

Course: Math 3 & 4 SC
Unit 4: Advanced Graphing and Equations

Year of Implementation: 2024-2025

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Stage One - Desired Results

Link(s) to New Jersey Student Learning Standards for this course:

<https://www.state.nj.us/education/cccs/2020/>

- **Unit Standards:**
 - **Content Standards**
 - A-SSE.A. Interpret the structure of expressions
 - 1. Interpret expressions that represent a quantity in terms of its context.
 - a: Interpret parts of an expression, such as terms, factors, and coefficients.
 - A-REI.B. Solve equations and inequalities in one variable
 - 3. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters
 - S-ID.A. Summarize, represent, and interpret data on a single count or measurement variable
 - 1. Represent data with plots on the real number line (dot plots, histograms, and box plots).
 - **21st Century Life & Career Standards**
 - 9.4.12.CI.2: Identify career pathways that highlight personal talents, skills, and abilities
 - 9.4.12.CT.1: Identify problem-solving strategies used in the development of an innovative product or practice.
 - 9.4.12.CT.2: Explain the potential benefits of collaborating to enhance critical thinking and problem solving.
 - 9.4.12.IML.1: Compare search browsers and recognize features that allow for filtering of information.
 - 9.4.12.TL.2: Generate data using formula-based calculations in a spreadsheet and draw conclusions about the data.
 - **Interdisciplinary Content Standards**
 - 6.1.12.EconNE.6.a: Analyze the impact of money, investment, credit, savings, debt, and financial institutions on the development of the nation and the lives of individuals

- HSN-Q.A.1: Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays
- **NJ Statutes:** NJ State law mandates the inclusion of the following topics in lesson design and instruction as aligned to elementary and secondary curriculum.

Amistad Law: N.J.S.A. 18A 52:16A-88 Every board of education shall incorporate the information regarding the contributions of African-Americans to our country in an appropriate place in the curriculum of elementary and secondary school students.

Holocaust Law: N.J.S.A. 18A:35-28 Every board of education shall include instruction on the Holocaust and genocides in an appropriate place in the curriculum of all elementary and secondary school pupils. The instruction shall further emphasize the personal responsibility that each citizen bears to fight racism and hatred whenever and wherever it happens.

LGBT and Disabilities Law: N.J.S.A. 18A:35-4.35 A board of education shall include instruction on the political, economic, and social contributions of persons with disabilities and lesbian, gay, bisexual, and transgender people, in an appropriate place in the curriculum of middle school and high school students as part of the district's implementation of the New Jersey Student Learning Standards (N.J.S.A. 18A:35-4.36) A board of education shall have policies and procedures in place pertaining to the selection of instructional materials to implement the requirements of N.J.S.A. 18A:35-4.35.

Diversity and Inclusion (N.J.S.A. 18A:35-4.36a) A board of education shall incorporate instruction on diversity and inclusion in an appropriate place in the curriculum of students in grades kindergarten through 12 as part of the district's implementation of the New Jersey Student Learning Standards.

Asian American and Pacific Islanders (AAPI) P.L.2021, c.410 Ensures that the contributions, history, and heritage of Asian Americans and Pacific Islanders (AAPI) are included in the New Jersey Student Learning Standards (NJSLs) for Social Studies in kindergarten through Grade 12 (P.L.2021, c.416)

For additional information, see

NJ Amistad Curriculum: <https://www.nj.gov/education/amistad/about/>

Diversity and Inclusion: <https://www.nj.gov/education/standards/dei/index.shtml>

- (Sample Activities/ Lessons): <https://www.nj.gov/education/standards/dei/samples/index.shtml>

Asian American and Pacific Islanders:

- [Asian American and Pacific Islander Heritage and History in the U.S.](#)

A Teacher's Guide from EDSITEment offering a collection of lessons and resources for K-12 social studies, literature and arts classrooms that center around the experiences, achievements and perspectives of Asian Americans and Pacific Islanders across U.S. history.

Transfer Goal: Students will be able to independently use their learning to organize numbers and data as they relate to real life situations.

As aligned with LRHSD Long Term Learning Goal(s): <https://www.lrhhsd.org/Page/6163>

- Problem-Solving: apply and transfer autonomously and collaboratively mathematical concepts and problem-solving techniques to unfamiliar, varied and real-world situations
- Reasoning: reason abstractly and quantitatively by applying mathematical representations, symbols and estimation techniques when engaging in problem-solving
- Critical Thinking: construct and effectively communicate valid conclusions and critique the reasoning of others
- Tools: identify the correct tools to solve problems, if applicable
- Structure: use multiple representations, critical thinking skills, and prior knowledge to solve problems in new situations
- Patterns: analyze data and recognize patterns in a variety of situations

Enduring Understandings

Students will understand that. . .

EU 1

- graphs are effective tools in presenting visual information in all aspects of life.

EU 2

- real-world scenarios can be transformed into equations in order to find solutions.

Essential Questions

- How can graphs sometimes be misleading?
- How can understanding a graph benefit employment?
- How can equations be used to solve real-world situations?

<p><u>Knowledge</u> Students will know . . .</p> <p>EU 1</p> <ul style="list-style-type: none"> the value of creating and reading a graph. (S-ID.A.1) <p>EU 2</p> <ul style="list-style-type: none"> real life situations can be interpreted and represented using equations and inequalities. (A-REI.B.3) 	<p><u>Skills</u> Students will be able to. . .</p> <p>EU 1</p> <ul style="list-style-type: none"> chart and label a graph. (S-ID.A.1) <p>EU 2</p> <ul style="list-style-type: none"> identify and write solutions of equations and inequalities. (A-REI.B.3)
<p>Stage Two - Assessment</p>	
<ul style="list-style-type: none"> 	
<ul style="list-style-type: none"> 	
<p>Stage Three - Instruction</p>	
<p><u>Learning Plan:</u> Suggested Learning Activities to Include Differentiated Instruction and Interdisciplinary Connections: Each learning activity listed must be accompanied by a learning goal of A= Acquiring basic knowledge and skills, M= Making meaning and/or a T= Transfer. All knowledge and skills must be addressed in this section with a corresponding lesson/activity which teaches each concept. The following color codes are used to notate activities that correspond with interdisciplinary connections and 21st Century Life & Career Connections (which involves Technology Literacy): <i>Red = Interdisciplinary Connection; Purple = 21st Century Life & Career Connection</i></p> <ul style="list-style-type: none"> List items needed at the grocery store (A, EU1) Demonstrate PEMDAS (A, EU2) Shopping Vocabulary Bingo (A, EU1) Demonstrate Internet skills to shop online (A, M, EU1) Gift Cards- Check balances of various cards by utilizing information on the back of the card (A, M, EU1 & EU2) Identify fixed and variable expenses (A, M, EU2) List and create a Venn Diagram identifying needs and wants (A, M, EU1) Compare food items that carry the store brand with a name-brand item (M, EU1) Use unit pricing and cost per serving to calculate if a sale item is truly a bargain (M, EU1 & EU2) 	

- Compare prices from different grocery store flyers, newspaper ads and websites and then select which items are the better buy **(M, EU1)**
- Make a shopping list using the grocery store flier, newspaper and their website **(M, EU1)**
- Comparison Shopping : Analyze two different online electronic retailers and using comparison shopping, identify the better deal **(M, EU1)**
- Merchant Policies –Students will be given two different receipts and asked to identify return policies and exchange policies from each **(M, EU1 & EU2)**
- Comparison Shopping : Analyze two different online electronic retailers and using comparison shopping identify the better deal **(M, EU1)**
- Create a shopping list with items needed to keep one healthy (ex. deodorant, shampoo) **(M, EU1)**
- Compare cost of store and brand name hygiene items **(M, EU1 & EU2)**
- Compare cost of supplements in health store versus department store **(M, EU1 & EU2)**
- Compare the cost of purchasing groceries at the store vs online. **(M, EU1 & EU2)**
- Create a T chart identifying incomes and expenses **(M, EU1)**
- After making a shopping list, visit the grocery store and purchase items on the shopping list **(T, EU1)**
- Retailer Visit: Given a wish list from your assigned Pollyanna, locate and purchase items utilizing comparison shopping to maximize budget **(T, EU1)**
- Calculate the cost for the year for a fitness center **(T, EU2)**
- Demonstrate practical application of skills through various field trips, including but not limited to restaurants, retail/grocery stores, municipal services and the mall. **(T, EU 1 & EU2)**

Pacing Guide

{This chart will be identical in all of the units for this course.}

Unit #	Title of Unit	Approximate # of teaching days
1	Advanced Number Sense	30-45
2	Finances	30-45
3	Budgeting	30-45
4	Advanced Graphing and Equations	30-45

Instructional Materials

- Graphing paper
- Calculator
- Manipulatives

Accommodations

Special Education: The curriculum will be modified as per the Individualized Education Plan (IEP). Students will be accommodated based on specific accommodations listed in the IEP.

Students with 504 Plans: Students will be accommodated based on specific accommodations listed in the 504 Plan.

English Language Learners: Students will be accommodated based on individual need and in consultation with the ELL teacher.

Students at Risk of School Failure: Students will be accommodated based on individual need and provided various structural supports through their school.

Gifted and Talented Students: Students will be challenged to enhance their knowledge and skills through acceleration and additional independent research on the subject matter.