Key Stage 5

Subject: Mathematics

Intent

The Mathematics Department at Frances Bardsley Academy for Girls wish to provide mathematics education that will encourage the girls to become accurate, efficient, and flexible problem solvers. Rapidly changing technological advances have created a fluid and dynamic world for this generation of students and it is difficult to predict and plan for the problems that our girls will need to solve when they enter the world of work. Therefore, we must ensure that the girls have the core knowledge, and the skills to apply that core knowledge, to a variety of situations that are known and unknown to all of us at this time.

At Key Stage 5, the students are expected to have mastered the skills at both Key Stage 3 and 4 and further enrich their mathematical knowledge on the A Level course. Across all key stages, we teach a knowledge-based curriculum which is integral to students being successful in Mathematics. We use technology to support our students' learning; we subscribe to Mathswatch, MyMaths and PiXL Maths App which give students immediate access to online videos and tutorials and practice questions. Other resources are free of charge and we recommend these to our students as we go through the years (e.g., Physics & Maths Tutor, Maths Genie, etc).

Programme of study and assessment

	Autumn Term	Spring Term	Summer Term
Year 12 (Pure)	• Algebraic expressions • Quadratics • Equations & inequalities • Graphs & transformations • Straight-line graphs • Circles	• Algebraic methods • Trigonometric ratios • Trigonometric identities & equations • Vectors • The binomial expansion • Differentiation	• Integration • Exponentials & logarithms • Algebraic methods
Year 12 (Applied)	• Data collection • Measures of location & spread • Representations of data • Correlation	• Probability • Modelling in mechanics • Constant acceleration • Forces & motion	• Statistical distributions • Hypothesis testing • Variable acceleration
Assessment	• Assessments are completed after each unit of work.	• The cumulative assessments are one hour long and	• At the start of the summer term, we complete an end-

	• The assessments take two forms: progress check or cumulative assessment. • Progress checks are a 15-minute assessment on an individual unit of work – these assessments are pass/fail. • Cumulative assessments test the students on everything that they have covered in the course up to that point.	occur on average after every three units – these assessments are graded. • Assessment results are used alongside bookwork to produce estimated grades that are reported to parents at regular intervals throughout the year.	of-year assessment which the students need to pass at grade D or higher to be able to continue into year 13 – these assessments are used to generate UCAS grades.
Year 13 **(Pure)**	• Functions & graphs • Sequences & series • Binomial expansion • Radians • Trigonometric functions • Trigonometry & modelling	• Parametric equations • Differentiation • Numerical methods • Integration	• Vectors • Revision
Year 13 **(Applied)**	• Regression, correlation & hypothesis testing • Conditional probability • The normal distribution • Moments	• Forces & friction • Projectiles • Applications of forces • Further kinematics	• Revision
Assessment	• Assessments follow the same pattern as in year 12	• In early January, the students sit mock examinations.	• The A level examinations take place in May/June. • These consist of three examinations papers, each 2 hours long. • The first & second papers assess the Pure Mathematics content; the third paper assesses the Applied course.