebraic fractions, four operations with algebraic fractions, completing the square

Unit 7: Linear simultaneous equations – solving linear simultaneous equations with elimination and substitution method, solving linear simultaneous equations graphically

Unit 8: Further graphs - plotting cubic, reciprocal and exponential graphs, proportion graphs, circle graphs

Assessment:

Students will be informally assessed every lesson using questioning, mini whiteboards and marking of independent work.

There will be 4 end of unit assessments during this term after every other unit.

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Unit 9: Probability – probability scale, listing, single event probability, relative frequency, expected outcomes, frequency trees, sample space, Venn diagrams, tree diagrams, capture recapture

Unit 10: Standard form – writing numbers in standard form, four operations with standard form

Unit 11: Further proportion – linear and non-linear direct proportion, linear and non-linear inverse proportion, proportion tables, complex further proportion

Unit 12: Growth and decay – simple interest, compound interest, comparing compound and simple interest, depreciation, exponential growth and decay

Unit 13: Further ratio – equivalent ratio, ratios to fractions, sharing in a given ratio, combining ratios, splitting ratios, problem solving with ratio

Unit 14: Recurring decimals – recurring decimals to fractions, calculations with recurring decimals

Assessment:

Mid Year assessments will take place in January.

Students will be informally assessed every lesson using questioning, mini whiteboards and marking of independent work.

There will be 4 end of unit assessments during this term after every other unit.

Sum

Unit 15: Statistics - types of data, sampling, mode median and range, mean, problem solving with mean, combining mean, comparing averages, averages and range from a frequency table, mean from a frequency table, mean from a grouped frequency table, pie charts, scatter graphs, frequency polygon

Unit 16: Surds – simplifying, four operations with surds, expanding and simplifying, rationalising with a single surd, rationalising with an expression, perimeter and area

Unit 17: Bounds – finding upper and lower bounds, calculations with bounds, suitable degree of accuracy

Unit 18: Right angled trigonometry – labelling sides, finding missing side lengths, finding missing angles isosceles triangles, exact trigonometric values

Unit 19: Similar shapes – finding missing lengths, area of similar shapes, volume of similar solids

Unit 20: Quadratic sequences - finding terms, finding the nth term

Unit 21: Plans and elevations – plans and elevations of 3D shapes, sketching 3D shapes from plans and elevations

Unit 22: Constructions and loci – perpendicular bisectors, angle bisectors, constructing triangles and parallelograms, loci lines, loci regions

Assessment:

Students will be informally assessed every lesson using questioning, mini whiteboards and marking of independent work.

There will be 4 end of unit assessments during this term.

End of Year assessments will take place in June.

Useful resources for supporting your child at home:

Videos on Sparx (www.sparxmaths.uk)

Videos on Corbett Maths (Videos and Worksheets – Corbettmaths)

CGP GCSE Maths Edexcel Revision Guide (link here)

REVISE Pearson Edexcel GCSE (9-1) Mathematics (link here)

Homework:

Homework will be set on Sparx (www.sparxmaths.uk).

Homework will be set once a week and students are expected to complete 100% of their homework each week. Homework is bespoke for all students depending on their performance in previous weeks.