Greenwich Public Schools Curriculum Overview

Topics In Math

Personalized learning is achieved through standards-based, rigorous and relevant curriculum that is aligned to digital tools and resources.

Note: Teachers retain professional discretion in how the learning is presented based on the needs and interests of their students.

Course Description

TOPICS IN MATHEMATICS
(Grade 12 only)
Full Year
023000   6 Blocks   1 Credit
This project-oriented course is designed to strengthen an individual's mathematical skills. The students will study mathematics found in daily living, common career choices, and develop their problem-solving skills. Examples include budgeting, taxes, measures, investments, pricing out trips, and other authentic scenarios. Students will use Google Docs, Google Slides, and Google Sheets to present data and see how math is relevant and meaningful.

Unit Guide

- Project 1: So what was the point?
- Project 2: Roadtrip
- Project 3: Time to Redesign
- Project 4: It's all about the Benjamins
- Project 5: Welcome to the Real World
- Project 6: Food Tracker *(only for seniors not on internship/project/experience)*

Mathematical Practices

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

Enduring Understandings:
Project 1:

- Students will figure out that all occupations utilize some form of mathematics.

Project 2:

- Students will be able to budget for a real-life trip. They will consider the route driven and the cost of gasoline, activities, food, and hotel.
- Sales tax increases the amount you pay for an item. The federal government charges excise taxes on goods such as alcohol, tobacco, gasoline, and gambling to generate revenue.
- A budget can help you manage your money. Checks are a common form of payment. A balanced checkbook can help you keep track of your money and avoid overdrafts and bad checks.

Project 3:

- Students will be able to calculate the cost of a home renovation. They will take into consideration the cost of flooring, wall paper or wall color, furniture, light fixtures, decorations, etc.

Project 4:

- Students will be able to identify benefits and disadvantages of savings accounts, CD's stocks and mutual funds.
- Students will be able to calculate interest, markups, discounts, and percent change.
- A markup is how much more you pay for an item than a retailer. A discount is the amount you save when an item is on sale. When you have two discounts on the same item, the final price can depend on the order in which you calculate the discounts.

Project 5:

- Students will be able to budget for their lives after being a student. They will consider expenses related to transportation, living expenses, cellphone, taxes, etc.

Project 6:

- Students will be able to better understand their nutritional intake

Essential Questions:
Project 1:

- How is mathematics used in a variety of occupations?
- What mathematics from my educational experience will be important to utilize later in life?

Project 2:

- What route, activities, hotel, and food did you choose and why?

- How did you calculate the amount of gas needed?
- How often will you need to fill up your car?
- What type of math is important to know to budget for a real-life road trip?

Project 3:

- What room(s) will you be redesigning?
- What changes will you be making to the room(s)?
- What type of math is important to know to redesign a room?
- How can you measure the dimensions of a room without a long measuring tape?

Project 4:
- How is math used when investing money?
- How is a markup different from a discount?
- What is the difference between continuous vs non continuous compounding formulas, and what do we use each?

Project 5:
- Will you go to college first? If so, where do you plan on going? Will you have student loans?
- Where will you work? What will your salary be?
- Where are you going to live?
- How much will you spend on your electric bill? cable/satellite tv? internet/wifi?
- How much will you be paying in federal taxes per month?
- How much will you be paying in state taxes per month?
- How much will you have to pay for healthcare per month?
- What car will you be driving? How much will it cost per month?
- How much will you spend on gas each month?
- How much will you need to pay for car insurance each month?
- How much will you spend on food each month?
- How much will you spend on miscellaneous expenses? (clothing, entertainment, hygiene products, gym membership, etc.)
- Will your salary support your lifestyle?
- How is math used in the real-world?

Project 6:
- What did you eat and drink?
- What is your initial weight? What is your end weight?
- Were you able to hit your goal? Why or why not?
- What are carbohydrates? How many should you be consuming in a day? How are they good for you and how are they bad for you?
- How is sugar good for you? How is sugar bad for you? How much should you be consuming in a day?
- How is math used when it comes to nutrition?

Quarterly Grading
- Participation (includes Classwork) = 30%
- Assessments (both Summative & Formative) = 70%

Connecticut Common Core State Standards
Projects 1,2,6:

- **CCSS.MATH.CONTENT.7.EE.B.4** Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

Project 3:

- **CCSS.MATH.CONTENT.4.MD.A.3** Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.
- **CCSS.MATH.CONTENT.2.MD.A.1** Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
- **CCSS.MATH.CONTENT.2.MD.A.3** Estimate lengths using units of inches, feet, centimeters, and meters.
- **CCSS.MATH.CONTENT.2.MD.A.4** Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.
- **CCSS.MATH.CONTENT.5.MD.A.1** Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

Project 4:

- **CCSS.MATH.CONTENT.7.RP.A.3** Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.
- **CCSS.MATH.CONTENT.7.EE.A.2** Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. For example, $a + 0.05a = 1.05a$ means that "increase by 5%" is the same as "multiply by 1.05."
- **CCSS.MATH.CONTENT.7.EE.B.4** Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

Project 5:

- **CCSS.MATH.CONTENT.7.EE.B.4** Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.
- **CCSS.MATH.CONTENT.7.RP.A.3** Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.