

Cosby High School

Part 1: Course Information

Instructor Information

Course: MRDM

Instructor: Dr. Powers

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Course Description

General Education/High School Pathway Area

- MRDM is a course that fulfills the math requirement for qualifying seniors.

Textbook & Course Materials

- **There is no required textbook for this course.**

Course Requirements

- Attendance is very important because students participate in hands-on activities during the class.

Course Structure

Methods: Students will receive daily instruction and will then complete assigned activities.

Assessment Methods

Student work will be assessed upon completion.

Part 2: Student Learning Outcomes

Learning Outcomes for MRDM

- Use financial mathematics to make personal financial decisions
- Use financial mathematics to make business decisions
- Use linear programming techniques to solve real-world problems
- Solve real-world optimization problems
- Analyze data from multiple viewpoints and perspectives
- Work with the normal distribution in real-world situations

- Work with confidence intervals in real-world situations
- Understand the role of precision in measurement

MRDM Standards

MR.N.NQ.A.1 Define common terms associated with finance (such as interest, compound interest, annuities, retirement funds, amortizations, future value, and present value) and know how each term is related to personal finance.

MR.N.NQ.A.2 Calculate compound interest within the context of personal finance (such as credit card debt, home/car purchase, personal loans, and amortization schedules) and use the results to make decisions (for example, determine which home financing option is best).

MR.N.NQ.A.3 Calculate net pay using gross pay (weekly, biweekly, monthly, or annual) and both fixed and variable deductions (such as withholding tax, Social Security tax, insurance costs, retirement investments and other contributory benefits).

MR.N.NQ.A.4 Access and use published data (such as cost of city or state utilities, housing, city or state taxes, meals, and other costs of living) to estimate and compare monthly living expenses based on location, identified needs, and personal preferences or desired lifestyles.

MR.N.NQ.A.5 Access and use published data (such as average life expectancy based on location and/or health issues, investment data, retirement funds, and annuity data) to calculate and compare retirement investments (such as total savings and monthly payouts) based on projected income.

MR.N.NQ.A.6 Access and use published data to create depreciation schedules and analyze the depreciation of various assets (such as cars, business equipment, and store fixtures).

MR.N.NQ.A.7 Access and use published data to calculate income tax based on projected gross annual income, returns on investments, tax deductions and tax credits, and other factors that affect calculations.

MR.N.NQ.A.8 Develop a personal mid-term (three to five years) financial plan based on anticipated income, projected living expenses, projected retirement or other savings, and other factors that affect personal finances.
B. Use financial mathematics to make business decisions.

MR.N.NQ.B.9 Compare the components of a small business plan to the components of a personal financial plan (i.e., identify components that are common to both plans and components that are unique to a small business plan)

MR.N.NQ.B.10 Define common terms associated with business finance (such as assets, liabilities, revenue, expenses, net profit, net loss, profit margin, and return on investment) and know how each term is related to business finance.

MR.N.NQ.B.11 Access and use published data to develop a three-year financial plan for starting and running a small business (including projected income and projected fixed and variable costs such as licenses, rent and utilities, city and state taxes, cost of goods sold, etc.).

MR.A.LP.A.1 Read, interpret, and solve linear programming problems graphically and by computational methods. B. Solve real-world optimization problems. MR.A.LP.B.2 Use linear programming to solve optimization problems (for example, optimizing profit for a small business).

MR.A.LP.B.3 Interpret the meaning of the maximum or minimum value in terms of the objective function.

MR.D.ID.A.1 Organize, analyze, and interpret data for problem solving (for example, compare data related to costs of living; analyze survey data; provide a circle graph that demonstrates the percentages of income that support various expenses).

MR.D.ID.A.2 Determine whether a set of data supports a given assertion (for example, whether a data set collected on Tennessee residents can be generalized to support an assertion about all Americans; whether a data set supports, or is large enough to support, the validity of a claim).

MR.D.ID.A.3 Develop facility with representations of a data set and explain why some representations are more accurate or relevant than others in a given context.

MR.D.ID.A.4 Interpret and use measures of central tendency and spread to solve problems and make informed decisions.

MR.D.ID.A.5 Calculate expected value in real-world situations (such as lottery return on investment, expected value of each possession in sports, and expected payoff in a game of chance).

MR.D.ID.A.6 Evaluate and compare two investments or strategies where one investment or strategy is safer but has lower expected value. Include large and small investments and situations with serious consequences.

MR.D.ID.A.7 Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values. Evaluate strategies and make decisions based on expected values (for example, whether a team should pursue a higher-scoring option with a smaller probability of success or a lower-scoring option with a higher probability of success; whether a homeowner should file a small insurance claim given the probability that the monthly cost of insurance will rise as a result).

MR.D.ND.A.1 Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve. B. Work with the confidence intervals in real-world situations.

MR.D.ND.B.2 Understand and interpret confidence levels and confidence intervals (for example, use the weights of randomly sampled boxes of cereal compared to the expected tolerances to determine whether the machinery is operating properly).

MR.G.GMD.A.1 Use standard units (metric and non-metric) to accurately measure objects to within 0.1 of the unit used.

MR.G.GMD.A.2 Use precise measurements (within 0.1 of the unit used) to calculate area, surface area, and volume/capacity (emphasize common two-and three-dimensional shapes).

MR.G.GMD.A.3 Understand and explain the effects that an error in measurement will have on a calculation that uses the erroneous measurement (for example, whether an error of 0.1 unit in length affects the calculated vs. actual measurement of the volume of an object, and whether that error is compounded by errors in other measurements used in the calculation).

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MR.G.GMD.B.4 Use standard units of measure to develop accurately estimated measurements of commonly available non-standard instruments of measurement (for example, establish the length of hand span in inches or centimeters; length of arm span or stride length in feet or yards; the area of a floor tile in square inches or square feet; the volume of a gallon of milk or a water bottle or a soda can in cubic inches or cubic centimeters, etc.).

MR.G.GMD.B.5 Understand and explain the consequences of relying on nonstandard units of measure (for example, explain why paper clip length or pencil length are not standard units of measure and how failing to use mutually agreed-upon units can lead to erroneous assumptions, calculations, or conclusions).

MR.G.GMD.B.6 Use the established dimensions of common non-standard measuring instruments to estimate other measurements using standard units to a given tolerance (for example, use stride length to estimate the length of a hallway to within 10% of the actual length in feet; use the estimated volume of a finger in cubic centimeters to estimate the amount of liquid in a glass).

MR.G.GMD.B.7 Estimate the area, surface area, volume, or capacity of an object using the established dimensions of common non-standard measuring instruments to determine measurements in standard units with and without using technology (for example, use the number of floor tiles along a wall to estimate the area of the floor of a room and use the height of a person to estimate the height of the room, then find the volume of the room based on those estimations; use the size of a milk jug to estimate the number of gallons in a tank of water).

MR.G.GMD.B.8 Estimate the amount of error in a calculation that is based on using established dimensions of common non-standard measuring instruments (for example, if a person's stride length is 30 inches plus/minus 2 inches, and the person uses stride length to measure the length and width of a plot of land, determine the estimated error in calculating the area of the plot of land).

MR.G.GMD.B.9 Understand and use unit conversions in estimations involving both standard and non-standard units (for example, determine how many boxes of flooring will be needed to cover a floor of given dimensions if 10% waste is assumed; how many gallons of paint will be needed to paint a room of a given size; how many bags of fertilizer will be needed to fertilize a yard of a given size).

MR.G.GMD.B.10 Discuss the various examples and consequences of innumeracy; consider poor estimation, improper experimental design, inappropriate comparisons, and scientific notation comparisons.

Part 3: Topic Outline/Schedule 2026-2027

Semester 1:

August/September Students will complete projects using financial math.

****No School August 6**

****No School September 4 & 7**

October/November/December

Students will complete projects using linear techniques to solve Real-world problems.

****Remote Day October 6 (Senior ACT)**

****No School: Fall Break October 12-16**

****No School November 25-27**

****Mid-term Exams: December 16, 17, 18**

****1:00 dismissal December 18**

Semester 2:

January/February Students will complete projects based on analyzing data.

****No School January 4**

****No School January 15 & 18**

****No School February 12 & 15**

March/April/May Students will complete projects precision and measurement techniques.

****Remote Day March 9 (11th ACT)**

****No School March 22-26 for Spring Break**

May 19-21 Semester Exams

****1:00 Dismissal May 21**

Part 4: Grading Policy

Grading Scale

90-100 = A; 80-89 = B; 70-79 = C; 60-69 = D; 0-59 = F

***Disclaimer: Assignments may change at any time.

Nine Weeks Grade

The nine weeks' grade will be calculated by averaging student assignment grades.

Late Work Policy

Late work will result in a 10% grade reduction each week.

Final Exam Policy

As daily attendance at school is critical for academic success, Cosby High School has added an incentive to the academic program to reward individual daily attendance.

- All **non-EOC teachers** are required to administer a comprehensive final exam that assesses the mastery of standards taught throughout the semester.
- **EOC teachers** are required to administer a graded quiz or test during the final exam blocks on the dates listed above. EOC quick scores are used in the final exam column and weighted as the final exam. The graded quiz or test will be averaged with the 4th nine weeks' grades.
- Exams are given on the last two/three days of both semesters. The grades on these exams will count 15% of the overall course average.

Attendance Policy

Attendance is extremely important to the education of each student. Students are expected to complete any and all work missed when they are absent. Please refer to the school district's attendance policy.

School Year 2026-2027

Final Exam Dates

Fall 2026

December 16, 17, 18

Spring 2027

May 19, 20, 21

****Dates may be changed at the discretion of the principal!**

(In the spring, exam dates for seniors are adjusted to allow time to average grades for graduation.)

ALL students in grades 9-12 have an opportunity to earn exemption on the final exam in non-EOC courses and/or final quiz/test given in the EOC courses. Teachers will follow the following guidelines in determining student exam exemption:

- The student has missed no more than 3 days (excused or unexcused) in the semester prior to the first day of finals.
- Absences for a school related activity (field trip, CTE program, athletic competition, etc.) does not count as an absence.
- The student is passing the class prior to the exams.

The student who qualifies for exam exemption may opt to take the exam on a no harm basis. If the exam grade damages the class average, then the exam grade will not count.

Teachers will administer tests in all courses and for all students except for those students who qualify for and accept the exemption.

Part 5: Course Policies

Students are expected to show respect for themselves and others at all times while on campus. Cell phones are not to be seen or heard during the duration of school day. A TI-84 calculator is provided for each student while in class, however, calculators are to remain in the classroom.

Academic Dishonesty Policy

Students caught cheating will receive a zero on the assignment/quiz and will not be allowed to redo that assignment or quiz.

According to Harbrace Handbook, 15th edition:

- **Plagiarism** is defined as “presenting someone else’s ideas, research, or opinions as your own without proper documentation, even if it has been rephrased.”
- This includes but is not limited to:
 - Copying verbatim all or part of another’s written work;
 - Using phrases, figures, or illustrations without citing the source;
 - Paraphrasing ideas, conclusions, or research without citing the source;
 - Using all or part of a literary plot, poem, or film without attributing the work to its creator.

Consequences of Plagiarism

- Plagiarism is a form of stealing and academic fraud.
- Students who are found guilty of plagiarism have the option of either redoing the assignment within a specified time period and accept a letter drop or taking a zero on the assignment.
- Parents are to be involved in making this decision

Religion in the Classroom

The board affirms that it is essential that the teaching about religion-and not of a religion be conducted in a factual, objective, and respectful manner in accordance with the following guidelines:

1. Religious themes may be a part of the curriculum for school-sponsored activities and programs provided it is essential to the learning experience in the various fields of study and is presented objectively;
2. The inclusion of religion shall be for educational purposes only;1
3. The emphasis on religious themes should be only as extensive as necessary for a balanced and comprehensive study of the curriculum. Such studies shall never be used to proselytize, establish, foster, or demean any particular religion, religious tenets, or beliefs; and1
4. Student-initiated expressions to questions or assignments which reflect their beliefs or non-beliefs about a religious theme shall be accommodated.