

Course: Math 1 & 2 SC
Unit 4: Graphing and Equations

Year of Implementation: 2023-2024

Curriculum Team Members Jennifer Ingersoll jingersoll@lrhsd.org, Andrew Fiorentino afiorentino@lrhsd.org, Jackie Scuderi jscuderi@lrhsd.org

Stage One - Desired Results

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

{provide all applicable links to standards here}

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

- **Unit Standards:** *(keep each of the following headings in place)*
 - **Content Standards**
 - 1.OA. D. Work with addition and subtraction equations.
 - 7. Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? $6 = 6$, $7 = 8 - 1$, $5 + 2 = 2 + 5$, $4 + 1 = 5 + 2$.
 - 2.OA. C. Work with equal groups of objects to gain foundations for multiplication
 - 3. Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.
 - 4. Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.
 - 3.OA. D. Solve problems involving the four operations, and identify and explain patterns in arithmetic.
 - 8. Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

- 2.MD. D. Represent and interpret data
 - 10. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put together, take-apart, and compare problems using information presented in a bar graph.

- 5.OA. B. Analyze patterns and relationships.
 - 3. Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. For example, given the rule “Add 3” and the starting number 0, and given the rule “Add 6” and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.

- **21st Century Life & Career Standards**
 - 9.4.2.CT.1: Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem (e.g., K-2-ETS1-1, 6.3.2.GeoGI.2).
 - 9.4.2.CT.2: Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3).
 - 9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g., inductive, deductive).
 - All curriculum writers/revisionists need to include standards that apply to “Career Readiness, Life Literacies, and Key Skills”. This should include a brief description of the standard and the standard number. Document only those standards and practices that apply to each unit. Use the following link to assist you [see pages of 31-36; 41-42; 53-56 for specific standard #'s and strands]
<https://www.state.nj.us/education/cccs/2020/2020%20NJSLS-CLKS.pdf>

- **English Companion Standards**
 - List grade-level appropriate companion standards for History, Social Studies, Science and Technical Subjects (CTE/Arts) 9-12. English Companion Standards are required only in these subject/content areas. This section can be deleted for all other content areas.
 - Grade 9-10 Companion Standards:
<https://www.state.nj.us/education/cccs/2016/ela/CompanionG0910.pdf>
 - Grade 11-12 Companion Standards:
<https://www.state.nj.us/education/cccs/2016/ela/CompanionG1112.pdf>

- ***Interdisciplinary Content Standards***
 - List any standards from other content areas that apply to this unit.
- ***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: <http://www.njamistadcurriculum.net/>

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 solve and organize situations in their daily life.*

As aligned with LRHSD Long Term Learning Goal(s):

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

Essential Questions

EU 1 {no more than 5 EQ's per each EU}

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

EU 2

- *real-world scenarios can be transformed into equations so that solutions can be found.*

- How do graphs assist in daily life?
- How can graphs sometimes be misleading?
- How can understanding a graph benefit employment?

EU 2

- How can equations be used to solve real-world situations?

Knowledge

Students will know . . .

EU 1

- the value of creating and reading a graph.

EU 2

- real life situations can be interpreted and represented using equations and inequalities.

Skills

Students will be able to . . .

EU 1

- chart and label a graph.

EU 2

- identify and write solutions of equations and inequalities.

Stage Two - Assessment

Stage Three - Instruction

Learning Plan: 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. {place A, M and/or T along with the applicable EU number in parentheses after each statement} 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): Red = Interdisciplinary Connection; Purple = 21st Century Life & Career Connection

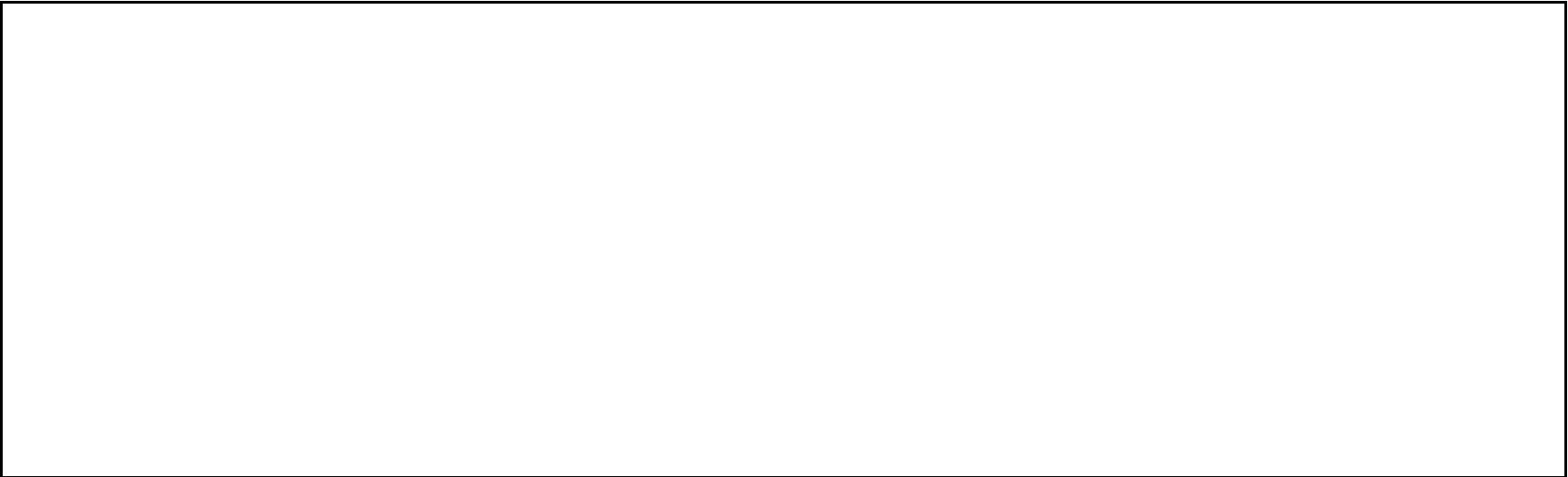
For example:

- Demonstrate Internet skills to shop online (A, M, EU1)
- List items needed at the grocery store (A, EU1)
- Demonstrate PEMDAS (A, EU2)
- 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)
- After making a shopping list, visit the grocery store and purchase items on the shopping list (T, EU1)
- Gift Cards- Check balances of various cards by utilizing information on the back of the card (A, M, EU1 & EU2)
- Shopping Vocabulary Bingo (A, 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)
- 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)
- 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)
- Identify fixed and variable expenses (A, M, EU2)
- List and create a Venn Diagram identifying needs and wants (A, M, EU1)
- Create a T chart identifying incomes and expenses (M, EU1)
- 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

Unit 4 will be taught intermittently throughout the year.



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.