Gatsby Benchmark 4

'Linking curriculum learning to careers'

Specific career content delivery and the promotion of employability skills

Curriculum area:	Mathematics

Year 7/8		
Autumn term	**Spring term**	**Summer term**
• **Number skills** • **Fractions, decimals and percentages** • **Ratio** **Communication** Explaining methods and answers verbally during class discussion. **Problem solving** Finding solutions to Mathematical problems given in context such as calculating a sale cost. **Organisation** Students are directed to document their written methods in a clear manner. They are encouraged to look for, and make us of, structure. **Numeracy** Developing and embedding numeracy skills to promote fluency of numerical concepts. Students enhance their ability to reason and problem solve with number.	• **Area and perimeter** • **Angles** • **Averages, range and representing data** **Communication** Students develop this core skill as they interact during group/shared work. **Teamwork** Working together in search of solutions and accepting alternative methods as being valid. For example, finding alternative routes to calculating a missing angle. **Emotional intelligence** Promoting resilience and perseverance when tackling challenging problems. For example, solving area and perimeter problems in context that require the use of skills acquired in earlier units. **Literacy** Enforcing the use of correct Mathematical language in exercise books and during discussions.	• **Probability** • **Algebra** • **Co-ordinates and straight line graphs** **Communication** Explaining methods and answers verbally during class discussion using correct Mathematical language. **Leadership** Working independently to solve problems and being able to justify a method or solution to others in the group. **Problem solving** Combining multiple skills to solve problems. For example, forming and solving an equation in order to calculate a perimeter. **Organisation** Students are directed to document their workings in a clear manner. For example, students must show how they have calculated their co-ordinates when completing a table of values.

Year 9		
Autumn term	**Spring term**	**Summer term**
• **Basic number and directed numbers** • **Powers and roots** • **Factors and multiples** • **Angles** • **Triangles and quadrilaterals** • **Basic algebra** • **Basic decimals** • **Rounding and estimating** • **Co-ordinates and linear graphs** • **Basic fractions** **Numeracy** Developing and embedding numeracy skills to promote fluency of numerical concepts. Students enhance their ability to reason and problem solve with number. **Communication** Explaining methods and answers verbally during class discussion using correct Mathematical language. **Creativity** Students are encouraged to choose and apply their own methods to solve problems. For example, when multiplying, whether to use the column/grid/Chinese method. Alternative methods are encouraged and discussed. **Emotional intelligence** Promoting resilience and perseverance when tackling challenging problems.	• **Sequences** • **Basic probability** • **Ratio and proportion** • **Basic percentages** • **Perimeter, area and volume** • **Circumference and area of circles and sectors** **Organisation** Students are directed to document their workings in a clear manner. This is particularly important when working through multi-step problems such as finding a missing dimension of a shape when given the volume. **Communication** Explaining methods and answers verbally during class discussion. **Teamwork** Working together to make discoveries such as finding the link before a circle's circumference and its diameter. **Numeracy** Developing and embedding numeracy skills to promote fluency of numerical concepts. Students enhance their ability to reason and problem solve with number **Literacy** Promoting the use of correct Mathematical language in exercise books and during discussions.	• **Equations** • **Collecting and representing data/statistical measures** • **Transformations** • **Scatter graphs** • **Index laws** • **Standard form** • **2D representations of 3D shapes** **Communication** Explaining methods and answers verbally during class discussion using correct Mathematical language .For example, when describing how a shape has been transformed. **Problem solving** Finding solutions to Mathematical problems given in context such as interpreting graphs and data and justifying whether data can be deemed to be reliable. **Organisation** Students are directed to document their workings in a clear manner. For example, when solving multi-step equations. **Emotional intelligence** Promoting resilience and perseverance when tackling challenging problems. **Leadership** Working independently to solve problems and being able to justify a method or solution to others.

Year 10 - Foundation		
Autumn term	**Spring term**	**Summer term**
• **Pythagoras' theorem** • **Calculating with percentages** • **Measures** • **Statistical measures** • **Angles in polygons** • **Constructions and loci** • **Algebra recap and extension** **Communication** Explaining methods and answers verbally during class discussion using correct Mathematical language. For example, how to calculate the hypotenuse of a right angled triangle. **Organisation** Students are directed to document their workings in a clear manner. For example, when working through a multi-step percentage problem. **Numeracy** Developing and embedding numeracy skills to promote fluency of numerical concepts. Students enhance their ability to reason and problem solve with number. **Teamwork** Working together to make draw conclusions such as discussing the outcomes of statistical measures. **Emotional intelligence** Promoting resilience and perseverance when tackling challenging problems.	• **Congruence and similarity** • **Inequalities** • **Direct and inverse proportion** • **Perimeter, area and volume** • **Circumference and area** • **Linear graphs** **Numeracy** Developing and embedding numeracy skills to promote fluency of numerical concepts. Students enhance their ability to reason and problem solve with number. T**eamwork** Working together to make draw conclusions such as identifying the links between the equation of a line and its corresponding graph. **Organisation** Students are directed to document their workings in a clear manner. For example, when showing how they have reached the solution of an inequality. **Leadership** Working independently to solve problems and being able to justify a method or solution to others. **Problem solving** Finding solutions to Mathematical problems given in context such as using perimeter, area and volume to calculate decorating costs.	• **Simultaneous equations** • **Scale diagrams and bearings** • **Real life graphs** • **Review of basic probability** • **Further probability** **Organisation** Students are directed to document their workings in a clear manner. For example, when finding solutions to a pair of simultaneous equations. **Communication** Explaining methods and answers verbally during class discussions. **Numeracy** Developing and embedding numeracy skills to promote fluency of numerical concepts. For example, calculating probabilities without using a calculator. **Organisation** Students are directed to document their workings in a clear manner. For example, graphs must be drawn accurately using the correct equipment. **Emotional intelligence** Promoting resilience and perseverance when tackling challenging problems. **Literacy** Promoting the use of correct Mathematical language in exercise books and during discussions.

Year 10 - Higher		
Autumn term	**Spring term**	**Summer term**
• **Upper and lower bounds** • **Calculating with percentages** • **Surds** • **Pythagoras' theorem in 2D and 3D** • **Introduction to trigonometry** • **Collecting and representing data** • **Direct and inverse proportion** • **Re-arranging formulae** **Numeracy** Developing and embedding numeracy skills to promote fluency of numerical concepts. Students enhance their ability to reason and problem solve with number. For example, extending their knowledge of powers and roots to surds. T**eamwork** Working together to make draw conclusions such as deducing the method for calculating upper and lower bounds. **Problem solving** Identifying the correct method to solve a problem such as which trigonometric ratio is needed to find a missing side/angle. **Emotional intelligence** Promoting resilience and perseverance when tackling challenging problems.	• **Scale diagrams and bearings** • **Constructions and loci** • **Volume and surface area** • **Congruence and similarity** • **Linear graphs** • **Measures** • **Real life graphs** **Communication** Explaining methods and answers verbally during class discussion using correct Mathematical language. **Organisation** Students are directed to document their workings in a clear manner. For example, graphs must be drawn accurately using the correct equipment. **Problem solving** Finding solutions to Mathematical problems given in context such as using bearings to work with maps. **Literacy** Enforcing the use of correct Mathematical language in exercise books and during discussions. T**eamwork** Working together to make draw conclusions such as interpreting information from a real life graph.	• **Angles in polygons** • **Inequalities** • **Solving quadratic equations** • **Quadratic graphs** • **Cubic and reciprocal graphs** • **Simultaneous equations** **Problem solving** Formulating a contextualised scenario into a Mathematical problem. For example, identifying that finding the value of two variables will require the use of simultaneous equations. **Organisation** Students are directed to document their workings in a clear manner. For example, graphs must be drawn accurately using the correct equipment. T**eamwork** Working together to make draw conclusions such as identifying the links between quadratic equations and their graphs. **Literacy** Enforcing the use of correct Mathematical language in exercise books and during discussions. **Communication** Explaining methods and answers verbally during class discussions.

Year 11 - Foundation		
Autumn term	**Spring term**	**Summer term**
• **Quadratics, rearranging formula and identities** • **Volume and surface area** • **Algebra and graphs** • **Upper and lower bounds** • **Trigonometry** **Emotional intelligence** Promoting resilience and perseverance when tackling challenging problems such as rearranging more complex equations. **Problem solving** Identifying the correct method to solve a problem in context such as deciding whether to calculate the surface area or volume. **Communication** Explaining methods and answers verbally during class discussion using correct Mathematical language. For example, how to calculate the hypotenuse of a right angled triangle. **Organisation** Students are directed to document their workings in a clear manner. For example, detailing how they have used trigonometry to find a missing side or angle. **Emotional intelligence** Promoting resilience and perseverance when tackling challenging problems such as applying upper and lower bounds to calculations.	• **Solving quadratic equations** • **Quadratic graphs** • **Non-linear graphs** • **Growth and decay** • **Vectors** **Organisation** Students are directed to document their workings in a clear manner. For example, graphs must be drawn accurately using the correct equipment. **Numeracy** Developing and embedding numeracy skills to promote fluency of numerical concepts. For example, understanding how multipliers can be used to calculate growth and decay. **Communication** Explaining methods and answers verbally during class discussion using correct Mathematical language. For example, explaining how to solve a quadratic equation. **Emotional intelligence** Promoting resilience and perseverance when tackling challenging problems. T**eamwork** Working together to make draw conclusions such as linking quadratic equations to their graphs. **Literacy** Enforcing the use of correct Mathematical language in exercise books and during discussions.	

Year 11 – Higher		
Autumn term	**Spring term**	**Summer term**
• **Algebraic proof** • **Trigonometry** • **Growth and decay** • **Equation of a circle** • **Vectors** • **Further probability** **Organisation** Students are directed to document their workings in a clear manner. For example, clearly laying out the steps of an algebraic proof and ensuring graphs are drawn accurately with the correct equipment. **Problem solving** Identifying the correct method to solve a problem such as identifying whether to use the sine or cosine rule. **Communication** Explaining methods and answers verbally. **Numeracy** Developing and embedding numeracy skills to promote fluency of numerical concepts. For example, understanding how multipliers can be used to calculate growth and decay. **Literacy** Enforcing the use of correct Mathematical language in exercise books and during discussions.	• **Quadratic inequalities** • **Further graphs** • **Functions** • **Transforming functions** • **Iteration** • **Circle theorems** • **Gradients and rates of change** • **Area under a curve** • **Algebraic fractions** **Communication** Explaining methods and answers verbally during class discussion using correct Mathematical language. For example, explaining how to solve a quadratic inequality. T**eamwork** Working together to make connections such as comparing fraction arithmetic to algebraic fractions. **Problem solving** Using a range of mathematical skills and concepts to solve an individual problem. **Literacy** Enforcing the use of correct Mathematical language in exercise books and during discussions. For example, being able to accurately describe the circle theorems.	