

Course: Algebra II Data Science
Unit #: Unit 4 - What Does Data Tell Us?

Year of Implementation: 2024-2025

Curriculum Team Members:

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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:** (keep each of the following headings in place)
 - **Content Standards**
 - Modeling is the process of choosing and using appropriate mathematics and statistics to analyze empirical situations, to understand them better, and to improve decisions
 - Interpreting Categorical and Quantitative Data S-ID: A. 1-3
 - Summarize, represent, and interpret data on a single count or measurement variable
 - **21st Century Life & Career Standards**
 - 9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas
 - 9.4.12.CI.3: Investigate new challenges and opportunities for personal growth, advancement, and transition
 - 9.4.12.CT.2: Explain the potential benefits of collaborating to enhance critical thinking and problem solving
 - (<https://www.state.nj.us/education/cccs/2020/2020%20NJSL-CLKS.pdf>)
 - **Interdisciplinary Content Standards**
 - NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.
 - SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with peers on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.
 - **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 reflect on their own experiences using self-generated data, an exploration of a larger dataset, and an analysis of data.

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

1. Problem-Solving: apply and transfer autonomously and collaboratively mathematical concepts and problem-solving techniques to unfamiliar, varied and real-world situations
2. Reasoning: reason abstractly and quantitatively by applying mathematical representations, symbols and estimation techniques when engaging in problem-solving
3. Critical Thinking: construct and effectively communicate valid conclusions and critique the reasoning of others
4. Modeling: demonstrate mastery of concepts by evaluating models that others have constructed or by creating appropriate models of their own
5. Tools: identify the correct tools to solve problems, if applicable
6. Precision: determine an answer's appropriateness as a means of determining its validity, while using proper mathematical notation and units
7. Structure: use multiple representations, critical thinking skills, and prior knowledge to solve problems in new situations
8. Patterns: analyze data and recognize patterns in a variety of situations
9. Habits of Mind: approach new situations with curiosity, persistence, resourcefulness, and confidence; take risks, monitor their progress, accept and learn from setbacks, make adjustments, and reflect on their performance

Enduring Understandings

Students will understand that. . .

EU 1

the data science process is applicable across many platforms.

EU 2

data can be used to tell stories.

Essential Questions

- Why are variability, data, and models important?
- How can data tell a story?

<p><i>EU 3</i> ethics should be considered when working with data.</p>	
<p><u>Knowledge</u> <i>Students will know . . .</i></p> <p><i>EU 1</i></p> <ul style="list-style-type: none"> when the data science process is appropriate to use. (Modeling) <p><i>EU 2</i></p> <ul style="list-style-type: none"> how they can apply mathematics to solve problems arising in everyday life, society, and the workplace. (Modeling) <p><i>EU 3</i></p> <ul style="list-style-type: none"> when to dig deeper into how data was collected and what might be misleading in the way it is presented. (Modeling, S-ID A1-3) 	<p><u>Skills</u> <i>Students will be able to . . .</i></p> <p><i>EU 1</i></p> <ul style="list-style-type: none"> identify, analyze, and synthesize relevant external resources to pose or solve problems. (Modeling) identify important quantities in a practical situation and map their relationships. (Modeling) <p><i>EU 2</i></p> <ul style="list-style-type: none"> interpret results in the context of a situation. (Modeling) create a visual representation of the data collected. (S-ID A1) <p><i>EU 3</i></p> <ul style="list-style-type: none"> analyze the adequacy of and make improvements to an existing model or develop a mathematical model of a real phenomenon. (Modeling, S-ID1-3)
Stage Two - Assessment	
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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*

- Data Talk Basketball (A, M, EU 1&2)
- Analyze dear data postcards (A, M, EU 1&2)
- Personal dear data project collection - planning (M, T, EU 1&2)
- Privacy Policies Data Talk (A, M, EU 3)
- Group exploration: Misuse of Data (A, M, EU 3)
- Personal dear data project - revision of plan (M, T EU 1&2)
- Jigsaw activity - ethics (M, T EU 3)
- Data Talk gathering surprises and challenges (A, M, EU 1&2)
- Data Talk Sharing and visualizing (A, M, EU 1&2)
- Gallery walk with peer feedback (M, T, EU 1&2)
- Pew Data Investigative Activity (M, T, EU 1&2)
- CODAP exploration (A, M, EU 1&2)
- Gallery Walk peer feedback for CODAP (M, T, EU 1&2)
- Dear data project slide show (M, T, EU 1&2)

Pacing Guide

Unit #	Title of Unit	Approximate # of teaching days
1	Quadratic Functions	30
2	Polynomial Functions	19
3	Exponential and Logarithmic Functions	19
4	What Does Data Tell Us?	17
5	Modeling and Analyzing Univariate Data	17
6	Modeling and Analyzing Bivariate Data	17
7	Probability and Simulations	16

Instructional Materials

- *Youcubed* - <https://hsdatascience.youcubed.org/curriculum/>
- *desmos.com*
- *TI-Nspire*
- *Google Sheets*
- *CODAP (Concord Consortium)* - <https://concord-consortium.github.io/codap-data/>
- *Google CoLAB*

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.