The Maths Curriculum at Jewellery Quarter Academy

Head of Department: Mr R Lally

Contact: rlally@jewelleryquarter.academy

Key Stage 4 Qualifications and Examination Boards:

Edexcel GCSE Mathematics Higher 1MA1/H

Edexcel GCSE Mathematics Foundation 1MA1/F

Useful Websites and Links:

www.mathsgenie.co.uk

www.corbettmaths.co.uk

www.bb.co.uk/bitesize

Year 7 Curriculum Plan

Autumn 1 Addition and subtraction	Autumn 2 Multiplication and division	Spring 1 Geometry	Spring 2 Fractions	Summer 1 Applications of algebra	Summer 2 Percentages and Statistics
All should be confident and competent with year 6 and 7 material. Review of these prerequisites may be useful for each unit:					
• Number bonds • Convert units • Money + / - • Measurement	• Mental strategies • Multiplication facts • Multiplication strategies • Solve number problems	• Lengths and units • Parallel and perpendicular • Work with angles • Division and the mean	• Equal parts • Factors and multiples • Tenths and hundredths • Word problems • Fractional areas	• Areas of rectangles and triangles • Number patterns • Algebraic notation • Triangle and quadrilateral properties	• Decimals and problem solving • Fraction of shapes • Equivalence • Order of operations
All will have to access to this specific content:					
• ***Place value (including decimals)*** • ***Add and subtract (including decimals)*** • ***Estimation*** • ***Perimeter*** • ***Word problems***	• ***Factors, HCF, multiples, LCM*** • ***Multiply and divide (including decimals)*** • ***Area of rectangle and triangle*** • ***Calculate the mean***	• ***Draw, measure and name acute, obtuse and reflex angles*** • ***Find unknown angles (straight lines, at a point, vertically opposite)*** • ***Properties of triangles and quadrilaterals***	• ***Equivalent fractions*** • ***Compare and order fractions and decimals*** • ***Change mixed to improper fractions and vice versa*** • ***Fraction of a quantity*** • ***Multiply and divide fractions***	• ***Order of operations*** • ***Substitution*** • ***Simplify algebraic expressions*** • ***Solve word problems with expressions*** • ***Sequences (term-to-term, not nth term)***	• ***Construct and interpret statistical diagrams including pie charts*** • ***Convert between percentages, vulgar fractions and decimals*** • ***Percentages of a quantity*** • ***Find the whole, given the part and the percentage***
The high attaining students maybe stretched through depth of the following topics:					
• Different counting systems • Upper and lower bounds	• Shikaku puzzles • Alternative methods of multiplication • Reverse mean	• Tessellating triangles and quadrilaterals • Tangram investigations • Rigid shapes	• Terminating and recurring decimals • Fractions of tangrams • Shape block challenge	• Four fours • Patterns and generalising • Algebraic mean questions	• Comparing and converting between representations • Applications of percentages

Year 8 Curriculum Plan

Autumn 1 Number	Autumn 2 Algebraic expressions	Spring 1 2-D geometry	Spring 2 Proportional reasoning	Summer 1 3-D geometry	Summer 2 Statistics
All should be confident and competent with year 6 and 7 material. Review of these prerequisites may be useful for each unit:					
• Factors, multiples and primes. • Multiplication and division. • Fraction equivalence and calculations.	• Problem solving with fractions. • Order of operation. • Form algebraic expressions. • Substitution.	• Angle types. • Angle facts. • Rectangle and triangle area. • × / ÷ by powers of 10. • Problem solving with negative numbers.	• Rounding. • Fraction × / ÷. • FDP equivalence.	• Rectilinear areas • Fraction + / -. • Problem solving with fractions. • Percentage increase and decrease. • Substitution with negatives.	• Statistical diagrams. • Ratio and rate. • The mean. • Calculator skills and rounding.
All will have to access to this specific content:					
• **Primes and indices.** • **Prime factorisation to find LCM, HCF, squares, cubes.** • **Venn diagrams.** • **Enumerating sets.** • **Add and subtract fractions.**	• **Negative numbers and inequality statements.** • **Formulate and evaluate expressions.** • **Linear equations.** • **Expressions and equations from real-world situations.** • **Linear sequences: nth term.**	• **Draw accurate triangles and quadrilaterals (ruler, protractor, compasses).** • **Find unknown angles (including parallel lines).** • **Conversion between length units and area units.** • **Area and perimeter of composite figures.** • **Areas of parallelograms and trapeziums.**	• **Convert between percentages, vulgar fractions and decimals.** • **Percentage increase and decrease, finding the whole given the part and the percentage.** • **Ratio (equivalent of a quantity) and rate.** **Speed, distance and time.**	• **Rounding, significant figures and estimation.** • **Circumference and area of a circle.** • **Visualise and identify 3-D shapes and their nets.** • **Volume of cuboid, prism, cylinder and composite solids.**	• **Collect and organise data.** • **Interpret and compare statistical representations.** • **Mean, median and mode averages.** • **The range and outlier.**
The high attaining students maybe stretched through depth of the following topics:					
• Egyptian fractions. • Continued fractions. • HCF and LCM generalisation.	• Explore non-linear sequences. • T-totals.	• Similarity and ratio. • Complex constructions. • Simple angle proofs.	• Density. • Area scale factors. • Loan repayment.	• Platonic solids. • Percentage errors. • Plans and elevations.	• Misleading graphs. • Equal width histograms. • Sampling methods.

Year 9 Curriculum Plan

Autumn 1 Graphs and proportion	Autumn 2 Algebraic expressions	Spring 1 2-D geometry	Spring 2 Equations and inequalities	Summer 1 Geometry	Summer 2 Statistics
All should be confident and competent with year 7 and 8 materials. Review of these prerequisites may be useful for each unit:					
• Read scales. • Linear equations. • Proportion. • Percentage increase and decrease	• Make expressions. • Expressions and area. • Substitution. • Powers and roots. • Problem solving with a calculator.	• Area and circumference. • Angles on a line and in triangles. • Angles in parallel lines. • Pie charts.	• Linear graphs. • Sequences. • Manipulate formulae. • Problem solving with algebra.	• Compound areas. • FDP conversion. • Averages and the range. • Approximation and significant figures.	• Venn diagrams and two-way tables. • Powers of 10 and standard form. • Number problems with fractions and decimals.
All will have to access to this specific content:					
• **Cartesian coordinates.** • **Linear graphs.** • **Direct and inverse proportion.** • **Calculate with scales.** • **Standard form.**	• **Sequences including arithmetic and geometric.** • **Algebraic manipulation.** • **Change the subject of a formula.** • **Expansion.** • **Factorisation.**	• **Construction and loci.** • **Triangles and quadrilaterals (angles on diagonals).** • **Congruence and similarity.** • **Angles in polygons.**	• **Construct and solve equations and inequalities.** • **Graphical solutions to simultaneous linear equations.** • **Quadratic and other graphs.**	• **Pythagoras theorem.** • **Exploring trigonometry with a 30-60-90 triangle.** • **Transformations (translation, rotation, reflection).** • **Use known angle and shape facts to obtain simple proofs.**	• **Probability** • **Mean of grouped data.** • **Compare two set of data.** • **Stem-and-leaf diagrams.** • **Scatter graphs.**
The high attaining students maybe stretched through depth of the following topics:					
• 3-D coordinates. • Explore linear and non-linear graphs.	• Algebraic proof.	• Geometric proof. • Euclidean geometry. • Complex constructions.	• Regions on graphs. • Linear programming. • Modelling.	• Further trigonometry. • Multiple transformations. • 3D Pythagoras.	• Probability problems. • Equations of lines of best fit.

Year 10 Foundation Curriculum Plan

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Students who are studying Foundation, should be confident with year 7 to 9 materials. Review of these prerequisites may be useful for each unit:					
• Equivalent fractions • Compare and order fractions. • Fraction of a quantity. • Converting between FDP. • Adding and subtracting decimals. • Calculate basic percentage values. • To calculate factors, multiples and prime of numbers.	• Calculate mean, median, mode and range for a set of data. • Draw and interpret pie charts. • Collect and organise data. • Calculate missing values in sequences. • Work out term-to-term and position-to-term rule.	• Draw, measure and name acute and obtuse angles. • Find unknown angles (straight lines, at a point, vertically opposite). • Properties of shapes. • Angles in polygons. • Sharing using ratio values. • Simplifying ratio values.	• Simplifying algebraic expressions. • Expand and factorise single brackets. • Construction of triangles. • Rules of indices. • Multiplying with expressions. • Using square and cubic numbers. • To reflect, translate and rotate a shape.	• Substitution. • Forming expressions. • Rearranging equations. • Calculating area of rectangles and triangles. • Calculating perimeter of rectangles, triangles and compound shapes. • Volume of cuboids and cubes.	• Dividing numbers. • Plotting straight line graphs. • Reading and plotting co-ordinates. • Drawing and labelling axis.
Foundation students will have to access to this specific content:					
• **Basic number** • **Fractions and percentages**	• **Statistical diagrams** • **Averages** • **Number and sequences**	• **Ratio and proportion** • **Angles**	• **Transformations and loci** • **Basic algebraic manipulation**	• **Solving equations** • **Length, area and volume**	• **Linear graphs**

Year 10 Higher Curriculum Plan

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Students who are studying Higher, should be confident with year 7 to 9 materials. Review of these prerequisites may be useful for each unit:					
• Fraction of a quantity. • Calculate basic percentage values. • Percentage increase and decrease. • Calculate missing values in sequences. • Calculate mean, median, mode and range. • Work out the sequence using nth term.	• Calculate nth term from a sequence. • Sharing using ratio values. • Simplifying ratio values. • Solving problems using ratios. • Properties of shapes. • Angles in polygons. • Angle in parallel lines. • To reflect, translate and rotate a shape.	• Construction of triangles. • Simplifying algebraic expressions. • Expand and factorise single brackets. • Rules of indices. • Multiplying with expressions. • Using square and cubic numbers. • Calculating area and perimeter of 2D shapes. • Volume of cuboids and cubes.	• Plotting straight line graphs. • Reading and plotting co-ordinates. • Drawing and labelling axis. • To calculate sides using Pythagoras. • To solve problems using Pythagoras. • To calculate the scale factor of 2d shapes.	• To solve probability in tables. • To use sample space diagrams. • To calculate probability using the and / or rule. • To multiply and divide using powers of 10. • To use laws of indices when multiplying and dividing. • To form and solve equations.	• To convert between decimals and fractions. • To multiply and divide using powers of 10. • To simplify fractions. • To use prime factors and square numbers. • To expand double brackets. • To substitute values into expressions.
Higher students will have to access to this specific content:					
• **Fractions and percentages** • **Statistical diagrams** • **Averages** • **Number and sequences**	• **Number and sequences** • **Ratio and proportion** • **Angles** • **transformations**	• **Construction and loci** • **Algebraic manipulation.** • **Length, area and volume**	• **Linear graphs** • **Right angled triangles** • **Similarity**	• **Probability** • **Powers and standard form** • **Equations and inequalities**	• **Counting, accuracy, powers and surds** • **Quadratic equations.**

Year 11 Foundation Curriculum Plan

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Students, who are studying Foundation, should be confident with year 7 to 10 materials. Review of these prerequisites may be useful for each unit:					
• Plotting straight line graphs. • Reading and plotting co-ordinates. • Drawing and labelling axis. • To calculate sides using Pythagoras. • To solve problems using Pythagoras. • To calculate the scale factor of 2d shapes. • To solve probability in tables. • To calculate probability using the and / or rule.	• To multiply and divide using powers of 10. • To use laws of indices when multiplying and dividing. • To form and solve equations. • To understand the signs of < > ≥ ≤. • To use the number line for inequalities.	• To review and reteach topics.	• To review and reteach topics.	• To revise for exams.	• To revise for exams.
Foundation students will have to access to this specific content:					
• **Right angled triangles.** • **Similarity.** • **Probability.**	• **Powers, roots and standard form.** • **Equations and inequalities.**	• **Review number, fractions and percentages.** • **Review number and sequences.** • **Review angles.**	• **Review ratio and proportion.** • **Review length, area and volume.** • **Review transformation and loci.**	• **Review algebraic manipulation.** • **Revision for exams.** • **Exams.**	• **Exams.**

Year 11 Higher Curriculum Plan

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Students, who are studying Higher, should be confident with year 7 to 10 materials. Review of these prerequisites may be useful for each unit:					
• To calculate angles in triangles and quadrilaterals. • To know angle facts. • To add and subtract with fractions. • To factorise and simplify single and double brackets. • To substitute values into expressions. • To rearrange formulas and expressions.	• To expand double brackets. • To factorise into double brackets. • To substitute values into formulas. • To simplify expressions. • To share values using ratio. • To expand and factorise with single brackets.	• To review and reteach topics.	• To review and reteach topics.	• To revise for exams.	• To revise for exams.
Higher students will have to access to this specific content:					
• **Properties of circles** • **Algebraic fractions** • **Functions and iteration**	• **Quadratic equations** • **Vector geometry**	• **Triangles (further trigonometry).** • **Graphs**	• **Combined events** • **Review topics**	• **Revision for exams**	• **Exams**