Landau Learner Curriculum Overview

Subject: Mathematics   **Director of Learning: Mr Ryan Bathew**   **Year: 10 Higher**

Curriculum organisation

Students are taught in tiered ability groups; higher, intermediate and foundation. Group selection is based on which scheme of work will help each individual make the most progress at the greatest rate. There is always scope for movement between groups. Students have the equivalent of 5 lessons per week.

What topics will students be studying this year? Includes links to National Curriculum, Curriculum Intent and Prior Related Learning*

Term 1:	Term 2:	Term 3:	Term 4:	Term 5:
• Investigating properties of shapes. • Calculating. • Solving equations and inequalities.	• Mathematical Movement • Algebraic proficiency • Proportional reasoning • Pattern sniffing	• Solving equations and inequalities • Calculating space	• Conjecturing • Algebraic proficiency • Exploring fdp • Solving equations and inequalities • Understanding risk	• Analysing statistics • Algebraic proficiency • Mathematical movement
Links to Prior learning: Solving equations, Pythagoras, similar shapes.. **National Curriculum:** make links to similarity (including trigonometric ratios) and scale factors, know the exact values of sinθ , cosθ and tanθ for θ = 0°, 30°, 45° and 60°, know the trigonometric ratios. Estimate with powers and roots. Calculate with powers and roots. Find approximate solutions to complex equations. Solve simultaneous equations. Solve problems involving simultaneous equations **Curriculum Intent:** Students will be able to make sensible estimations in real life contexts. Students will be able to use trigonometry to solve real life modelling problems	**Links to Prior learning:** Calculate with negative numbers, multiply two linear expressions of the form $(x ± a)(x ± b)$, factorise a quadratic expression of the form $x^2 + bx + c$, add, subtract, multiply and divide proper fractions **National Curriculum:** Explore enlargement of 2D shapes, investigate the transformation of 2D shapes Manipulate algebraic expressions, investigate inverse functions Explore differences between direct and inverse proportion, investigate ways of representing proportion in situation, solve problems involving proportion Explore quadratic sequences and Investigate geometric progressions **Curriculum Intent:** Students will deepen understanding of links between areas of mathematics. They will solve real life problems in a range of contexts.	**Links to Prior learning:** Calculate exactly with multiples of π. Know and use the formula for area and circumference of a circle. Know how to use formulae to find the area of rectangles, parallelograms, triangles, trapezia, circles, sectors. Calculate the surface area of a right prism and a cylinder. Carry out an enlargement and the scale factor of a given enlargement. Use Pythagoras' theorem to find missing lengths in right-angled triangles. **National Curriculum:** Understand and use set notation, solve inequalities and represent inequalities on a graph. Calculate surface areas of solids, calculate volumes of solids, solve problems involving enlargement and 3D shapes. **Curriculum Intent:** Students will improve geometrical and spatial awareness. They will be able to apply algebra to solve real life problems.	**Links to Prior learning:** Identify if a fraction is terminating or recurring. Move freely between terminating fractions, decimals and percentages. Use a multiplier to calculate the result of percentage changes. **National Curriculum:** Investigate geometric patterns using circles. Explore circle theorems. Make and prove conjectures Explore graphs of exponential functions. Create and use graphs of non-standard functions. Investigate gradients of graphs. Find and interpret areas under graphs. Investigate features of quadratic graphs **Curriculum Intent:** Students will solve real life problems involving repeated percentage change, algebra and exponential growth and decay. They will deepen their understanding of probability, risk and combinations to ensure they are well informed citizens.	**Links to Prior learning:** Understand column vector notation. Use the form y = mx + c to identify parallel lines. Rearrange an equation into the form y = mx + c. Find the equation of a line through one point with a given gradient. Find the equation of a line through two given points. Know and apply Pythagoras' Theorem. **National Curriculum:** Construct and interpret cumulative frequency graphs. Construct and interpret box plots. Analyse distributions of data sets Investigate features of straight line graphs. Know and use the equation of a circle with centre at the origin. Solve problems involving the equation of a circle Explore the concept of a vector Solve problems involving vectors **Curriculum Intent:** Students will be able to interpret data presented in a range of contexts, allowing them to make informed decisions in life.

Equipment needed for sessions:		What can you do to support your child?	
• Mathematics exercise book • Scientific calculator with fractional display		• Encourage them to complete homework tasks to the best of their ability • Encourage your child to aid in common place mathematical problems (managing money, measuring space etc). • Check understanding of commonly used language such as 'credit' and 'debit'.	
How will learning be assessed and progress measured?		**Extension and enrichment activities:**	
• Marking of bookwork is carried out on a regular basis in line with college policy • Two summative assessments • Individual topic assessments • Regular peer and self-marking		• Maths clinic extension – Tuesday 3:30 - 4:25 every week • Weekly problem solving challenge • Maths challenge (TBA)	