

MATHEMATICS

Exam board: Edexcel (IGCSE)

Assessment Method: 100% Exam (Assessed with two equally weighted exam calculator-papers out of 100 marks each)

Exam Length: There are two exam papers that are 2 hr in length each. These are sat in the Summer Term.

Breakdown of units

- Unit 1. Number. Calculations, rounding, indices, surds, reciprocals and the order of operations. Factors, multiples, primes and standard form.
- Unit 2. Algebra. Rearranging and solving equations. Forming equations to solve problems. Solving problems with sequences.
- Unit 3. Interpreting and representing data. Averages and range. Scatter graphs.
- Unit 4. Fractions, ratio and percentages. Problems with fractions and percentages. Problems with ratio and proportion.
- Unit 5. Angles and trigonometry. Polygons and angles in parallel lines. Pythagoras' theorem and trigonometry.
- Unit 6. Graphs. Basic graphs and real-life graphs. Linear graphs and coordinate geometry. Quadratic, cubic and other graphs.
- Unit 7. Area and volume. Area and perimeter of circles. Finding the surface area and volume of cylinders, cones and spheres. Accuracy and bounds.
- Unit 8. Transformations and constructions. Translations, rotations, reflections and enlargements. Constructions, loci and bearings.
- Unit 9. Equations and inequalities. Solving quadratic equations and completing the square. Solving simple simultaneous equations. Solving linear and quadratic simultaneous equations. Solving inequalities.
- Unit 10. Probability. Combined and mutually exclusive events. Independent events and tree diagrams. Conditional probability. Venn diagrams and set notations.
- Unit 11. Multiplicative reasoning. Percentages, growth and decay and compound measures. Ratio and proportion.
- Unit 12. Similarity and congruence. Congruence, geometric proof and congruence, similarity in 2D and 3D.
- Unit 13. More trigonometry. Graphs of trigonometric functions, calculating the area of a triangle. The sine and cosine rule. Solving 3D problems with trigonometry.
- Unit 14. Further statistics. Cumulative frequency and histograms.
- Unit 15. Equations and graphs. Solving simultaneous equations graphically, representing inequalities graphically. Graphs of quadratic functions and solving quadratic equations graphically. Graphs of cubic functions.
- Unit 16.* Circle theorems. Radii, chords, tangents and angles in circles. Applying the circle theorems to solve problems.
- Unit 17. More algebra. Rearranging formulae. Simplifying algebraic fractions and solving algebraic fraction equations. Surds, functions and proof.
- Unit 18. Vectors and geometric proof. Vectors and vector notation. Vector arithmetic, parallel vectors. Solving geometric problems using vectors.
- Unit 19. Proportion and graphs. Exponential functions, non-linear graphs, translating, reflecting and stretching graphs of functions. Direct and inverse proportion.
- Unit 20. Calculus. Rates of change, differentiating integer powers. Using differentiation to find the gradient, rate of change and minimum and maximum points of graphs. Applying calculus to solve problems with kinematics.
- Unit 21. Revision.
- Unit 22. Exam preparation

Coursework

N/A

Overlap with other subjects

Whilst learning mathematics, students develop their skills in numeracy, reasoning and problem solving which allows them to more easily overcome obstacles in many other subjects including physics, biology, chemistry, computer science.

Lower School Teaching Staff

Eytan Melamud



MATHEMATICS

Programme of Study

<p>Autumn Term 1</p> <p>Unit 12. Similarity and congruence. Congruence, geometric proof and congruence, similarity in 2D and 3D.</p> <p>Unit 13. More trigonometry. Graphs of trigonometric functions, calculating the area of a triangle. The sine and cosine rule. Solving 3D problems with trigonometry.</p>	<p>Autumn Term 2</p> <p>Unit 14. Further statistics. Cumulative frequency and histograms.</p> <p>Unit 15. Equations and graphs. Solving simultaneous equations graphically, representing inequalities graphically. Graphs of quadratic functions and solving quadratic equations graphically. Graphs of cubic functions.</p>
<p>Spring Term 3</p> <p>Unit 16. Circle theorems. Radii, chords, tangents and angles in circles. Applying the circle theorems to solve problems.</p> <p>Unit 17. More algebra. Rearranging formulae. Simplifying algebraic fractions and solving algebraic fraction equations. Surds, functions and proof.</p>	<p>Spring Term 4</p> <p>Unit 18. Vectors and geometric proof. Vectors and vector notation. Vector arithmetic, parallel vectors. Solving geometric problems using vectors.</p> <p>Unit 19. Proportion and graphs. Exponential functions, non-linear graphs, translating, reflecting and stretching graphs of functions. Direct and inverse proportion.</p>
<p>Summer Term 5</p> <p>Unit 20. Calculus. Rates of change, differentiating integer powers. Using differentiation to find the gradient, rate of change and minimum and maximum points of graphs. Applying calculus to solve problems with kinematics.</p> <p>Unit 21. Revision and exam preparation</p>	<p>Summer Term 6</p> <p>-</p>

