

Window Rock High School
Mathematics Department
Syllabus: Quantitative Reasoning
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Prerequisite: Algebra 1, Algebra 2, & Geometry

Course Description:

This course is designed to help students develop critical thinking and problem-solving skills using mathematical reasoning in real-world contexts. In this class, students will explore various topics related to quantitative data, with an emphasis on applying mathematical concepts to make informed decisions. Through real-life examples, discussions, hands-on activities, and projects, students will learn to make informed decisions based on numerical information. The course emphasizes not only the technical skills necessary for analyzing data, but also focuses on developing the **Habits of the Mind** that foster critical thinking and serve as foundational tools for lifelong learning and effective problem-solving.

Course Highlights:

- **Data Analysis & Interpretation:** Learn how to collect, analyze, and interpret different types of data, such as statistics and probability, and how they are used in fields like economics, science, and social studies.
- **Financial Literacy:** Understand the mathematical principles behind personal finance, including budgeting, interest rates, taxes, investments, and loans.
- **Critical Thinking & Problem Solving:** Develop strategies for solving complex, multi-step problems in a variety of contexts, fostering logical reasoning and mathematical fluency.
- **Real-World Applications:** Investigate how mathematical concepts are used to solve problems in daily life, from managing household expenses to interpreting news articles that involve statistical data.

Key Skills Developed:

- Proficiency in interpreting graphs, tables, and charts.
- Ability to make sound decisions using quantitative data.
- Enhanced problem-solving abilities for real-life applications.
- Improved critical thinking and decision-making skills.
- Ability to communicate mathematical reasoning clearly and effectively.

By the end of the course, students will have a deeper understanding of how quantitative reasoning impacts their lives and will be well-equipped to approach everyday challenges with a logical, mathematical mindset. More information on Fourth Credit High School Guidance and Standards at <https://www.azed.gov/standards-practices/k-12standards/mathematics-standards>

Habits of the Mind

- **Persistence:** Learn to approach complex problems with determination, taking time to analyze, re-evaluate, and refine solutions.
- **Flexibility:** Develop the ability to adapt to new challenges by thinking creatively and approaching problems from multiple perspectives.
- **Critical Thinking:** Engage in deep, reflective thinking to understand problems and solutions, questioning assumptions and seeking evidence-based conclusions.
- **Collaboration:** Work together with peers on group problems and projects, fostering teamwork and the ability to explain mathematical reasoning to others.
- **Metacognition:** Cultivate an awareness of your own thinking processes to assess and adjust problem-solving strategies, leading to better understanding and improvement over time.
- **Precision:** Focus on accuracy and clarity, ensuring that mathematical operations, data interpretations, and conclusions are correct and well-supported by evidence.

Performance Expectations

First Quarter:

- Chapter 1: Critical Thinking Skills
- Chapter 2: Sets
- Chapter 3: Logic
- APEX Unit 1 to Unit 3
- Project: Ads and Logic Poster

Second Quarter:

- Chapter 4: Systems of Numeration
- Chapter 5: Number Theory and the Real Number System
- Chapter 6: Algebra, Graphs, and Functions
- APEX Units 4 to Unit 6
- Project: Numeration Booklet

Third Quarter:

- Chapter 7: The Metric System
- Chapter 8: Geometry
- Chapter 9: Mathematical Systems
- Chapter 10: Consumer Mathematics
- APEX Unit 7 to Unit 9
- Project: Tariffs Booklet/Poster

Fourth Quarter:

- Chapter 11: Probability
- Chapter 12: Statistics
- Chapter 13: Graph Theory
- Chapter 14: Voting and Apportionment
- APEX Unit 10 and Unit 11
- Project: Leadership Booklet/Poster

Assessments

- Teacher designed standards-based assignments.
- Learning tasks/Activities/Projects
- Teacher designed chapter formative and summative assessments.
- APEX Unit Assessments

Materials

- Textbook: In a survey of Mathematics with Applications
- IXL.com
- APEX Online Learning: Math Foundations 1 (11 Units)
- Supplemental materials and resources
- Composition books for note-taking
- Markers/Colored Pencils

Grading Scale:

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