Advanced Mathematical Decision Making is a state-designed mathematics course that furthers student interaction with concept knowledge gained from algebra and geometry. It builds on students' comprehension of statistical information and summaries, basic financial decisions, and analyzing and effectively modeling data and information to develop capacity for making real-world, informed decisions.

Topics for this course include trigonometry and three-dimensional geometry; principles of personal finance, budgeting, and investments; graphical data description, measurement, and modeling; probability application and distribution.

Students begin each lesson by discovering new concepts through guided instruction, and then confirm their understanding in an interactive, feedback-rich environment. In Discussions, students exchange and explain their mathematical ideas. Modeling activities equip students with tools for analyzing a variety of real-world scenarios and mathematical ideas. Journaling activities allow students to reason abstractly and quantitatively, construct arguments, critique reasoning, and communicate precisely. Performance tasks prepare students to synthesize their knowledge in novel, real-world scenarios and require that they make sense of multifaceted problems and persevere in solving them.

This course is built to adhere to the Georgia state Standards of Excellence (GSE).

Length: Two Semesters

Unit 1: Trigonometry

- Trigonometric Ratios
- Law of Cosines and Proofs
- Law of Sines and Proofs
- Transformations and Matrices
- Vectors
- Trigonometry Wrap-Up

Unit 2: Three-Dimensional Solids

- Three Dimensions
- What Is a Polyhedron?
- Cylinders and Cones
- Platonic Solids
- Surface Area
- Volume
- Spheres
- Similar Solids
- Performance Task: Three-Dimensional Solids

Copyright© Edmentum Inc. All Rights Reserved.

- Three-Dimensional Solids Wrap-Up

Unit 3: Cost of Living and Budget

- Types of Wages
- Compensation Packages
- Piece Rate
- Linear Equations and Wages
- Percentages and Commission
- Take-Home Pay: Required Deductions
- Take-Home Pay: Optional Deductions
- Income and Career
- Cost of Living and Budget
- Income and Budgeting Wrap-Up

Unit 4: Purchasing and Credit

- Sales Tax
- Coupons, Rebates, and Sales
- Marketing
- Credit Cards
- Calculating Credit Card Interest
- Tracking Payments and Purchases
- Comparing Credit Cards
- Credit Scores
- Bankruptcy
- Purchasing and Credit Wrap-Up

Unit 5: Loans and Payments

- Single and Payday Loans
- Installment Loans and Layaway
- Monthly Payment
- Loan Pre-Approvals
- Deferred Payments
- Paying Off
- Prepayment
- Loans and Payments Wrap-Up

Unit 6: Investments

- CDs
- Annuities
- Bonds
- Stocks
- The Stock Market
- Prediction
- Periodic Investment
- Retirement and Periodic Investment

Copyright© Edmentum Inc. All Rights Reserved.

- Individual Net Worth
- Investments Wrap-Up

Unit 7: Semester 1 Exam

Unit 8: Describing Data Graphically

- Categorical Data
- Numerical Data
- Two-Way Frequency Tables
- Describing Data Graphically Wrap-Up

Unit 9: Measures of Center and Spread

- Measures of Center
- Measures of Spread
- Box Plots
- Project
- Measures of Center and Spread Wrap-Up

Unit 10: Modeling Data

- Linear Models in Data
- Correlation
- Regression Methods
- Assessing Data Models
- Nonlinear Models
- Transforming Bivariate Data
- Modeling Data Wrap-Up

Unit 11: Introduction to Probability

- Random Outcomes, Sample Spaces, and Events
- Permutations and Combinations
- Independent and Dependent Events
- Conditional Probability
- Introduction to Probability Wrap-Up

Unit 12: Applications of Probability

- Using Two-Way Frequency Tables
- Using Probability to Make Decisions
- Simulations
- Project
- Applications of Probability Wrap-Up

Unit 13: Discrete Probability Distributions

- Discrete Random Variables
- Binomial Probability
- Cumulative Binomial Probability Distributions
- Discrete Probability Distributions Wrap-Up

Copyright© Edmentum Inc. All Rights Reserved.

Unit 14: Semester 2 Exam

Advanced Mathematical Decision Making
Copyright© Edmentum Inc. All Rights Reserved.