

CURRICULUM OVERVIEW

Mathematical Models with Applications A



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Course Overview

Mathematical Models with Applications A is designed for high school students who have completed Algebra I. The semester-length course starts with a review of the math skills that students will need throughout the course, then moves on to build their knowledge of financial math applications with banking and credit cards, cars and housing, budgeting and bills, and investing and retirement. Students will gain a better understanding of various financial situations and use math to guide their decision-making.

Each of the five units includes nine to fourteen lessons, with one to two projects. Each lesson has a minimum of five formative assessment questions to enable students and their teacher to gauge student understanding. Summative assessments include three quizzes in each unit, a test for each unit, and a semester exam covering all five units. Each project uses concepts covered in the unit.

- Unit 1: Construct and compare functions to solve real-world problems
- Unit 2: Investigate the real cost of using credit to make large purchases
- Unit 3: Analyze renting and owning vehicles and houses in real-world situations
- Unit 4: Create a monthly budget given a salary expectation
- Unit 5: Compose an investment portfolio

| Unit 1: BASIC MATH AND ALGEBRA REVIEW | | |
|---|---|--|
| Mathematical Models with Applications A | Assignments | |
| | 1. Course Overview | 13. Alternate Quiz: Equations* |
| | 2. Operations with Decimals and Fractions | 14. Linear Regressions |
| | 3. Percent's | 15. Quadratic Functions |
| | 4. Ratios, Rates, and Unit Rates | 16. Exponential Functions |
| | 5. Proportions | 17. Exponential Growth and Decay |
| | 6. Quiz: Basic Math | 18. Project: Functions in the Real World |
| | 7. Alternate Quiz: Basic Math* | 19. Quiz: Functions |
| | 8. Operations with Rational Numbers | 20. Alternate Quiz: Functions* |
| | 9. Writing and Solving Equations and Inequalities | 21. Unit Review |
| | 10. Writing Linear Equations | 22. Test: Basic Math and Algebra Review |
| | 11. Graphing and Interpreting Linear Equations | 23. Alternate Test: Basic Math and Algebra Review* |
| | 12. Quiz: Equations | 24. Glossary and Credits |

| Unit 2: BANKING AND CREDIT CARDS | | |
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| Mathematical Models with Applications A | Assignments | |
| | 1. Banking Services | 13. Installment Loans |
| | 2. Checking Accounts | 14. Annual Percentage Rate |
| | 3. ATMs | 15. Credit |
| | 4. Overdraft Protection | 16. Credit Card Purchases |
| | 5. Quiz: Checking Accounts | 17. Project: Cost of Credit |
| | 6. Alternate Quiz: Checking Accounts* | 18. Quiz: Borrowing |
| | 7. Savings Accounts | 19. Alternate Quiz: Borrowing* |
| | 8. Simple Interest | 20. Unit Review |
| | 9. Compound Interest | 21. Test: Banking and Credit Cards |
| | 10. Financing Large Purchases | 22. Alternate Test: Banking and Credit Cards* |
| | 11. Quiz: Savings Accounts | 23. Glossary and Credits |
| | 12. Alternate Quiz: Savings Accounts* | |

| Mathematical Models with Applications A | Unit 3: CARS AND HOUSING | |
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| | Assignments | |
| | 1. Credit Scores and Loans | 10. Mortgages |
| | 2. Leasing Cars | 11. Homeowner's Insurance |
| | 3. Automobile Loans | 12. Project: Renting vs. Buying A Home |
| | 4. Car Insurance | 13. Quiz: Renting and Buying Homes |
| | 5. Project: Buying vs. Leasing a Car | 14. Alternate Quiz: Renting and Buying Homes* |
| | 6. Quiz: Buying and Leasing Cars | 15. Unit Review |
| | 7. Alternate Quiz: Buying and Leasing Cars* | 16. Test: Cars and Housing |
| | 8. Renting | 17. Alternate Test: Cars and Housing* |
| | 9. Renter's Insurance | 18. Glossary and Credits |
| Mathematical Models with Applications A | Unit 4: BUDGETING AND BILLS | |
| | Assignments | |
| | 1. Wages | 14. Taxes: Federal 1040 |
| | 2. Payroll | 15. Taxes: FICA |
| | 3. Payroll Deductions | 16. Taxes: State |
| | 4. Other Deductions | 17. Taxes: Local |
| | 5. Commission and Tips | 18. Taxes: Other |
| | 6. Quiz: Paychecks and Deductions | 19. Project: Balancing a Budget |
| | 7. Alternate Quiz: Paychecks and Deductions* | 20. Quiz: Taxes |
| | 8. Life Insurance | 21. Alternate Quiz: Taxes* |
| | 9. Premiums | 22. Unit Review |
| | 10. Health Insurance | 23. Test: Budgeting and Bills |
| | 11. Other Insurance | 24. Alternate Test: Budgeting and Bills* |
| | 12. Quiz: Insurance | 25. Glossary and Credits |
| | 13. Alternate Quiz: Insurance* | |
| Mathematical Models with Applications A | Unit 5: INVESTING AND RETIREMENT | |
| | Assignments | |
| | 1. Financial Planning | 12. Stocks |
| | 2. Retirement Planning | 13. Bonds |
| | 3. 401(k) and 403(b) | 14. Mutual Funds |
| | 4. Quiz: Retirement | 15. Certificates of Deposit |
| | 5. Alternate Quiz: Retirement* | 16. Project: Creating an Investment Portfolio |
| | 6. Roth IRA and Traditional IRA | 17. Quiz: Investing |
| | 7. Social Security and Pension Plans | 18. Alternate Quiz: Investing* |
| | 8. Annuities | 19. Unit Review |
| | 9. Project: Planning for Retirement | 20. Test: Investing and Retirement |
| | 10. Quiz: Retirement Plans | 21. Alternate Test: Investing and Retirement* |
| | 11. Alternate Quiz: Retirement Plans* | 22. Glossary and Credits |
| Mathematical Models with Applications A | Unit 6: SEMESTER REVIEW AND EXAM | |
| | Assignments | |
| | 1. Semester Review | 3. Alternate Semester Exam* |
| | 2. Semester Exam | |

(*) Indicates alternative assignment