AP MATH GENIUS PROGRAM

Making your child a genius at math

SN	Topic	Duration
A.	**Algebra I Genius - Accelerated / Regular**	
1	**Linear Equations and Inequalities**	**4 Weeks**
1.1	Solving linear equations	Live Classes Online lessons Math Genius Activities / Worksheet
1.2	Solving linear inequalities	
1.3	Graphing linear equations and inequalities	
1.4	Systems of linear equations and inequalities	
	Review	**1 week**
2	**Functions and Graphs**	**4 weeks**
2.1	Function Notation	Live Classes Online lessons Math Genius Activities / Worksheets
2.2	Domain and Range	
2.3	Operations on Functions	
2.4	Composite Functions	
2.5	Transformations of Functions	
2.6	Inverse Functions	
2.7	Introduction to Exponential and Logarithmic Functions	
	PTA & Review	**1 week**
3	**Polynomial and Rational Functions**	**4 weeks**
3.1	Polynomial Functions and Their Graphs	Live Classes Online lessons Math Genius Activities / Worksheets
3.2	Polynomial Division	
3.3	Real Zeros of Polynomial Functions	
3.4	Rational Functions and Asymptotes	
	PTA & Review	**1 week**
4	**Quadratic Equations**	**4 weeks**
4.1	Solving quadratic equations by factoring	Live Classes Online lessons Math Genius Activities / Worksheets
4.2	completing the square	
4.3	Quadratic formula	
4.4	Graphing quadratic functions	
4.5	Properties of parabolas (vertex, axis of symmetry)	
5	**Rational Expressions and Functions**	**4 weeks**

5.1	Simplifying rational expressions	Live Classes Online lessons Math Genius Activities / Worksheets
5.2	Multiplying and dividing rational expressions	
5.3	Adding and subtracting rational expressions	
5.4	Solving rational equations	
	PTA & Review	**1 week**
B.	**Algebra II Genius - Accelerated/Regular**	
1	**Complex Numbers**	**4 weeks**
1.1	Imaginary unit i	Live Classes Online lessons Math Genius Activities / Worksheets
1.2	Addition and Multiplication of Complex numbers	
1.3	Multiplication and Division of Complex numbers	
1.4	Polar form of complex numbers	
	PTA & Review	**1 week**
2	**Advanced Functions**	**4 Weeks**
2.1	Polynomial functions and their graphs	Live Classes Online lessons Math Genius Activities / Worksheets
2.2	Rational functions and asymptotes	
2.3	Exponential functions	
2.4	Logarithmic functions (properties, solving equations)	
	PTA & Review	**1 week**
3	**Systems of Equations and Inequalities**	**4 Weeks**
3.1	Solving systems of linear equations - substitution	Live Classes Online lessons Math Genius Activities / Worksheets
3.2	Solving systems of linear equations - elimination	
3.3	Solving systems of linear equations - matrices	
3.4	Solving systems of nonlinear equations	
3.5	Linear programming	
	PTA & Review	**1 week**
4	**Matrices**	**4 Weeks**
4.1	Matrix operations - addition, subtraction	Live Classes Online lessons Math Genius Activities / Worksheets
4.2	Matrix operations - multiplication	
4.3	Determinants and inverses	
4.4	Solving systems of equations using matrices	
	PTA & Review	
5	**Conic Sections**	**4 Weeks**
5.1	Parabolas	Live Classes Online lessons Math Genius Activities / Worksheets
5.2	Ellipses	
5.3	Hyperbolas	
5.4	Circles	

	PTA & Review	**1 week**
6	**Probability and Statistics**	**4 Weeks**
6.1	Permutations and combinations	Live Classes Online lessons Math Genius Activities / Worksheets
6.2	Probability rules and calculations	
6.3	Descriptive statistics (mean, median, mode, standard deviation)	
6.4	Probability distributions	
	PTA & Review	**1 week**
C.	**Geometry Genius - Accelerated/Regular**	
1	**Superfast 2D & 3D Shapes and Angles**	**4 Weeks**
1.1	Identify popular 2D shapes	Live Classes Online lessons Math Genius Activities / Worksheets
1.2	Identify popular 3D shapes	
1.3	Transversal, parallel, and intersecting lines	
1.4	Names and values of angles	
1.5	Angles in clocks	
1.6	Angles in compass bearings	
1.7	Angle pairs	
	PTA & Review	1 week
2	**Superfast Triangles**	**5 Weeks**
2.1	Identify popular triangle types	Live Classes Online lessons Math Genius Activities / Worksheets
2.2	Identify popular triangle angles	
2.3	Perimeter of triangles	
2.4	Area of triangles	
2.5	Right Triangles	
2.6	Similar triangles by AA	
2.7	Similar triangles by SAS	
2.8	Similar triangles by SSS	
2.9	Similar triangles by RHS	
	PTA & Review	1 week
3	**Superfast Quadrilaterals & Polygons**	**4 Weeks**
3.1	Identify different quadrilaterals	Live Classes Online lessons Math Genius Activities / Worksheets
3.2	Angles in a quadrilateral	
3.3	Properties of their diagonals	
3.4	Perimeter of different quadrilaterals	
3.5	Area of different quadrilaterals	
3.6	Interior angles of a polygon	
3.7	Exterior angles of a polygon	
3.8	Compound shapes involving quadrilaterals and polygons	
	PTA & Review	1 week
4	**Superfast Circles**	**3 Weeks**
4.1	Parts of a circle	

4.2	Circumference of a circle	Live Classes Online lessons Math Genius Activities / Worksheets
4.3	Area of a circle	
4.4	Subtended angles	
4.5	Cyclic quadrilateral	
4.6	Chords	
4.7	Tangents	
4.8	Major and minor arc lengths	
4.9	Major and minor sector area	
	PTA & Review	1 week
5	**Superfast Surface Area & Volume of 3D Shapes**	**4 Weeks**
5.1	Types of 3D shapes	Live Classes Online lessons Math Genius Activities / Worksheets
5.2	Surface Area – Sphere, Cylinder, Cone	
5.3	Volume – Sphere, Cylinder, Cone	
	PTA & Review	1 week
6	**Superfast Transformations & Symmetry**	**5 Weeks**
6.1	Reflective symmetry	Live Classes Online lessons Math Genius Activities / Worksheets
6.2	Rotational symmetry	
6.3	Translation	
6.4	Reflection	
6.5	Rotation	
6.6	Dilation	
6.7	Transformations in depth	
	PTA & Review	1 week
7	**Coordinate Geometry**	**4 Weeks**
7.1	Distance formula	Live Classes Online lessons Math Genius Activities / Worksheets
7.2	Midpoint formula	
7.3	Slope of a line	
7.4	Equation of a line	
	PTA & Review	1 week
8	**Logical Proofs & Theorems**	**4 Weeks**
8.1	Writing logical proofs	Live Classes Online lessons Math Genius Activities / Worksheets
8.2	Triangle congruence proofs	
8.3	Angle theorems	
8.4	Parallel line theorems	
	PTA & Review	1 week
9	**Trigonometry Basics**	**4 Weeks**
9.1	Introduction to trigonometric ratios	Live Classes Online lessons Math Genius Activities / Worksheets
9.2	Using trigonometric ratios in right triangles	
9.3	Trigonometric values for special angles	
9.4	Inverse trigonometric functions	
9.5	Law of Sines	
9.6	Law of Cosines	
9.7	Trigonometric identities	

	PTA & Review	1 week
10	**Analytic Geometry**	**3 Weeks**
10.1	Equations of circles	Live Classes Online lessons Math Genius Activities / Worksheets
10.2	Ellipses and hyperbolas	
10.3	Parabolas	
	PTA & Review	1 week
11	**Other Advanced Geometry Topics**	**3 Weeks**
11.1	Introduction to vectors & Applications in Geometry	Live Classes Online lessons Math Genius Activities / Worksheets
11.2	Non-Euclidean Geometry - Spherical and hyperbolic	
11.3	Geometric Constructions	
11.4	Geometric Optimization	
11.5	Projective Geometry	
11.6	Mathematical Modeling	
	PTA & Review	1 week
D.	**Pre-Calculus Genius - Accelerated / Regular**	
1	**Trigonometry**	**4 weeks**
1.1	Unit Circle and Trigonometric Functions	Live Classes Online lessons Math Genius Activities / Worksheets
1.2	Trigonometric Identities	
1.3	Graphs of Trigonometric Functions	
1.4	Inverse Trigonometric Functions	
	PTA & Review	**1 week**
2	**Analytic Trigonometry**	**4 weeks**
2.1	Trigonometric Equations	Live Classes Online lessons Math Genius Activities / Worksheets
2.2	Sum and Difference Formulas	
2.3	Double Angle and Half Angle Formulas	
2.4	Trigonometric Equations and Inequalities	
	PTA & Review	**1 week**
3	**Exponential and Logarithmic Functions**	**4 weeks**
3.1	Exponential Functions	Live Classes Online lessons Math Genius Activities / Worksheets
3.2	Logarithmic Functions	
3.3	Properties of Logarithms	
3.4	Exponential and Logarithmic Equations	
	PTA & Review	**1 week**
4	**Systems of Vectors, Equations and Matrices**	**4 weeks**
4.1	Systems of Linear Equations	Live Classes Online lessons Math Genius Activities / Worksheets
4.2	Gaussian Elimination and Matrix Operations	
4.3	Matrix Inverses	
4.4	Solving Systems using Matrices	

	PTA & Review	**1 week**
5	**Analytic Geometry**	**4 weeks**
5.1	Conic Sections (Circle, Parabola, Ellipse, Hyperbola)	Live Classes Online lessons Math Genius Activities / Worksheets
5.2	Parametric Equations and Graphs	
5.3	Polar Coordinates and Graphs	
5.4	Complex numbers in polar form	
5.5	De Moivre's Theorem	
	PTA & Review	**1 week**
6	**Sequences and Series**	**4 weeks**
6.1	Arithmetic Sequences and Series	Live Classes Online lessons Math Genius Activities / Worksheets
6.2	Geometric Sequences and Series	
6.3	Infinite Geometric Series	
6.4	Convergence and Divergence of Series	
	PTA & Review	**1 week**
7	**Introduction to Limits and Continuity**	**4 weeks**
7.1	Understanding Limits	Live Classes Online lessons Math Genius Activities / Worksheets
7.2	Continuity of Functions	
7.3	Intermediate Value Theorem	
7.4	Limits at Infinity	
	PTA & Review	**1 week**
8	**Introduction to Derivatives and Integrals**	**4 weeks**
8.1	Concept of a derivative	Live Classes Online lessons Math Genius Activities / Worksheets
8.2	Basic differentiation rules	
8.3	Concept of an integral	
8.4	Basic integration techniques	
	PTA & Review	**1 week**
E	**Calculus AB Genius**	
1	**Limits and Continuity**	**4 weeks**
1.1	Understanding Limits Graphically and Numerically	Live Classes Online lessons Math Genius Activities / Worksheets
1.2	Properties of Limits	
1.3	Calculating Limits Algebraically	
1.4	One-sided Limits	
1.5	Continuity of Functions	
1.6	Intermediate Value Theorem	
	PTA & Review	**1 week**

2	**Introduction to Derivatives and Integrals**	**4 weeks**
2.1	Concept of a derivative	Live Classes Online lessons Math Genius Activities / Worksheets
2.2	Basic differentiation rules	
2.3	Concept of an integral	
2.4	Basic integration techniques	
	PTA & Review	**1 week**
3	**Applications of Derivatives**	**4 weeks**
3.1	Analysis of Graphs (Increasing/Decreasing, Concavity, Points of Inflection)	Live Classes Online lessons Math Genius Activities / Worksheets
3.2	Optimization Problems (Maxima and Minima)	
3.3	Curve Sketching (Critical Points, First and Second Derivative Tests)	
3.4	Linear Approximation and Differentials	
	PTA & Review	**1 week**
4	**Integration and Accumulation of Change**	**4 weeks**
4.1	Antiderivatives and Indefinite Integrals	Live Classes Online lessons Math Genius Activities / Worksheets
4.2	Definite Integrals and the Fundamental Theorem of Calculus	
4.3	Riemann Sums and the Trapezoidal Rule	
4.4	Area Between Curves	
4.5	Applications of Integration (Net Change, Average Value of a Function)	
	PTA & Review	**1 week**
5	**Applications of Integration to Geometry**	**4 weeks**
5.1	Area Under a Curve	Live Classes Online lessons Math Genius Activities / Worksheets
5.2	Volume of Revolution (Disk Method, Washer Method)	
5.3	Arc Length	
5.4	Surface Area of Revolution	
	PTA & Review	**1 week**
6	**Differential Equations**	**4 weeks**
6.1	Slope Fields and Euler's Method	Live Classes Online lessons Math Genius Activities / Worksheets
6.2	Separable Differential Equations	
6.3	Exponential Growth and Decay	
	PTA & Review	**1 week**
7	**Applications of the Definite Integral**	**4 weeks**
7.1	Modeling with Differential Equations	Live Classes Online lessons Math Genius Activities / Worksheets
7.2	Motion Along a Line	
7.3	Particle Motion (Position, Velocity, Acceleration)	

7.4	Work, Average Value, and Fluid Problems	
	PTA & Review	**1 week**
8	**Analytical Geometry**	**4 weeks**
8.1	Parametric Equations and Calculus	Live Classes Online lessons Math Genius Activities / Worksheets
8.2	Polar Coordinates and Calculus	
8.3	Vectors and Calculus (Vector Functions, Tangent and Normal Vectors)	
	PTA & Review	**1 week**
9	**Infinite Sequences and Series**	**4 weeks**
9.1	Sequences (Convergence, Divergence)	Live Classes Online lessons Math Genius Activities / Worksheets
9.2	Series (Geometric Series, p-Series, Convergence Tests)	
9.3	Taylor and Maclaurin Series	
	PTA & Review	**1 week**
F	**Calculus BC Genius**	
1	**Review of Calculus AB Topics**	**4 weeks**
1.1	Limits and Continuity	Live Classes Online lessons Math Genius Activities / Worksheets
1.2	Differentiation and its Applications	
1.3	Integration and its Applications	
1.4	Differential Equations	
1.5	Applications of the Definite Integral	
	PTA & Review	**1 week**
2	**Further Techniques and Applications of Integ**	**4 weeks**
2.1	Integration by Parts	Live Classes Online lessons Math Genius Activities / Worksheets
2.2	Trigonometric Integrals and Substitutions	
2.3	Partial Fractions	
2.4	Improper Integrals	
2.5	Numerical Integration (Trapezoidal Rule, Simpson's Rule)	
	PTA & Review	**1 week**
3	**Parametric, Polar, and Vector Functions**	**4 weeks**
3.1	Parametric Equations and Curves	Live Classes Online lessons Math Genius Activities / Worksheets
3.2	Calculus with Parametric Curves (Derivatives, Arc Length, Surface A	
3.3	Polar Coordinates and Graphs	
3.4	Calculus with Polar Curves (Derivatives, Arc Length, Area)	
3.5	Vectors in Two and Three Dimensions	
3.6	Dot Product and Cross Product	
3.7	Motion in Space	

	PTA & Review	**1 week**
4	**Infinite Sequences and Series**	**4 weeks**
4.1	Convergence and Divergence of Series	Live Classes Online lessons Math Genius Activities / Worksheets
4.2	Tests for Convergence (Comparison Test, Limit Comparison Test, A	
4.3	Power Series and Interval of Convergence	
4.4	Taylor and Maclaurin Series	
4.5	Applications of Taylor Series (Approximations, Error Estimation)	
	PTA & Review	**1 week**
5	**Advanced Differential Calculus**	**4 weeks**
5.1	L'Hôpital's Rule	Live Classes Online lessons Math Genius Activities / Worksheets
5.2	Improper Integrals	
5.3	Differential Equations (Separation of Variables, Exact Equations, Int	
	PTA & Review	**1 week**
6	**Advanced Applications of Integration**	**4 weeks**
6.1	Area Between Curves (Polar Coordinates)	Live Classes Online lessons Math Genius Activities / Worksheets
6.2	Volume of Solids with Known Cross-Sections	
6.3	Arc Length and Surface Area in Parametric and Polar Forms	
6.4	Differential Equations (Models involving Newton's Law of Cooling, L	
	PTA & Review	**1 week**
7	**Advanced Topics in Calculus**	**4 weeks**
7.1	Sequences and Series of Functions	Live Classes Online lessons Math Genius Activities / Worksheets
7.2	Convergence and Uniform Convergence	
7.3	Fourier Series (Concepts and Applications)	
	PTA & Review	**1 week**
8	**Advanced Techniques in Integration**	**4 weeks**
8.1	Integration Techniques (Partial Fractions, Trigonometric Integrals, In	Live Classes Online lessons Math Genius Activities / Worksheets
8.2	Improper Integrals and Comparison Tests	
8.3	Applications of Integration (Centroids, Moments of Inertia, Fluid Pre	
	PTA & Review	**1 week**
9	**Advanced Differential Equations**	**4 weeks**
9.1	Second-Order Differential Equations (Homogeneous, Non-homoger	Live Classes Online lessons Math Genius Activities / Worksheets
9.2	Systems of Differential Equations	
9.3	Applications to Engineering and Physics (Harmonic Motion, Electric	
	PTA & Review	**1 week**

G	**AP Statistics Genius**	
1	**Exploring Data**	**4 weeks**
1.1	Overview of Data Analysis	Live Classes Online lessons Math Genius Activities / Worksheets
1.2	Types of Data and Variables	
1.3	Describing Data Using Numerical and Graphical Methods	
1.4	Measures of Central Tendency (Mean, Median, Mode)	
1.5	Measures of Variability (Range, Variance, Standard Deviation)	
1.6	Frequency Distributions and Histograms	
1.7	Stem-and-Leaf Plots	
1.8	Boxplots (Box-and-Whisker Plots)	
	PTA & Review	**1 week**
2	**Exploratory Data Analysis (EDA)**	**4 weeks**
2.1	Quartiles, Interquartile Range (IQR)	Live Classes Online lessons Math Genius Activities / Worksheets
2.2	Scatterplots and Correlation	
2.3	Outliers and Influential Points	
	PTA & Review	**1 week**
3	**Sampling and Experimentation**	**4 weeks**
3.1	Planning and Conducting Surveys	Live Classes Online lessons Math Genius Activities / Worksheets
3.2	Types of Sampling Methods	
3.3	Simple Random Sampling	
3.4	Stratified Sampling	
3.5	Cluster Sampling	
3.6	Systematic Sampling	
3.7	Experimental Design Principles	
3.8	Control, Randomization, Replication	
3.9	Bias in Sampling and Experiments	
3.10	Selection Bias, Nonresponse Bias, Undercoverage	
3.11	Observational Studies vs. Experiments	
	PTA & Review	**1 week**
4	**Anticipating Patterns**	**4 weeks**
4.1	Probability	Live Classes Online lessons Math Genius Activities / Worksheets
4.2	Basic Probability Rules	
4.3	Conditional Probability	
4.4	Independence and Multiplication Rule	
4.5	Discrete Probability Distributions	
4.6	Binomial Distribution	
4.7	Geometric Distribution	
4.8	Poisson Distribution	

4.9	Sampling Distributions	
4.10	Sampling Distribution of a Sample Mean	
4.11	Central Limit Theorem	
4.12	Statistical Inference	
	PTA & Review	**1 week**
5	**Confidence Intervals**	**4 weeks**
5.1	Confidence Interval for a Population Mean	Live Classes Online lessons Math Genius Activities / Worksheets
5.2	Confidence Interval for a Population Proportion	
5.3	Hypothesis Testing	
5.4	Null and Alternative Hypotheses	
5.5	Type I and Type II Errors	
5.6	P-Values and Significance Levels	
5.7	Inference for Means and Proportions	
5.8	One-Sample and Two-Sample Tests	
5.9	Paired Data	
5.10	Chi-Square Tests	
5.11	Goodness-of-Fit Test	
5.12	Test for Independence (Contingency Tables)	
	PTA & Review	**1 week**
6	**Linear Regression and Correlation**	**4 weeks**
6.1	Scatterplots and Correlation Coefficient (r)	Live Classes Online lessons Math Genius Activities / Worksheets
6.2	Linear Regression Model	
6.3	Least-Squares Regression Line	
6.4	Interpreting Regression Output	
6.5	Residual Analysis	
6.6	Residual Plots	
6.7	Checking Assumptions of Linear Regression	
6.8	Influential Points and Outliers	
6.9	Transformations to Achieve Linearity	
	PTA & Review	**1 week**
7	**Inference for Relationships**	**4 weeks**
7.1	Inference for Correlation and Slope	Live Classes Online lessons Math Genius Activities / Worksheets
7.2	Confidence Intervals for Correlation Coefficient	
7.3	Testing the Significance of the Slope	
7.4	Multiple Regression Analysis	
7.5	Fitting Multiple Regression Models	
7.6	Interpreting Multiple Regression Output	
7.7	Model Selection and Diagnostics	
	PTA & Review	**1 week**

8	**Probability Simulation**	**4 weeks**
8.1	Monte Carlo Simulations	Live Classes Online lessons Math Genius Activities / Worksheets
8.2	Using Simulation to Estimate Probabilities	
8.3	Applications of Probability Simulation	
	PTA & Review	**1 week**
9	**Analyzing Categorical Data**	**4 weeks**
9.1	Analyzing Categorical Data	Live Classes Online lessons Math Genius Activities / Worksheets
9.2	Two-Way Tables and Marginal/Conditional Distributions	
9.3	Chi-Square Test of Independence	
9.4	Relative Risk and Odds Ratio	
	PTA & Review	**1 week**
10	**Final Review and Exam Preparation**	**4 weeks**
10.1	Review of Key Concepts and Techniques	Live Classes Online lessons Math Genius Activities / Worksheets
10.2	Practice AP Statistics Exam Questions	
10.3	Tips for Exam Day	
	PTA & Review	**1 week**
Important Note: All enrollments are subject to our Terms and Conditions, which can be reviewed at https://www.profved.com/privacy-policy/.		