Jarrow School Key Stage 4 Maths Curriculum

Year 10

All students in year 10 will follow their 2-year GCSE KS4 course. During the course pupils will learn branches of Number, Algebra, Ratio, Proportion, Geometry and measure, Probability and Statistics.

All students will learn methods which will help with their other GCSE subjects by using, applying, consolidating and re-enforcing learning. Students will study mathematics which will be intertwined with links to the local labour market consisting of areas such as; Architecture and design, Life Skills, Engineering, Medical Mathematics, Further Digital Information, Geographical and Physical Properties.

In Year 10 we use a blend of formative and summative assessment strategies to monitor students' progress and support their learning. Every two units, students complete an assessment that includes 10 marks focused on retrieval of prior knowledge and 20 marks from each of the units being tested. Feedback is provided in the next lesson, where teachers model high-quality responses and guide pupils through each question. Students then complete targeted shadow questions to address any misconceptions and strengthen their understanding.

All students will sit their Edexcel GCSE Statistics exam at the end of year 10.

Stage 1 – Foundation Stage 2 – Foundation Higher Stage 3 – Higher

Stage 1	Stage 2	Stage 3
Unit 1 – Number Skills	Unit 1 – Number Skills	Unit 1 – Number Skills
• Square, cube and prime numbers • Square and cube roots • Powers • Integers that satisfy an inequality • Using a calculator • Money calculations - • BIDMAS • Frequency Trees • Calculating with time	• Using a calculator • Money calculations • BIDMAS • Frequency Trees • Calculating with time • Multiplying and dividing decimals - • HCF and LCM • Prime factor decomposition - index form, including HCF and LCM using Venn diagrams • Estimation - multi step calculations	• Error intervals • Converting standard • Calculating using Standard form • Product rule for counting • Simplify, calculating and expanding surds
Unit 2 – Fractions, decimals, percentages	Unit 2 – Fractions, decimals, percentages	Unit 2 – Fractions, decimals, percentages
• Equivalent and simplify fractions • Mixed numbers and improper fractions Fractions of an amount • Percentages of an amount with and without a calculator	• Order fractions • Arithmetic with fractions • Arithmetic with mixed numbers	• Reciprocals • Percentage change • Reverse percentages • Compound interest • Recurring decimals
Unit 3 – Algebra	Unit 3 – Algebra	Unit 3 – Algebra

• Expressions and function machines • Algebraic language • Term to term rule • Substitution • Inequality diagrams • Solve one step linear inequalities	• Algebraic language • Substitution • Solve linear inequalities • Solving equations • Expand and simplify single brackets • Factorise single brackets • Expand double brackets • Factorise quadratics • Index laws	• Writing and solving equations • Change the subject • Equating identities • Factorise to solve • Geometric and quadratic sequences • Simultaneous equations • Expand triple brackets • Completing the square • Quadratic formula • Index laws
Unit 4 – Graphs & Functions	Unit 4 – Graphs & Functions	Unit 4 – Graphs & Functions
• Plotting coordinates • Equations of vertical and horizontal lines • Midpoint of a line from diagrams	• Equations of vertical and horizontal lines • Drawing straight line graphs • Midpoint of a line from diagrams and coordinates • Coordinate problem solving • Drawing quadratic graphs	• Equation of line • Graphing simultaneous equations • Inequality regions • Exponential and trigonometry graphs • Equations of a circles and perpendicular lines • Gradient by drawing tangent • Function notation • Composite and inverse functions
Unit 5 – Ratio & Proportion	Unit 5 – Ratio & Proportion	Unit 5 – Ratio & Proportion
• Write, simplify and divide into a given ratio. • Ratio – difference and one part given • Scale drawings • Direct proportion • Conversion graphs	• Write, simplify and divide into a given ratio. • Ratio – difference and one part given • Scale drawings • Compound measures • Direct and inverse proportion • Conversion graphs	• Problem solving with ratio • Direct and inverse proportion – including use of formulae
Unit 6 – Area, Perimeter, Volume	Unit 6 – Area, Perimeter, Volume	Unit 6 – Area, Perimeter, Volume
• Measuring lines and angles • Convert units of length • Perimeter 2D shapes • Area of simple 2D shapes • Parts of a circle • Circumference and area of circles	• Area of 2D shapes • Parts of circles • Circumference and area circles • Surface area cubes, cuboids and triangular prisms • Volume of cubes, cuboids and triangular prisms	• Converting units of area and volume • Area and perimeter of sectors • Arc length • Similar shapes - area and volume

Unit 7 – Angles & Shape Properties	Unit 7 – Angles & Shape Properties	Unit 7 – Angles & Shape Properties
• Angles facts • Angles in simple 2D shapes • Faces, edges and vertices • Line and rotational symmetry • Congruency • Plans and elevations • Constructions	• Congruency • Plans and elevations • Constructions • Transformations – Translations, enlargements, reflections, rotations • Pythagoras Theorem	• Angles in parallel lines • Bearings, constructions and loci • Interior and exterior angles in polygons • Trigonometry (SOCAHTOA) • Sine and cosine rule • Area of a triangle using trigonometry • 3D Pythagoras and trigonometry • Column vectors • Enlargement - negative scale factors • Circle theorems
Unit 8 - Probability	**Unit 8 - Probability**	**Unit 8 - Probability**
• Two-way tables • Venn diagrams • Relative frequency • Tree diagrams	• Two-way tables • Venn diagrams • Relative frequency • Tree diagrams	• Two-way tables • Venn diagrams • Relative frequency • Tree diagrams
Unit 9 - Statistics	**Unit 9 - Statistics**	**Unit 9 - Statistics**
• Types of data • Surveys and questionnaires • Tally charts and frequency tables • Averages from lists, tables and graphs. • Drawing and interpreting a range of charts and graphs • Histograms (equal class width) • Choropleth maps and population pyramids • Stem and Leaf diagrams • Cumulative frequency and box plots	• Types of data • Surveys and questionnaires • Tally charts and frequency tables • Averages from lists, tables and graphs. • Drawing and interpreting a range of charts and graphs • Histograms (equal class width) • Choropleth maps and population pyramids • Stem and Leaf diagrams • Cumulative frequency and box plots	• Types of data • Surveys and questionnaires • Averages from lists, tables and graphs. • Moving Averages • Estimated mean • Drawing and interpreting a range of charts and graphs • Trend Lines and seasonal variation • Histograms • Choropleth maps and population pyramids • Stem and Leaf diagrams • Cumulative frequency and box plots • Capture Recapture • Standard Deviation • Quality Control • Geometric Mean • Index numbers

Year 11

In Year 11 we use a blend of formative and summative assessment strategies to monitor students' progress and support their learning. Every two units, students complete an assessment that includes 10 marks focused on retrieval of prior knowledge and 20 marks from each of the units being tested. Feedback is provided in the next lesson, where teachers model high-quality responses and guide pupils through each question. Students then complete targeted shadow questions to address any misconceptions and strengthen their understanding. Alongside this in preparation for their GCSE exams they will sit two sets of formal mock examinations across the year.

Stage 1	Stage 2	Stage 3
Unit 1 – Number Skills	Unit 1 – Number Skills	Unit 1 – Number Skills
• Multiplying and dividing decimals • HCF and LCM • Prime factor decomposition • HCF and LCM - Venn Diagrams • Estimation - multi step calculations	• Error intervals • Converting standard • Calculating using Standard form	• Surds – rationalising the denominator
Unit 2 – Fractions, decimals, percentages	Unit 2 – Fractions, decimals, percentages	Unit 2 – Fractions, decimals, percentages
• Order fractions • Arithmetic with fractions • Arithmetic with mixed numbers	• Reciprocals • Percentage change • Reverse percentages • Compound interest	• Recurring decimals to fractions
Unit 3 – Algebra	Unit 3 – Algebra	Unit 3 – Algebra
• Solve linear inequalities • Solving equations • Expand and simplify single brackets • Factorise single brackets • Expand double brackets • Factorise quadratics • Index laws	• Writing and solving equations • Change the subject • Equating identities • Factorise to solve • Geometric and quadratic sequences • Simultaneous equations	• Iteration • Quadratic inequalities • Non-linear simultaneous equations • Algebraic fractions • Algebraic proof
Unit 4 – Graphs & Functions	Unit 4 – Graphs & Functions	Unit 4 – Graphs & Functions
• Drawing straight line graphs • Midpoint of a line from diagrams and coordinates • Coordinate problem solving • Drawing quadratic graphs	• Gradient • Equation of line • Graphing simultaneous equations	• Equation of a tangent to circle • Transformation of graphs
Unit 5 – Ratio & Proportion	Unit 5 – Ratio & Proportion	Unit 5 – Ratio & Proportion

• Compound measures • Direct and inverse proportion • Conversion graphs	• Compound measures • Multiple ratios • Problem solving with ratio	• Direct proportion equation • Inverse proportion equation • Speed-Time graphs
Unit 6 – Area, Perimeter, Volume	Unit 6 – Area, Perimeter, Volume	Unit 6 – Area, Perimeter, Volume
• Surface area cubes, cuboids and triangular prisms • Volume of cubes, cuboids and triangular prisms	• Converting units of area • Converting units of volume • Area and perimeter of a sector • Arc length	• Area of a triangle using trigonometry • Similar area • Similar volume
Unit 7 – Angles & Shape Properties	Unit 7 – Angles & Shape Properties	Unit 7 – Angles & Shape Properties
• Transformations – Translations, enlargements, reflections, rotations • Pythagoras Theorem	• Angles in parallel lines • Bearings, constructions and loci • Interior and exterior angles in polygons • Trigonometry (SOCAHTOA) • Column vectors	• Vectors • Geometric proof