**PLUME ACADEMY - LEARNING OVERVIEW**

| Year | 13 |
|---|---|
| Course | Mathematics |
| Specification Number/Exam Board | EDEXCEL |
| Examination Papers and Weighting | Pure – 67% Mechanics and Statistics – 33% Consisting of Two Pure papers, one Statistics and one Mechanics paper |

**Prior Learning**

- The course builds on prior learning by developing those more advanced skills in Algebra, Trigonometry, Geometry, Statistics and Mechanics.
- All material covered in Year 12 will be assessed either by external AS exams in May or via Mock exams and Unit tests. All material is Year 12 must be revised as it will form the bedrock for the material in Year 13.
- Pure topics covered in Year 12 will be further developed which includes their application to real life problems. These topics include Binomial expansion, Differentiation, Integration, Trigonometric modelling and Vectors.
- New Pure topics in Year 13 include Functions, Sequences and Series, Numerical Methods and Parametric equations.
- In Statistics, the Normal Distribution is introduced and there is more emphasis on the application of Statistical data to real life applications.
- In Mechanics, the applications of Forces will be further developed covering Forces and Moments, Friction and the forces involved when particles are stationary or moving. Projectiles are also covered. Many of the techniques covered in the Pure course are used in Mechanics.

**Curriculum Intent – What are the curriculum aims?**

This course aims to:
- understand mathematics and mathematical processes in a way that promotes confidence, fosters enjoyment and provides a strong foundation for progress to further study
- extend their range of mathematical skills and techniques
- understand coherence and progression in mathematics and how different areas of mathematics are connected
- apply mathematics in other fields of study and be aware of the relevance of mathematics to the world of work and to situations in society in general
- use their mathematical knowledge to make logical and reasoned decisions in solving problems both within pure mathematics and in a variety of contexts, and communicate the mathematical rationale for these decisions clearly
- reason logically and recognise incorrect reasoning
- generalise mathematically
- construct mathematical proofs
- use their mathematical skills and techniques to solve challenging problems that require them to decide on the solution strategy

- recognise when mathematics can be used to analyse and solve a problem in context
- represent situations mathematically and understand the relationship between problems in context and mathematical models that may be applied to solve them
-  draw diagrams and sketch graphs to help explore mathematical situations and interpret solutions
- make deductions and inferences and draw conclusions by using mathematical reasoning
- interpret solutions and communicate their interpretation effectively in the context of the problem
- read and comprehend mathematical arguments, including justifications of methods and formulae, and communicate their understanding
- read and comprehend articles concerning applications of mathematics and communicate their understanding
- use technology such as calculators and computers effectively and recognise when their use may be inappropriate
- take increasing responsibility for their own learning and the evaluation of their own mathematical development.

## Curriculum Implementation – What will my child will be learning?

| Term 1 | Half Term 1 | 5. Radians 6. Trigonometric functions 7. Trigonometry and modelling 9. Differentiation |
|---|---|---|
| | Half Term 2 | 8. Parametric equations 3. Sequences and series 10. Numerical Methods 11. Integration |
| Term 2 | Half Term 3 | 12. Vectors<br>Statistics - 1. Regression, Correlation and Hypothesis testing 2. Conditional probability 3. The Normal Distribution |
| | Half Term 4 | Mechanics - 4. Moments 5. Forces and Friction 6. Projectiles 7. Applications of Forces 8. Further Kinematics |
| Term 3 | Half Term 5 | Revision and Exam preparation for A level exams. |
| | Half Term 6 | |

## Curriculum Impact – How will my child be assessed and receive feedback?

*Brief notes on how work will be assessed*
Unit tests and practice papers by topic and practice exam papers are used.

**Super-Curricular Opportunities – Supporting and Extending Learning**

| Useful study resources | If a student is really passionate about this subject they can... |
|---|---|
| <ul><li>Mathsgenie</li><li>Solomon</li><li>Resourceaholic</li><li>NRICH</li><li>Underground Maths</li><li>Madasmathx.com</li><li>Examsolutions</li><li>Dr. Frost</li></ul> | <ul><li>UK Senior Maths Challenge</li><li>University taster days.</li><li>STEM (Science, Technology, Engineering and Mathematics) open/taster events</li></ul> |