KS4 Curriculum Overview (Mathematics)

YEAR 10 Higher

TERM 1 TOPIC/s	*Key Skills/Subject Links	*Career links & BV
• Bounds • Angles in parallel lines • Indices • Quadratics • Compound Measures • Standard Form • Quadratics- Difference of two squares • Proportions • Indices problems solving • Circle Theorem	▪ Bound calculations and selection of values for all calculation types. ▪ Use angle facts to solve complex parallel line problems by forming and solving equations. ▪ Fractional and negative indices in algebra ▪ Recognise quadratic expressions and explain why it is called quadratic. Solve by factorisation quadratics where a=1 ▪ Apply kinematics formulae with or without rearrangement. ▪ convert a range of standard form values to ordinary numbers and order values. ▪ Recognise and factorise the difference of two squares and use this to solve quadratics. ▪ Recognise direct and inverse proportionality on a graph and problem solve using graphs. ▪ Apply more than one index law to simply terms. ▪ Apply angle between a radius and tangent theorem to solve problems.	Bounds, Proportions, compound measures, have links to careers such as: Finance Manufacturing, Business administrators etc.
TERM 2 TOPIC/s	***Key Skills/Subject Links**	***Career links & BV**
• Similar Shapes • Recurring decimals • Circle Theorem • Similar Shapes – Area & Volume • Standard form	• Prove similarity in triangles, using scale factor to find a missing side of similar shapes. • Convert recurring decimals to fractions. • Use angles at the centre and circumference of a circle theorem. • Area and volume of similar shapes • Add and subtract in standard form. • Recognise quadratic expressions. Solve by factorisation quadratics where a>1.	Similar shapes, circle theorem can have links to manufacturing, engineering and computing programming

• More Quadratics • More Circle Theorem	• Multiply and divide in standard form. • Applying the angle in a semi-circle is a right-angle circle theorem.	
TERM 3 TOPIC/s	***Key Skills/Subject Links**	***Career links & BV**
• Vectors • Simultaneous equations • Trigonometry • More Quadratics • Surface Area • More Quadratics • More Simultaneous equations	• Recall conditions for and prove parallel and collinear vectors. • Solve linear simultaneous equations: Graphically. • Use Sin to find missing side or angle. • Solve quadratics by completing the square where a=1 and a>1 • Surface area of a sphere and a hemisphere • Solve quadratics by using the formula. • Set up and solve simultaneous equations by appropriate method.	Vector and surface area have links to careers such as: Engineering, air controller, Manufacturing, builders, painters etc.
TERM 4 TOPIC/s	▪ ***Key Skills/Subject Links**	***Career links & BV**
• Surface area • More Quadratics • More Trigonometry • More Quadratics • Cumulative frequency graphs • Volume of Pyramids and cones • Iteration • Perpendicular lines • Inequalities	• Surface area problems. • Solve quadratics equations using graphs. • Use Cos to find missing side or angle. • Draw quadratic graphs from a table of values, identify lines of symmetry and explain the shape of a negative quadratic. • Construct a cumulative frequency table and draw a cumulative frequency graph. Estimate median and quartiles and extract frequencies from a cumulative frequency graph. • Calculate volume of a pyramid and cone. • Solving equations by iteration • Find the gradient of a line perpendicular to a given equation of a line or a line on a graph. • Interpret inequalities and represent them on a graph. Show a region on a graph that satisfies a set of inequalities, including line type. • Recognise, draw, and find the roots of cubic graphs. • Use Tan to find missing side or angle.	Surface area, Volume, quadratics can be linked to careers such as: Engineering, Manufacturing, builder etc.

• More Trigonometry		
TERM 5 TOPIC/s	▪ ***Key Skills/Subject Links**	***Career links & BV**
• Inequalities • Volume • Quadratics Sequence • Probabilities • Proofs • Enlargement	• Solve quadratic inequalities by using a graphical representation. • Volume of a sphere • Volume of a frustrum • Recognise, draw, and state the value of x for which the equation is not defined. • Find the nth term of a quadratic sequence and identify if a number is in a sequence or not. • Identify independent events, find probabilities using AND rule. Draw tree diagrams to work out probabilities. • Proofs by exhaustion (using odds & evens, lists & number properties) and deduction & counter example. • Enlargements with negative / fractional scale factors	Probabilities, proofs, sequences, Volume have links to careers such as: Researchers, Engineering, Manufacturing, builders etc.
TERM 6 TOPIC/s	▪ ***Key Skills/Subject Links**	***Career links & BV**
• . Exponential graph • Area of Triangle • Area of Segment • Histogram • Box plot • Equation of a Circle • Compare sets of data	▪ Recognise & draw exponential graphs. ▪ Area of a triangle using 1/2 base x height and 1/2.a.b.Sin(C) ▪ Area of a segment of a circle ▪ Calculate frequency density, draw histograms, and read statistical data including estimating mean, median and quartiles. ▪ Interpret and construct box plots. ▪ Recognise and interpret the equation of a circle and draw the graph. ▪ Compare sets of data using a measure of average and spread, recognize outliers and comment on their effect. Draw comparative box plots and comment on the data. Use the data from a box plot to draw a cumulative frequency graph and vice versa. **(The year 10 Higher Maths topics have links to most other subjects, find some of these topics below. Physics, Biology, Chemistry, computer Science, Engineering, Business studies, Geography, and home economics etc.**	Area of triangles, Exponential graphs, box plot comparing data set simultaneous equations can be linked to careers such as: Manufacturing, forecaster, builders, finance, statisticians etc.