Reading Public Schools

Instilling a joy of learning and inspiring the innovative leaders of tomorrow

Course Description

This is a mathematical modeling course that is algebra-based, applications-oriented, and technology-dependent. The mathematics topics contained in this course are introduced, developed, and applied in an as-needed format in the financial settings covered. Students are encouraged to use a variety of problem-solving skills and strategies in real-world contexts and to question outcomes using mathematical analysis and data to support their findings. The course offers students multiple opportunities to use, construct, question, model, and interpret financial situations through symbolic algebraic representations, graphical representations, and verbal representations.

Content Standards

Algebra

Seeing Structure in Expressions
1. Interpret the structure of polynomial and rational expressions.
2. Write expressions in equivalent forms to solve problems.

Functions

Interpreting Functions
1. Analyze functions using different representations.

Building Functions
1. Build a function that models a relationship between two quantities.
2. Build new functions from existing functions.

Linear, Quadratic, and Exponential Models
1. Construct and compare linear, quadratic, and exponential models and solve problems.
    - Distinguish between situations that can be modeled with linear functions and with exponential functions.
        - Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.
        - Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.
        - Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.
    - Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).
    - Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.
2. Interpret expressions for functions in terms of the situation they model.

Math Practice Standards

- Making sense of problems and persevering in solving them
- Reasoning abstractly and quantitatively
- Constructing viable arguments and critiquing the reasoning of others
- Modeling with mathematics
- Using appropriate tools strategically
- Attending to precision
- Looking for and making use of structure
- Looking for and expressing regularity in repeated reasoning

Units	Essential Questions	Key Activities MAY include:
Employment & Income Taxes	• How do you get paid? • Beside the pay, what are the benefits of a job? • How do retired people have an income? • How are salaries recorded and reported? • What information do you need to complete a tax return? • How are gross pay, net pay, and taxable income different? • What tax structure (regressive, progressive, or flat) do you think is best and why?	⇒ Whole class instruction ⇒ Small group instruction
Banking Services	• How are banks and credit unions different? • What types of bank accounts can you open, and what are the pros and cons of each? • How is interest calculated? • How is calculating the present value and the future value of an investment different?	⇒ Formative assessments ⇒ Summative assessments ⇒ Performance tasks
Introduction to Consumer Credit	• How does credit work? • What is a credit score, and how does it impact your life? • How are credit card balances calculated? • How do you analyze a credit card statement?	⇒ Group projects ⇒ Explorations with technology
Automobile Ownership	• How can math help you buy or sell a car? • Why do we need auto insurance? • What is the value of your car? • How can algebraic functions help you to drive safely? •	⇒ Real-world application problems

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Curriculum Guide Overview

Curriculum Guide	Curriculum guides are public documents aligned with the Massachusetts Department of Education Curriculum Frameworks. They focus on the set of standards that students will learn within certain disciplines at appropriate grade levels. Each area of the curriculum is divided into general strands (broad categories) under which the standards fall. When we discuss "standards-based education" we mean that students are measured against their proficiency and growth towards meeting these standards. Curriculum Guides are intended for teachers, parents, and the wider school community as an overview document of the course of study for the year.
Curriculum Map	Curriculum maps are internal documents utilized as planning tools for teachers. Curriculum maps keep a focus on the end-of-year standards and chart a course for the teaching and learning over the year. They are typically organized in a grade-level overview organized by month or marking period. Curriculum maps typically include; standards and expectations for the grade/content, essential skills/concepts, methods of assessment, and major content resources. Maps are never "done" as ongoing work of educators include revisions, additions, and revisits to the maps. They provide an overview for the year while also allowing educators to see a vertical picture of how the content develops as students progress through each grade.
Standards	The standards used as the foundation of our curriculum come directly from the Massachusetts Department of Education Curriculum Frameworks. State standards may be viewed here: http://www.doe.mass.edu/frameworks/
Priority Areas	Priority areas are defined by the state of Massachusetts as the most critical areas in each grade level on which instructional time should focus.
Mathematical Practice Standards	Mathematical Practice Standards are a set of skills/behaviors that are replicated in grades preK-12. These standards describe ways in which students engage with the mathematical content and the level of application grows increasingly complex as students progress vertically throughout their education.
Content Standards	The Content Standards describe what students should know and be able to do once within the area of mathematics.
Essential Questions	Essential questions are questions that are not answerable with an easy answer or a simple instruction. The purpose of essential questions is to provide opportunities for inquiry into the learning and act as an umbrella to anchor the unit/lesson.
Resources	Resources identified in Curriculum Guides are not intended to be exhaustive, nor are they intended to be prescriptive. The resources identified may function as a menu of curriculum resources from which educators identify the most appropriate tools to utilized in their classrooms. More specifics about identified resources are identified within the curriculum map documents.