CURRICULUM AND ASSESSMENT PLAN

ORMISTON FORGE ACADEMY

MATHEMATICS

YEAR 10 FOUNDATION

CURRICULUM INTENT

The curriculum and assessment of students at this stage of education has been carefully designed to promote deep learning of mathematics and develop students into analytical and logical problem solvers.
Students in Year 10 will strengthen and consolidate their knowledge of number, ratio and proportion, algebra, geometry, and data. They will use and apply their understanding of the Big Ideas of mathematics which have been developed to improve the students' ability to retain information, develop their mathematical skills and apply their knowledge using a consistent range of methods and techniques. Students will be taught to link and interconnect the Big Ideas in a fluent way thus becoming familiar with them. The curriculum will ensure that students are able to solve multi-step problems and will ensure that all students have access to appropriate challenge. In addition to this, we aim to broaden students' perception of mathematics by providing the opportunity to explore how the skills they are developing can be used in real life situations. We believe that this exposure to the application of mathematics, in addition to their learning, will inspire them to be our next generation of mathematicians.

PRIOR LEARNING	We have carefully designed the curriculum so that students will review the topics taught during Year 9 with interleaving to support the recall and retention of previously learned content..
PERSONAL DEVELOPMENT & CURRICULUM LINKS	There are opportunities for links with science, technology, geography and PE. Consistent methods will be used across all departments to support students' understanding of mathematics.
EXTRA-CURRICULAR & CULTURAL CAPITAL	AMSP will be running support sessions, trips and competitions to widen student understanding of mathematics, particularly with real life scenarios and context. In addition to this, other trips and competitions will be run with a key focus on careers and potential jobs that involve mathematics. Homework support will be available from September. The aims of these are to support students with resources and projects that would normally be unavailable to them.

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
TOPIC/KNOWLEDGE	**NUMBER and ALGEBRA** **All students will know:** Calculations with integers Powers and roots Rounding and estimation Index laws HCF & LCM Product of primes Order of operations Standard form Simplifying algebraic expressions Expanding single brackets Factorising algebraic expressions	**NUMBER and SHAPE** **All students will know:** Percentages; percentage change, reverse percentages, interest and depreciation Properties of 2D and 3D shapes Metric conversion Perimeter and Area of 2D shapes Calculations with decimals Recognise sequences Continue sequences Finding and using the nth term Solving equations	**RATIO and GEOMETRY** **All students will know:** How to plot linear graphs How to share an amount in a ratio How to solve ratio problems; one part given and difference given Combining ratios Using ratio and proportion in real life contexts; best value, recipes and exchange rates Angles around a point Angles that meet at a point on a straight line Angles in triangles and quadrilaterals	**GEOMETRY, SHAPE AND NUMBER** **All students will know:** Internal and external angles of polygons Problem solving with angles Volume of Cuboids and Prisms Surface area of 3D shapes Convert metric 2D and 3D units of area and volume Equivalent fractions Calculations with fractions	**PROBABILITY, GRAPHS AND DATA** **All students will know:** Pie charts Compound measures Drawing and interpreting travel graphs Calculating basic probability	**PROBABILITY AND DATA** **All students will know:** Calculating averages from a list and a table Representing data Calculating probability Frequency tree diagrams Venn diagrams
SKILLS	Problem solving, written and verbal communication, logical and accurate thinking and solutions. Application of topics to geometric and contextual problems.	Problem solving, written and verbal communication, logical and accurate thinking and solutions. Application of topics to geometric and contextual problems.	Problem solving, written and verbal communication, logical and accurate thinking and solutions. Application of topics to geometric and contextual problems.	Problem solving, written and verbal communication, logical and accurate thinking and solutions. Application of topics to geometric and contextual problems.	Problem solving, analysis of data, written and verbal communication, logical and accurate thinking and solutions. Application of topics to contextual problems.	Problem solving, analysis of data, written and verbal communication, logical and accurate thinking and solutions. Application of topics to contextual problems.
ASSESSMENT	Students will complete low stake fluency tests regularly to check retention and understanding of topics taught. Gaps identified will be addressed in lesson and through the use of homework set on Sparx Maths. Students will also sit a formal GCSE style assessment, which focusses on all the content from half term 1.	Students will complete low stake fluency tests regularly to check retention and understanding of topics taught. Gaps identified will be addressed in lesson and through the use of homework set on Sparx Maths.	Students will complete low stake fluency tests regularly to check retention and understanding of topics taught. Gaps identified will be addressed in lesson and through the use of homework set on Sparx Maths. Students will also sit a formal GCSE style assessment, that focusses on all the content from half term 1, 2 and 3.	Students will complete low stake fluency tests regularly to check retention and understanding of topics taught. Gaps identified will be addressed in lesson and through the use of homework set on Sparx Maths.	Students will complete low stake fluency tests regularly to check retention and understanding of topics taught. Gaps identified will be addressed in lesson and through the use of homework set on Sparx Maths.	Students will complete low stake fluency tests regularly to check retention and understanding of topics taught. Gaps identified will be addressed in lesson and through the use of homework set on Sparx Maths. Students will sit a mock GCSE at the end of the half term which will consist of 3 GCSE papers. This will be used to support gap closure and intervention moving into Year 11.
VOCAB	Grid method, factorise, expand, place value table, factor, multiple, prime number, integer, estimate, order of operations, simplifying, HCF, LCM, balance method, simplify, substitute, solve.	Increase, decrease, compound interest, depreciation, faces, edges, vertices, metric, area, perimeter, sequence, solve, equation.	Rearrange, acute, obtuse, reflex, parallel, kite, trapezium, gradient, y intercept, axis, coordinates, horizontal, vertical, straight lines, around a point.	Polygons, exterior, interior, Pythagoras, rearrange, solve, equivalent, volume, surface area, area, dimensions, length.	Pie charts, speed, distance, time, mass, volume, density, probability, equally likely events, predicted.	Sample space, independent, dependent, probability conditional, tree diagrams, sample space outcome, theoretical, experimental, relative frequency, fair, biased, stem and leaf diagram, mean, median, mode, range.

READING SKILLS

Decoding, fluency, vocabulary, prior knowledge and summarising will all be necessary for this year.

CAREERS LINKS

Acoustic specialist, actuary, chartered accountant, cryptographer, data scientist, economist, investment analyst, mathematician, medical statistician, meteorologist, operations research analyst, research scientist, risk management officer, software engineer, statistician, teacher or lecturer, technician

SUPPORTING STUDENTS AT HOME

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CURRICULUM AND ASSESSMENT PLAN

ORMISTON FORGE ACADEMY

MATHEMATICS

YEAR 10
HIGHER

CURRICULUM INTENT

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	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
TOPIC/KNOWLEDGE	**NUMBER and ALGEBRA** **All students will know:** Calculations with integers Powers and roots Rounding and estimation Index laws Standard form Simplifying algebraic expressions Expanding single brackets Factorising algebraic expressions Upper and lower bounds Surds Solving quadratic equations	**NUMBER and GRAPHS** **All students will know:** Percentages; percentage change, reverse percentages, interest and depreciation Recognise sequences Continue sequences Finding and using the nth term Quadratic graphs Parallel and perpendicular lines HCF & LCM Product of primes Rational numbers Recurring decimals	**RATIO and GEOMETRY** **All students will know:** Rearranging formulae Solving equations Angles in parallel lines Bearings Divide a quantity in a given ratio Simplifying ratio Ratio and fractions Best buy Direct proportion problems Inverse proportion	**GEOMETRY AND SHAPE** **All students will know:** Internal and external angles of polygons Problem solving with angles Applying Pythagoras' theorem Volume of Cuboids and Prisms Surface area of 3D shapes Convert metric 2D and 3D units of area and volume Equivalent fractions Calculations with algebraic fractions	**PROBABILITY, GRAPHS AND DATA** **All students will know:** Trigonometry Calculating averages from a list and a table Representing data Calculating basic probability	**PROBABILITY AND DATA** **All students will know:** Calculating probability of combined events Venn diagrams Compound measures Real life graphs
SKILLS	Problem solving, written and verbal communication, logical and accurate thinking and solutions. Application of topics to geometric and contextual problems.	Problem solving, written and verbal communication, logical and accurate thinking and solutions. Application of topics to geometric and contextual problems.	Problem solving, written and verbal communication, logical and accurate thinking and solutions. Application of topics to geometric and contextual problems.	Problem solving, written and verbal communication, logical and accurate thinking and solutions. Application of topics to geometric and contextual problems.	Problem solving, analysis of data, written and verbal communication, logical and accurate thinking and solutions. Application of topics to contextual problems.	Problem solving, analysis of data, written and verbal communication, logical and accurate thinking and solutions. Application of topics to contextual problems.
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VOCAB	Grid method, factorise, expand, place value table, factor, multiple, integer, estimate, order of operations, simplifying, balance method, simplify, substitute, solve, quadratic, equation, surds	Increase, decrease, compound interest, depreciation, linear, parallel, perpendicular, HCF, LCM, rational, recurring, sequence.	Rearrange, solving, equation, balance method, acute, obtuse, reflex, parallel, bearings, best buy, inverse, simplify.	Polygons, exterior, interior, Pythagoras, rearrange, solve, equivalent, volume, surface area, area, dimensions, length, equivalent, metric.	Sample space, independent, dependent, probability conditional, tree diagrams, sample space outcome, theoretical, experimental, relative frequency, fair, biased, stem and leaf diagram, mean, median, mode, range.	Speed, distance, time, mass, volume, density, probability, equally likely events, predicted.

READING SKILLS

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CURRICULUM AND ASSESSMENT PLAN

ORMISTON FORGE ACADEMY

MATHEMATICS

YEAR 11
FOUNDATION

CURRICULUM INTENT

The curriculum and assessment of students at this stage of education has been carefully designed to promote deep learning of mathematics and develop students into analytical and logical problem solvers: Year 11 students will strengthen their knowledge and understanding of the Big Ideas and will start to prepare for their GCSE exams. We have chosen Pearson Edexcel as our exam board; a key element of student learning in Year 11 is how to interpret GCSE questions and how to apply their understanding of the Big Ideas to these questions. Big Ideas have been developed to improve the student's ability to retain information and knowledge. We also aim for fluency in the language of mathematics and for students to enhance their literacy skills when explaining their understanding of mathematics.

PRIOR LEARNING	Year 11 will build on the knowledge, skills and understanding of mathematical concepts learned during Years 9 and 10. Foundation tier students in Year 11 will become more confident when applying this understanding to a range of challenges including multistep questions. Higher tier students will continue to develop a wider and deeper knowledge of topics, and a greater number of mathematical skills and procedures
PERSONAL DEVELOPMENT & CURRICULUM LINKS	There are opportunities for links with science, technology, geography and PE. Consistent methods will be used across all departments to support students' understanding of mathematics.
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	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1 & 2
TOPIC/KNOWLEDGE	**GEOMETRY AND ALGEBRA** **All students will know:** Simplify expressions Substitution Expand and factorise Represent inequalities Solve inequalities Basic angle facts Bearings Reflecting shapes Vertical and horizontal graphs Rounding Estimation Bounds Rotating shapes Enlarging shape	**GEOMETRY AND ALGEBRA** **All students will know:** Plans and elevations Translate shapes Use vector notation Plot linear graphs Plot quadratic graphs Factorise and solve quadratics	**GEOMETRY AND ALGEBRA** **All students will know:** Pythagoras' theorem Trigonometry Solving equations Simultaneous equations Perpendicular bisector Angle bisector	**EXAM PREPARATION AND REVISION** **Students will undertake a bespoke exam preparation and revision plan based upon each classes assessment results.**	**REVISION** **Students will undertake a bespoke exam preparation and revision plan based upon each classes assessment results.**
SKILLS	Problem solving, written and verbal communication, logical and accurate thinking and solutions. Application of topics to geometric and contextual problems.	Problem solving, written and verbal communication, logical and accurate thinking and solutions. Application of topics to geometric and contextual problems.	Problem solving, written and verbal communication, logical and accurate thinking and solutions. Application of topics to geometric and contextual problems.	Problem solving, written and verbal communication, logical and accurate thinking and solutions. Application of topics to geometric and contextual problems. Understanding of command words used in examinations to support the development of examination technique.	Problem solving, written and verbal communication, logical and accurate thinking and solutions. Application of topics to geometric and contextual problems. Understanding of command words used in examinations to support the development of examination technique.
ASSESSMENT	Students will complete a low stake GCSE practice paper every two weeks. Gaps identified will be addressed in lesson and through the use of homework set on Sparx Maths.	Students will complete a low stake GCSE practice paper every two weeks. Gaps identified will be addressed in lesson and through the use of homework set on Sparx Maths. Students will sit a GCSE assessment at the beginning of the half term. This will be used to support gap closure and intervention as we progress through the year.	Students will complete a low stake GCSE practice paper every two weeks. Gaps identified will be addressed in lesson and through the use of homework set on Sparx Maths. Students will sit a mock GCSE at the end of the half term which will consist of 3 GCSE papers. This will be used to support gap closure and intervention moving into the next half term	Students will complete a low stake GCSE practice paper every two weeks. Gaps identified will be addressed in lesson and through the use of homework set on Sparx Maths.	Students will complete a low stake GCSE practice paper every two weeks. Gaps identified will be addressed in lesson and through the use of homework set on Sparx Maths. External assessment
VOCAB	Simplify, expression, substitute, expand, factorise, inequalities, solve, estimation, rotation, enlargement, vertical, horizontal, reflection.	Plan, elevation, face, translate, vector, linear, equation, quadratic, factorise.	Solve, simultaneous, perpendicular, bisect, trigonometry, Pythagoras, Hypotenuse, Adjacent, Opposite, Sine, Cosine, Tangent	Grid method, factorise, expand, place value table, factor, multiple, integer, estimate, order of operations, simplifying, balance method, simplify, substitute, solve, quadratic, equation, Increase, decrease, compound interest, depreciation, linear, parallel, perpendicular, HCF, LCM, sequence, Rearrange, solving, equation, balance method, acute, obtuse, reflex, parallel, bearings, best buy, inverse, simplify.	

READING SKILLS

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MATHEMATICS YEAR 11 HIGHER

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	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1 & 2
TOPIC/KNOWLEDGE	**ALGEBRA AND DATA** **All students will know:** Simultaneous equations Iteration Functions Cumulative frequency graphs Box plots	**DATA, GEOMETRY AND ALGEBRA** **All students will know:** Histograms Parts of circles Circle theorems Completing the square	**ALGEBRA AND GEOMETRY** **All students will know:** Solving linear inequalities Graphical inequalities Pythagoras' theorem in 3D Similar shapes	**GEOMETRY** **All students will know:** Vector geometry Transformations Construction Loci Solving any triangle Trigonometry in 3D	**REVISION** **Students will undertake a bespoke exam preparation and revision plan based upon each classes assessment results.** .
SKILLS	Problem solving, written and verbal communication, analysis of data, logical and accurate thinking and solutions. Application of topics to geometric and contextual problems.	Problem solving, written and verbal communication, analysis of data, logical and accurate thinking and solutions. Application of topics to geometric and contextual problems.	Problem solving, written and verbal communication, logical and accurate thinking and solutions. Application of topics to geometric and contextual problems.	Problem solving, written and verbal communication, logical and accurate thinking and solutions. Application of topics to geometric and contextual problems.	Problem solving, written and verbal communication, logical and accurate thinking and solutions. Application of topics to geometric and contextual problems. Understanding of command words used in examinations to support the development of examination technique.
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VOCAB	Solve, equations, simultaneous, cumulative, iteration, function, substitute.	Cumulative, histogram, Radius, Circumference, Diameter, sector, chord, tangent.	Solve, inequalities, Pythagoras, similar,	Reflection, enlargement, translation, rotation, describe, vector, perpendicular, bisect, loci, trigonometry	Grid method, factorise, expand, place value table, factor, multiple, integer, estimate, order of operations, simplifying, balance method, simplify, substitute, solve, quadratic, equation, Increase, decrease, compound interest, depreciation, linear, parallel, perpendicular, HCF, LCM, sequence, rearrange, solving.

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