Year 12 Lent Exams – March 2026

Subject	Maths	
Title/Topic	Format	Length
Core Pure	Written assessment	1hr 15
Modelling with Algorithms	Written assessment	1hr 15

In this Lent assessment I will be asked to show I can…

Paper 1 – all pure content you've covered

Core Pure (Y410)
Contents

Proof	Proof by induction is introduced for formulae for simple sequences, sums of simple series and powers of matrices.
Complex numbers	Complex numbers and their basic arithmetic are introduced, including in modulus-argument form. They are used to solve polynomial equations with real coefficients and to define loci on the Argand diagram.
Matrices and transformations	Matrix arithmetic is introduced and applied to linear transformations in 2-D, and some in 3-D. Inverses of matrices (which may be found using a calculator in the 3×3 case) are used to solve matrix equations and related to inverse transformations.
Vectors and 3-D space	Scalar products are introduced, and used to form the equation of a plane. How planes intersect in 3-D space is considered, and matrices are used to find the point(s) of intersection.
Algebra	Relationships between roots of and coefficients of polynomials are explored.
Series	Standard formulae and the method of differences are used to calculate the sum of the given series.

Paper 2 – all modelling with algorithms content you've covered

Modelling with Algorithms (Y413)
Contents

Algorithms	In covering this section of the specification, learners should understand: what an algorithm is; iterative processes; what kind of problems are susceptible to an algorithmic approach; how to compare algorithms, including complexity; the importance of proving that an algorithm works and of the use of heuristic algorithms when this is not possible; the need for an algorithmic approach and computing power to solve problems of the size often met in the real world. Other algorithms are used for modelling in the Networks section; this section emphasises that algorithms can be analysed in their own right.
Networks	Network algorithms are used for modelling a range of real-world problems. Formulating the problems as LP problems allows them to be addressed using technology.
Linear Programming (LP)	This topic introduces constrained optimisation. In some cases LP problems can be interpreted and solved graphically. The simplex method gives an algebraic approach, but using this by hand is limited. The use of a simplex method optimisation routine in a spreadsheet package or other software is introduced, which enables problems of a more realistic size to be tackled. The crucial skills are then setting up the problem in a way suitable for the software and interpreting the output. These are precisely the modelling skills most useful in the real world. Linear programming unifies this content; a wide range of apparently unrelated problems can be formulated as LP problems, and so solved using technology.

What should I do to revise and prepare for this assessment?

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To prepare for this assessment:

1. Review the work you have completed in class this term. Work through the practice questions you have been provided after each lesson again so that you have a deep understanding of all the topics covered.
2. Complete and revisit the integral assessments for the units covered this year.
3. Complete questions from your text book.
4. Use revision techniques such as flashcards on problematic topics.

What useful websites/resources could I use to help me prepare?

www.integralmaths.org