

A correlation of
**Population Connection
Activities**

from

Nuestro Mundo, Nuestro Futuro
(Our World, Our Future)

to

**New Jersey Core Curriculum
Content Standards**

Organized by:

- 1. Population Connection Activity*
- 2. Subject*
- 3. Grade*
- 4. Standard*

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Environmental Dilemmas

Language Arts

Grade 6

Language Arts.6.3.3 (Speaking)

All Students Will Speak In Clear, Concise, Organized Language That Varies In Content And Form For Different Audiences And Purposes.

A. Discussion (small group and whole class)

1. Support a position with organized, appropriate details.
2. Stay focused on a topic and ask relevant questions.
5. Participate in class discussion appropriately.

B. Questioning (Inquiry) and Contributing

4. Discuss information heard, offer personal opinions, and ask for restatement or general explanation to clarify meaning.

Grade 7

Language Arts.7.3.2 (Writing)

All Students Will Write In Clear, Concise, Organized Language That Varies In Content And Form For Different Audiences And Purposes.

D. Writing Forms, Audiences, and Purposes (exploring a variety of forms)

9. Demonstrate writing clarity and supportive evidence when answering open-ended and essay questions across the curriculum.

Language Arts.7.3.3 (Speaking)

All Students Will Speak In Clear, Concise, Organized Language That Varies In Content And Form For Different Audiences And Purposes.

A. Discussion (small group and whole class)

1. Support a position, acknowledging opposing views.
2. Present ideas and opinions spontaneously in response to a topic or other speakers.

Language Arts.7.3.3 (Speaking)

All Students Will Speak In Clear, Concise, Organized Language That Varies In Content And Form For Different Audiences And Purposes.

A. Discussion (small group and whole class)

5. Participate in an informal debate (e.g., small group discussion).
7. Participate in class discussions appropriately.

B. Questioning (Inquiry) and Contributing

3. Talk with others to identify and explore issues and problems.
4. Solve a problem or understand a task through group cooperation.

Language Arts.7.3.4 (Listening)

All Students Will Listen Actively To Information From A Variety Of Sources In A Variety Of Situations.

A. Active Listening

1. Demonstrate active listening behaviors in a variety of situations (e.g., one-on-one or small group).

Grade 8

Language Arts.8.3.3 (Speaking)

All Students Will Speak In Clear, Concise, Organized Language That Varies In Content And Form For Different Audiences And Purposes.

A. Discussion (small group and whole class)

1. Support a position, acknowledging opposing views.
2. Present ideas and opinions spontaneously in response to a topic or other speakers.
7. Participate in class discussion appropriately.

B. Questioning (Inquiry) and Contributing

4. Solve a problem or understand a task through group cooperation.

Language Arts.8.3.4 (Listening)

All Students Will Listen Actively To Information From A Variety Of Sources In A Variety Of Situations.

A. Active Listening

1. Demonstrate active listening behaviors in a variety of situations (e.g., one-on-one or small group).

Grade 9 to Grade 12

Language Arts.9-12.3.4 (Listening)

All Students Will Listen Actively To Information From A Variety Of Sources In A Variety Of Situations.

A. Active Listening

1. Explore and reflect on ideas while hearing and focusing attentively.

Science

Grade 3 to Grade 4

Science.3-4.5.1 (Scientific Processes)

All Students Will Develop Problem-Solving, Decision-Making And Inquiry Skills, Reflected By Formulating Usable Questions And Hypotheses, Planning Experiments, Conducting Systematic Observations, Interpreting And Analyzing Data, Drawing Conclusions, And Communicating Results.

B. Inquiry and Problem Solving

1. Develop strategies and skills for information-gathering and problem-solving, using appropriate tools and technologies.

Grade 5 to Grade 6

Science.5-6.5.10 (Environmental Studies)

All Students Will Develop An Understanding Of The Environment As A System Of Interdependent Components Affected By Human Activity And Natural Phenomena.

B. Human Interactions and Impact

2. Evaluate the impact of personal activities on the local environment.

Grade 7 to Grade 8

Science.7-8.5.1 (Scientific Processes)

All Students Will Develop Problem-Solving, Decision-Making And Inquiry Skills, Reflected By Formulating Usable Questions And Hypotheses, Planning Experiments, Conducting Systematic Observations, Interpreting And Analyzing Data, Drawing Conclusions, And Communicating Results.

A. Habits of Mind

1. Evaluate the strengths and weaknesses of data, claims, and arguments.

Science.7-8.5.4 (Nature And Process Of Technology)

All Students Will Understand The Interrelationships Between Science And Technology And Develop A Conceptual Understanding Of The Nature And Process Of Technology.

B. Nature of Technology

1. Analyze a product or system to determine the problem it was designed to solve, the design constraints, trade-offs and risks involved in using the product or system, how the product or system might fail, and how the product or system might be improved.

Science.7-8.5.10 (Environmental Studies)

All Students Will Develop An Understanding Of The Environment As A System Of Interdependent Components Affected By Human Activity And Natural Phenomena.

B. Human Interactions and Impact

1. Compare and contrast practices that affect the use and management of natural resources.

Grade 9 to Grade 12

Science.9-12.5.1 (Scientific Processes)

All Students Will Develop Problem-Solving, Decision-Making And Inquiry Skills, Reflected By Formulating Usable Questions And Hypotheses, Planning Experiments, Conducting Systematic Observations, Interpreting And Analyzing Data, Drawing Conclusions, And Communicating Results.

A. Habits of Mind

1. When making decisions, evaluate conclusions, weigh evidence, and recognize that arguments may not have equal merit.
2. Assess the risks and benefits associated with alternative solutions.
4. Explore cases that demonstrate the interdisciplinary nature of the scientific enterprise.

Science.9-12.5.4 (Nature And Process Of Technology)

All Students Will Understand The Interrelationships Between Science And Technology And Develop A Conceptual Understanding Of The Nature And Process Of Technology.

C. Technological Design

1. Plan, develop, and implement a proposal to solve an authentic, technological problem.

Social Studies

Grade 5 to Grade 8

Social Studies.5-8.6.1

All Students Will Utilize Historical Thinking, Problem Solving, And Research Skills To Maximize Their Understanding Of Civics, History, Geography, And Economics.

A. Social Studies Skills

2. Use critical thinking skills to interpret events, recognize bias, point of view, and context.
11. Summarize information in written, graphic, and oral formats.

Social Studies.5-8.6.2 (Civics)

All Students Will Know, Understand And Appreciate The Values And Principles Of American Democracy And The Rights, Responsibilities, And Roles Of A Citizen In The Nation And The World.

D. Citizenship

5. Discuss basic contemporary issues involving the personal, political, and economic rights of American citizens (e.g., dress codes, sexual harassment, fair trial, free press, minimum wage).

E. International Education: Global Challenges, Cultures, and Connections

8. Discuss how global challenges are interrelated, complex, and changing and that even local issues may have a global dimension (e.g., environmental issues, transportation).

Social Studies.5-8.6.5 (Economics)

All Students Will Acquire An Understanding Of Key Economic Principles.

B. Economics and Society

7. Discuss the need for ethical behavior in economic decisions and financial transactions.

Social Studies.5-8.6.6 (Geography)

All Students Will Apply Knowledge Of Spatial Relationships And Other Geographic Skills To Understand Human Behavior In Relation To The Physical And Cultural Environment.

C. Physical Systems

4. Discuss how the community and its environment function as an ecosystem.

Grade 9 to Grade 12

Social Studies.9-12.6.1

All Students Will Utilize Historical Thinking, Problem Solving, And Research Skills To Maximize Their Understanding Of Civics, History, Geography, And Economics.

A. Social Studies Skills

6. Apply problem-solving skills to national, state, or local issues and propose reasoned solutions.

Social Studies.9-12.6.2 (Civics)

All Students Will Know, Understand And Appreciate The Values And Principles Of American Democracy And The Rights, Responsibilities, And Roles Of A Citizen In The Nation And The World.

A. Civic Life, Politics, and Government

3. Analyze how individual responsibility and commitment to law are related to the stability of American society.

5. Discuss how participation in civic and political life can contribute to the attainment of individual and public good.

Social Studies.9-12.6.6 (Geography)

All Students Will Apply Knowledge Of Spatial Relationships And Other Geographic Skills To Understand Human Behavior In Relation To The Physical And Cultural Environment.

C. Physical Systems

2. Analyze the effects of both physical and human changes in ecosystems, such as acid rain, ozone layer, carbon-dioxide levels, and clean water issues.

Everything Is Connected

Language Arts

Grade 6

Language Arts.6.3.1 (Reading)

All Students Will Understand And Apply The Knowledge Of Sounds, Letters, And Words In Written English To Become Independent And Fluent Readers, And Will Read A Variety Of Materials And Texts With Fluency And Comprehension.

H. Inquiry and Research

5. Summarize and organize information by taking notes, outlining ideas, and/or making charts.

Language Arts.6.3.3 (Speaking)

All Students Will Speak In Clear, Concise, Organized Language That Varies In Content And Form For Different Audiences And Purposes.

A. Discussion (small group and whole class)

5. Participate in class discussion appropriately.

B. Questioning (Inquiry) and Contributing

6. Solve a problem or understand a task through group cooperation.

Grade 7

Language Arts.7.3.3 (Speaking)

All Students Will Speak In Clear, Concise, Organized Language That Varies In Content And Form For Different Audiences And Purposes.

A. Discussion (small group and whole class)

7. Participate in class discussions appropriately.

B. Questioning (Inquiry) and Contributing

3. Talk with others to identify and explore issues and problems.

4. Solve a problem or understand a task through group cooperation.

Grade 8

Language Arts.8.3.3 (Speaking)

All Students Will Speak In Clear, Concise, Organized Language That Varies In Content And Form For Different Audiences And Purposes.

B. Questioning (Inquiry) and Contributing

4. Solve a problem or understand a task through group cooperation.

Science

Grade 5 to Grade 6

Science.5-6.5.10 (Environmental Studies)

All Students Will Develop An Understanding Of The Environment As A System Of Interdependent Components Affected By Human Activity And Natural Phenomena.

B. Human Interactions and Impact

1. Describe the effect of human activities on various ecosystems.

Grade 7 to Grade 8

Science.7-8.5.10 (Environmental Studies)

All Students Will Develop An Understanding Of The Environment As A System Of Interdependent Components Affected By Human Activity And Natural Phenomena.

B. Human Interactions and Impact

1. Compare and contrast practices that affect the use and management of natural resources.

Grade 9 to Grade 12

Science.9-12.5.1 (Scientific Processes)

All Students Will Develop Problem-Solving, Decision-Making And Inquiry Skills, Reflected By Formulating Usable Questions And Hypotheses, Planning Experiments, Conducting Systematic Observations, Interpreting And Analyzing Data, Drawing Conclusions, And Communicating Results.

A. Habits of Mind

1. When making decisions, evaluate conclusions, weigh evidence, and recognize that arguments may not have equal merit.
2. Assess the risks and benefits associated with alternative solutions.
4. Explore cases that demonstrate the interdisciplinary nature of the scientific enterprise.

Social Studies

Grade 5 to Grade 8

Social Studies.5-8.6.1

All Students Will Utilize Historical Thinking, Problem Solving, And Research Skills To Maximize Their Understanding Of Civics, History, Geography, And Economics.

A. Social Studies Skills

11. Summarize information in written, graphic, and oral formats.

Grade 9 to Grade 12

Social Studies.9-12.6.1

All Students Will Utilize Historical Thinking, Problem Solving, And Research Skills To Maximize Their Understanding Of Civics, History, Geography, And Economics.

A. Social Studies Skills

7. Analyze social, political, and cultural change and evaluate the impact of each on local, state, national, and international issues and events.

Social Studies.9-12.6.2 (Civics)

All Students Will Know, Understand And Appreciate The Values And Principles Of American Democracy And The Rights, Responsibilities, And Roles Of A Citizen In The Nation And The World.

E. International Education: Global Challenges, Cultures, and Connections

4. Analyze and evaluate the interconnections of local, regional, and national issues with global challenges and issues, and recommend possible solutions.
5. Discuss how global interconnections can have both positive and negative consequences (e.g., international companies, transfer of jobs to foreign plants, international security and access to transportation).

If the World Was an Apple

Language Arts

Grade 5

Language Arts.5.3.3 (Speaking)

All Students Will Speak In Clear, Concise, Organized Language That Varies In Content And Form For Different Audiences And Purposes.

- A. Discussion (small group and whole class)
 - 5. Participate in class discussions appropriately.

Mathematics

Kindergarten to Grade 12

Math.K-12.4.5 (Mathematical Processes)

All Students Will Use Mathematical Processes Of Problem Solving, Communication, Connections, Reasoning, Representations, And Technology To Solve Problems And Communicate Mathematical Ideas.

- A. Problem Solving
 - 1. Learn mathematics through problem solving, inquiry, and discovery.
- B. Communication
 - 1. Use communication to organize and clarify their mathematical thinking.
 - Reading and writing.
 - Discussion, listening, and questioning.
 - 2. Communicate their mathematical thinking coherently and clearly to peers, teachers, and others, both orally and in writing.
 - 4. Use the language of mathematics to express mathematical ideas precisely.
- C. Connections
 - 3. Recognize that mathematics is used in a variety of contexts outside of mathematics.
 - 4. Apply mathematics in practical situations and in other disciplines.
- E. Representations
 - 1. Create and use representations to organize, record, and communicate mathematical ideas.
 - Concrete representations (e.g., base-ten blocks or algebra tiles).
 - Pictorial representations (e.g., diagrams, charts, or tables).
 - Symbolic representations (e.g., a formula).
 - Graphical representations (e.g., a line graph).
 - 3. Use representations to model and interpret physical, social, and mathematical phenomena.

Grade 4

Math.4.4.1 (Number And Numerical Operations)

All Students Will Develop Number Sense And Will Perform Standard Numerical Operations And Estimations On All Types Of Numbers In A Variety Of Ways.

- A. Number Sense
 - 1. Use real-life experiences, physical materials, and technology to construct meanings for numbers (unless otherwise noted, all indicators for grade 4 pertain to these sets of numbers as well).
 - Whole numbers through millions

- Commonly used fractions (denominators of 2, 3, 4, 5, 6, 8, 10, 12, and 16) as part of a whole, as a subset of a set, and as a location on a number line
- Decimals through hundredths.

B. Numerical Operations

3. Construct, use, and explain procedures for performing whole number calculations and with:
 - Pencil-and-paper.
 - Mental math.
 - Calculator.

Math.4.4.4 (Data Analysis, Probability, And Discrete Mathematics)

All Students Will Develop An Understanding Of The Concepts And Techniques Of Data Analysis, Probability, And Discrete Mathematics, And Will Use Them To Model Situations, Solve Problems, And Analyze And Draw Appropriate Inferences From Data.

A. Data Analysis

2. Read, interpret, construct, analyze, generate questions about, and draw inferences from displays of data.
 - Pictograph, bar graph, line plot, line graph, table.
 - Average (mean), most frequent (mode), middle term (median).

Grade 5

Math.5.4.1 (Number And Numerical Operations)

All Students Will Develop Number Sense And Will Perform Standard Numerical Operations And Estimations On All Types Of Numbers In A Variety Of Ways.

A. Number Sense

1. Use real-life experiences, physical materials, and technology to construct meanings for numbers (unless otherwise noted, all indicators for grade 5 pertain to these sets of numbers as well).
 - All fractions as part of a whole, as subset of a set, as a location on a number line, and as divisions of whole numbers.
 - All decimals.
4. Use whole numbers, fractions, and decimals to represent equivalent forms of the same number.

Math.5.4.2 (Geometry And Measurement)

All Students Will Develop Spatial Sense And The Ability To Use Geometric Properties, Relationships, And Measurement To Model, Describe And Analyze Phenomena.

D. Units of Measurement

4. Use measurements and estimates to describe and compare phenomena.

Math.5.4.4 (Data Analysis, Probability, And Discrete Mathematics)

All Students Will Develop An Understanding Of The Concepts And Techniques Of Data Analysis, Probability, And Discrete Mathematics, And Will Use Them To Model Situations, Solve Problems, And Analyze And Draw Appropriate Inferences From Data.

A. Data Analysis

2. Read, interpret, select, construct, analyze, generate questions about, and draw inferences from displays of data.
 - Bar graph, line graph, circle graph, table.
 - Range, median, and mean.
3. Respond to questions about data and generate their own questions and hypotheses.

Grade 6

Math.6.4.1 (Number And Numerical Operations)

All Students Will Develop Number Sense And Will Perform Standard Numerical Operations And Estimations On All Types Of Numbers In A Variety Of Ways.

A. Number Sense

1. Use real-life experiences, physical materials, and technology to construct meanings for numbers (unless otherwise noted, all indicators for grade 6 pertain to these sets of numbers as well).

- All integers.
- All fractions as part of a whole, as subset of a set, as a location on a number line, and as divisions of whole numbers.
- All decimals.

4. Explore the use of ratios and proportions in a variety of situations.

5. Understand and use whole-number percents between 1 and 100 in a variety of situations.

6. Use whole numbers, fractions, and decimals to represent equivalent forms of the same number.

Math.6.4.3 (Patterns And Algebra)

All Students Will Represent And Analyze Relationships Among Variable Quantities And Solve Problems Involving Patterns, Functions, And Algebraic Concepts And Processes.

C. Modeling

1. Use patterns, relations, and linear functions to model situations.

- Using variables to represent unknown quantities.
- Using concrete materials, tables, graphs, verbal rules, algebraic expressions/equations/inequalities.

Math.6.4.4 (Data Analysis, Probability, And Discrete Mathematics)

All Students Will Develop An Understanding Of The Concepts And Techniques Of Data Analysis, Probability, And Discrete Mathematics, And Will Use Them To Model Situations, Solve Problems, And Analyze And Draw Appropriate Inferences From Data.

A. Data Analysis

2. Read, interpret, select, construct, analyze, generate questions about, and draw inferences from displays of data.

- Bar graph, line graph, circle graph, table, histogram.
- Range, median, and mean.
- Calculators and computers used to record and process information.

3. Respond to questions about data, generate their own questions and hypotheses, and formulate strategies for answering their questions and testing their hypotheses.

Grade 7

Math.7.4.1 (Number And Numerical Operations)

All Students Will Develop Number Sense And Will Perform Standard Numerical Operations And Estimations On All Types Of Numbers In A Variety Of Ways.

A. Number Sense

3. Understand and use ratios, proportions, and percents (including percents greater than 100 and less than 1) in a variety of situations.

5. Use whole numbers, fractions, decimals, and percents to represent equivalent forms of the same number.

Math.7.4.3 (Patterns And Algebra)

All Students Will Represent And Analyze Relationships Among Variable Quantities And Solve Problems Involving Patterns, Functions, And Algebraic Concepts And Processes.

C. Modeling

2. Use patterns, relations, symbolic algebra, and linear functions to model situations.
 - Using manipulatives, tables, graphs, verbal rules, algebraic expressions/ equations/ inequalities.
 - Growth situations, such as population growth and compound interest, using recursive (e.g., NOW-NEXT) formulas (cf. science standard 5.5 and social studies standard 6.6).

Math.7.4.4 (Data Analysis, Probability, And Discrete Mathematics)

All Students Will Develop An Understanding Of The Concepts And Techniques Of Data Analysis, Probability, And Discrete Mathematics, And Will Use Them To Model Situations, Solve Problems, And Analyze And Draw Appropriate Inferences From Data.

A. Data Analysis

2. Make inferences and formulate and evaluate arguments based on displays and analysis of data.

Grade 8

Math.8.4.1 (Number And Numerical Operations)

All Students Will Develop Number Sense And Will Perform Standard Numerical Operations And Estimations On All Types Of Numbers In A Variety Of Ways.

A. Number Sense

3. Understand and use ratios, proportions, and percents (including percents greater than 100 and less than 1) in a variety of situations.

5. Use whole numbers, fractions, decimals, and percents to represent equivalent forms of the same number.

Math.8.4.3 (Patterns And Algebra)

All Students Will Represent And Analyze Relationships Among Variable Quantities And Solve Problems Involving Patterns, Functions, And Algebraic Concepts And Processes.

C. Modeling

2. Use patterns, relations, symbolic algebra, and linear functions to model situations.
 - Using concrete materials (manipulatives), tables, graphs, verbal rules, algebraic expressions/ equations/ inequalities.
 - Growth situations, such as population growth and compound interest, using recursive (e.g., NOW-NEXT) formulas (cf. science standard 5.5 and social studies standard 6.6).

Math.8.4.4 (Data Analysis, Probability, And Discrete Mathematics)

All Students Will Develop An Understanding Of The Concepts And Techniques Of Data Analysis, Probability, And Discrete Mathematics, And Will Use Them To Model Situations, Solve Problems, And Analyze And Draw Appropriate Inferences From Data.

A. Data Analysis

2. Make inferences and formulate and evaluate arguments based on displays and analysis of data.

Science

Grade 3 to Grade 4

Science.3-4.5.1 (Scientific Processes)

All Students Will Develop Problem-Solving, Decision-Making And Inquiry Skills, Reflected By Formulating Usable Questions And Hypotheses, Planning Experiments, Conducting Systematic Observations, Interpreting And Analyzing Data, Drawing Conclusions, And Communicating Results.

A. Habits of Mind

1. Raise questions about the world around them and be willing to seek answers through making careful observations and experimentation.

B. Inquiry and Problem Solving

1. Develop strategies and skills for information-gathering and problem-solving, using appropriate tools and technologies.
2. Identify the evidence used in an explanation.

Science.3-4.5.3 (Mathematical Applications)

All Students Will Integrate Mathematics As A Tool For Problem-Solving In Science, And As A Means Of Expressing And/Or Modeling Scientific Theories.

A. Numerical Operations

1. Determine the reasonableness of estimates, measurements, and computations of quantities when doing science.
3. Express quantities using appropriate number formats, such as:
 - integers.
 - fractions.

B. Geometry and Measurement

1. Select appropriate measuring instruments based on the degree of precision required.
Science
2. Use a variety of measuring instruments and record measured quantities using the appropriate units.

Science.3-4.5.8 (Earth Science)

All Students Will Gain An Understanding Of The Structure, Dynamics, And Geophysical Systems Of The Earth.

B. Atmosphere and Water

2. Recognize that most of Earth's surface is covered by water and be able to identify the characteristics of those sources of water.
 - oceans.
 - rivers.
 - lakes.
 - underground sources.
 - glaciers.

Grade 5 to Grade 6

Science.5-6.5.10 (Environmental Studies)

All Students Will Develop An Understanding Of The Environment As A System Of Interdependent Components Affected By Human Activity And Natural Phenomena.

B. Human Interactions and Impact

1. Describe the effect of human activities on various ecosystems.

Grade 7 to Grade 8

Science.7-8.5.3 (Mathematical Applications)

All Students Will Integrate Mathematics As A Tool For Problem-Solving In Science, And As A Means Of Expressing And/Or Modeling Scientific Theories.

C. Patterns and Algebra

1. Express physical relationships in terms of mathematical equations derived from collected data.

D. Data Analysis and Probability

1. Represent and describe mathematical relationships among variables using:
 - graphs.
 - tables.

Science.7-8.5.4 (Nature And Process Of Technology)

All Students Will Understand The Interrelationships Between Science And Technology And Develop A Conceptual Understanding Of The Nature And Process Of Technology.

B. Nature of Technology

1. Analyze a product or system to determine the problem it was designed to solve, the design constraints, trade-offs and risks involved in using the product or system, how the product or system might fail, and how the product or system might be improved.

Science.7-8.5.10 (Environmental Studies)

All Students Will Develop An Understanding Of The Environment As A System Of Interdependent Components Affected By Human Activity And Natural Phenomena.

B. Human Interactions and Impact

1. Compare and contrast practices that affect the use and management of natural resources.

Grade 9 to Grade 12

Science.9-12.5.1 (Scientific Processes)

All Students Will Develop Problem-Solving, Decision-Making And Inquiry Skills, Reflected By Formulating Usable Questions And Hypotheses, Planning Experiments, Conducting Systematic Observations, Interpreting And Analyzing Data, Drawing Conclusions, And Communicating Results.

A. Habits of Mind

1. When making decisions, evaluate conclusions, weigh evidence, and recognize that arguments may not have equal merit.
4. Explore cases that demonstrate the interdisciplinary nature of the scientific enterprise.

Science.9-12.5.2 (Science And Society)

All Students Will Develop An Understanding Of How People Of Various Cultures Have Contributed To The Advancement Of Science And Technology, And How Major Discoveries And Events Have Advanced Science And Technology.

A. Cultural Contributions

1. Recognize the role of the scientific community in responding to changing social and political conditions and how scientific and technological achievement effect historical events.

B. Historical Perspectives

2. Discuss significant technological achievements in which science has played an important part as well as technological advances that have contributed directly to the advancement of scientific knowledge.

Science.9-12.5.3 (Mathematical Applications)

All Students Will Integrate Mathematics As A Tool For Problem-Solving In Science, And As A Means Of Expressing And/Or Modeling Scientific Theories.

A. Numerical Operations

1. Reinforce indicators from previous grade level.

Science.9-12.5.4 (Nature And Process Of Technology)

All Students Will Understand The Interrelationships Between Science And Technology And Develop A Conceptual Understanding Of The Nature And Process Of Technology.

B. Nature of Technology

1. Assess the impacts of introducing a new technology in terms of alternative solutions, costs, tradeoffs, risks, benefits and environmental impact.

C. Technological Design

1. Plan, develop, and implement a proposal to solve an authentic, technological problem.

Science.9-12.5.10 (Environmental Studies)

All Students Will Develop An Understanding Of The Environment As A System Of Interdependent Components Affected By Human Activity And Natural Phenomena.

B. Human Interactions and Impact

2. Use scientific, economic, and other data to assess environmental risks and benefits associated with societal activity.

Social Studies

Grade 3 to Grade 4

Social Studies.3-4.6.2 (Civics)

All Students Will Know, Understand And Appreciate The Values And Principles Of American Democracy And The Rights, Responsibilities, And Roles Of A Citizen In The Nation And The World.

E. International Education: Global Challenges, Cultures, and Connections

5. Identify current issues that may have a global impact (e.g., pollution, diseases) and discuss ways to address them.

Social Studies.3-4.6.5 (Economics)

All Students Will Acquire An Understanding Of Key Economic Principles.

A. Economic Literacy

4. Discuss how natural, human, and capital resources are used to produce goods and to provide services.

Social Studies.3-4.6.6 (Geography)

All Students Will Apply Knowledge Of Spatial Relationships And Other Geographic Skills To Understand Human Behavior In Relation To The Physical And Cultural Environment.

B. Places and Regions

1. Identify the physical and human characteristics of places and regions in New Jersey and the United States (e.g., landforms, climate, vegetation, housing).

C. Physical Systems

1. Describe the basic components of the Earth's physical systems, including landforms, water, erosion, weather, and climate and discuss their impact on human development.

E. Environment and Society

1. Differentiate between living and non-living natural resources.
2. Explain the nature, characteristics, and distribution of renewable and non-renewable resources.

Grade 5 to Grade 8

Social Studies.5-8.6.1

All Students Will Utilize Historical Thinking, Problem Solving, And Research Skills To Maximize Their Understanding Of Civics, History, Geography, And Economics.

A. Social Studies Skills

4. Analyze data in order to see persons and events in context.
11. Summarize information in written, graphic, and oral formats.

Social Studies.5-8.6.2 (Civics)

All Students Will Know, Understand And Appreciate The Values And Principles Of American Democracy And The Rights, Responsibilities, And Roles Of A Citizen In The Nation And The World.

E. International Education: Global Challenges, Cultures, and Connections

8. Discuss how global challenges are interrelated, complex, and changing and that even local issues may have a global dimension (e.g., environmental issues, transportation).

Social Studies.5-8.6.5 (Economics)

All Students Will Acquire An Understanding Of Key Economic Principles.

B. Economics and Society

1. Discuss how meeting the needs and wants of a growing world population impacts the environment and economic growth.

Social Studies.5-8.6.6 (Geography)

All Students Will Apply Knowledge Of Spatial Relationships And Other Geographic Skills To Understand Human Behavior In Relation To The Physical And Cultural Environment.

A. The World in Spatial Terms

5. Use geographic tools and technologies to pose and answer questions about spatial distributions and patterns on Earth.

8. Use thematic maps to describe places (e.g., patterns of population, diseases, rainfall).

B. Places and Regions

1. Compare and contrast the physical and human characteristics of places in regions in New Jersey, the United States, and the world.

3. Compare the natural characteristics used to define a region.

C. Physical Systems

1. Describe the characteristics and spatial distribution of major Earth ecosystems.

2. Discuss how ecosystems function locally and globally.

4. Discuss how the community and its environment function as an ecosystem.

5. Describe how the physical environment affects life in different regions (e.g., population density, architecture, transportation systems, industry, building materials, land use, recreation).

E. Environment and Society

2. Analyze the impact of various human activities and social policies on the natural environment and describe how humans have attempted to solve environmental problems through adaptation and modification.

5. Describe world, national, and local patterns of resource distribution and utilization, and discuss the political and social impact.

Grade 9 to Grade 12

Social Studies.9-12.6.1

All Students Will Utilize Historical Thinking, Problem Solving, And Research Skills To Maximize Their Understanding Of Civics, History, Geography, And Economics.

A. Social Studies Skills

6. Apply problem-solving skills to national, state, or local issues and propose reasoned solutions.

Social Studies.9-12.6.2 (Civics)

All Students Will Know, Understand And Appreciate The Values And Principles Of American Democracy And The Rights, Responsibilities, And Roles Of A Citizen In The Nation And The World.

B. American Values and Principles

2. Propose and justify new local, state, or federal governmental policies on a variety of contemporary issues (e.g., definition of marriage, voting systems and procedures, censorship, religion in public places).

E. International Education: Global Challenges, Cultures, and Connections

4. Analyze and evaluate the interconnections of local, regional, and national issues with global challenges and issues, and recommend possible solutions.

Social Studies.9-12.6.6 (Geography)

All Students Will Apply Knowledge Of Spatial Relationships And Other Geographic Skills To Understand Human Behavior In Relation To The Physical And Cultural Environment.

A. The World in Spatial Terms

2. Use maps of physical and human characteristics of the world to answer complex geographical questions.

4. Use geographic tools and technologies to pose and answer questions about spatial distributions and patterns on Earth.

C. Physical Systems

2. Analyze the effects of both physical and human changes in ecosystems, such as acid rain, ozone layer, carbon-dioxide levels, and clean water issues.

E. Environment and Society

1. Discuss the global impacts of human modification of the physical environment (e.g., the built environment).

3. Analyze examples of changes in the physical environment that have altered the capacity of the environment to support human activity, including pollution, salinization, deforestation, species extinction, population growth, and natural disasters.

5. Evaluate policies and programs related to the use of local, national and global resources.

6. Analyze the human need for respect for and informed management of all resources (sustainability), including human populations, energy, air, land, and water to insure that the earth will support future generations.

Life and Death

Mathematics

Kindergarten to Grade 12

Math.K-12.4.5 (Mathematical Processes)

All Students Will Use Mathematical Processes Of Problem Solving, Communication, Connections, Reasoning, Representations, And Technology To Solve Problems And Communicate Mathematical Ideas.

A. Problem Solving

1. Learn mathematics through problem solving, inquiry, and discovery.
2. Solve problems that arise in mathematics and in other contexts (cf. workplace readiness standard 8.3).
 - Open-ended problems.
 - Non-routine problems.
 - Problems with multiple solutions.
 - Problems that can be solved in several ways.
4. Pose problems of various types and levels of difficulty.

B. Communication

1. Use communication to organize and clarify their mathematical thinking.
 - Reading and writing.
 - Discussion, listening, and questioning.
2. Communicate their mathematical thinking coherently and clearly to peers, teachers, and others, both orally and in writing.
4. Use the language of mathematics to express mathematical ideas precisely.

C. Connections

3. Recognize that mathematics is used in a variety of contexts outside of mathematics.
4. Apply mathematics in practical situations and in other disciplines.

D. Reasoning

2. Use reasoning to support their mathematical conclusions and problem solutions.

E. Representations

1. Create and use representations to organize, record, and communicate mathematical ideas.
 - Concrete representations (e.g., base-ten blocks or algebra tiles).
 - Pictorial representations (e.g., diagrams, charts, or tables).
 - Symbolic representations (e.g., a formula).
 - Graphical representations (e.g., a line graph).
2. Select, apply, and translate among mathematical representations to solve problems.
3. Use representations to model and interpret physical, social, and mathematical phenomena.

Kindergarten to Grade 2

Math.K-2.4.1 (Number And Numerical Operations)

All Students Will Develop Number Sense And Will Perform Standard Numerical Operations And Estimations On All Types Of Numbers In A Variety Of Ways.

C. Estimation

1. Judge without counting whether a set of objects has less than, more than, or the same number of objects as a reference set.

Grade 3

Math.3.4.1 (Number And Numerical Operations)

All Students Will Develop Number Sense And Will Perform Standard Numerical Operations And Estimations On All Types Of Numbers In A Variety Of Ways.

A. Number Sense

1. Use real-life experiences, physical materials, and technology to construct meanings for numbers (unless otherwise noted, all indicators for grade 3 pertain to these sets of numbers as well).
 - Whole numbers through hundred thousands.
 - Commonly used fractions (denominators of 2, 3, 4, 5, 6, 8, 10) as part of a whole, as a subset of a set, and as a location on a number line.

C. Estimation

2. Construct and use a variety of estimation strategies (e.g., rounding and mental math) for estimating both quantities and the result of computations.

Math.3.4.2 (Geometry And Measurement)

All Students Will Develop Spatial Sense And The Ability To Use Geometric Properties, Relationships, And Measurement To Model, Describe And Analyze Phenomena.

D. Units of Measurement

2. Select and use appropriate standard units of measure and measurement tools to solve real-life problems.
 - Length - fractions of an inch ($\frac{1}{4}$, $\frac{1}{2}$), mile, decimeter, kilometer.
 - Area - square inch, square centimeter.
 - Weight - ounce.
 - Capacity - fluid ounce, cup, gallon, milliliter.

Math.3.4.3 (Patterns And Algebra)

All Students Will Represent And Analyze Relationships Among Variable Quantities And Solve Problems Involving Patterns, Functions, And Algebraic Concepts And Processes.

B. Functions and Relationships

1. Use concrete and pictorial models to explore the basic concept of a function.
 - Input/output tables, T-charts.

C. Modeling

1. Recognize and describe change in quantities.
 - Graphs representing change over time (e.g., temperature, height).

Grade 4

Math.4.4.1 (Number And Numerical Operations)

All Students Will Develop Number Sense And Will Perform Standard Numerical Operations And Estimations On All Types Of Numbers In A Variety Of Ways.

A. Number Sense

1. Use real-life experiences, physical materials, and technology to construct meanings for numbers (unless otherwise noted, all indicators for grade 4 pertain to these sets of numbers as well).
 - Whole numbers through millions
 - Commonly used fractions (denominators of 2, 3, 4, 5, 6, 8, 10, 12, and 16) as part of a whole, as a subset of a set, and as a location on a number line
 - Decimals through hundredths.

3. Demonstrate a sense of the relative magnitudes of numbers.

B. Numerical Operations

3. Construct, use, and explain procedures for performing whole number calculations and with:
 - Pencil-and-paper.
 - Mental math.
 - Calculator.

C. Estimation

2. Construct and use a variety of estimation strategies (e.g., rounding and mental math) for estimating both quantities and the results of computations.

Math.4.4.2

(Geometry And Measurement)

All Students Will Develop Spatial Sense And The Ability To Use Geometric Properties, Relationships, And Measurement To Model, Describe And Analyze Phenomena.

D. Units of Measurement

2. Select and use appropriate standard units of measure and measurement tools to solve real-life problems.
 - Length - fractions of an inch (1/8, 1/4, 1/2), mile, decimeter, kilometer
 - Area - square inch, square centimeter.
 - Volume - cubic inch, cubic centimeter.
 - Weight - ounce.
 - Capacity - fluid ounce, cup, gallon, milliliter.

4. Incorporate estimation in measurement activities (e.g., estimate before measuring).

Math.4.4.3 (Patterns And Algebra)

All Students Will Represent And Analyze Relationships Among Variable Quantities And Solve Problems Involving Patterns, Functions, And Algebraic Concepts And Processes.

C. Modeling

1. Recognize and describe change in quantities.
 - Graphs representing change over time (e.g., temperature, height).
 - How change in one physical quantity can produce a corresponding change in another (e.g., pitch of a sound depends on the rate of vibration).

Math.4.4.4 (Data Analysis, Probability, And Discrete Mathematics)

All Students Will Develop An Understanding Of The Concepts And Techniques Of Data Analysis, Probability, And Discrete Mathematics, And Will Use Them To Model Situations, Solve Problems, And Analyze And Draw Appropriate Inferences From Data.

D. Discrete Mathematics- Vertex- Edge Graphs and Algorithms

1. Follow, devise, and describe practical sets of directions (e.g., to add two 2-digit numbers).

Grade 5

Math.5.4.1 (Number And Numerical Operations)

All Students Will Develop Number Sense And Will Perform Standard Numerical Operations And Estimations On All Types Of Numbers In A Variety Of Ways.

A. Number Sense

1. Use real-life experiences, physical materials, and technology to construct meanings for numbers (unless otherwise noted, all indicators for grade 5 pertain to these sets of numbers as well).
 - All fractions as part of a whole, as subset of a set, as a location on a number line, and as divisions of whole numbers.
 - All decimals.

C. Estimation

1. Use a variety of estimation strategies for both number and computation.

Math.5.4.2 (Geometry And Measurement)

All Students Will Develop Spatial Sense And The Ability To Use Geometric Properties, Relationships, And Measurement To Model, Describe And Analyze Phenomena.

D. Units of Measurement

2. Convert measurement units within a system (e.g., 3 feet = ___ inches).
4. Use measurements and estimates to describe and compare phenomena.

Math.5.4.3 (Patterns And Algebra)

All Students Will Represent And Analyze Relationships Among Variable Quantities And Solve Problems Involving Patterns, Functions, And Algebraic Concepts And Processes.

A. Patterns

1. Recognize, describe, extend, and create patterns involving whole numbers.
 - Descriptions using tables, verbal rules, simple equations, and graphs.

C. Modeling

1. Use number sentences to model situations.
 - Using variables to represent unknown quantities.
 - Using concrete materials, tables, graphs, verbal rules, algebraic expressions/equations.

Math.5.4.4 (Data Analysis, Probability, And Discrete Mathematics)

All Students Will Develop An Understanding Of The Concepts And Techniques Of Data Analysis, Probability, And Discrete Mathematics, And Will Use Them To Model Situations, Solve Problems, And Analyze And Draw Appropriate Inferences From Data.

A. Data Analysis

3. Respond to questions about data and generate their own questions and hypotheses.

Grade 6

Math.6.4.1 (Number And Numerical Operations)

All Students Will Develop Number Sense And Will Perform Standard Numerical Operations And Estimations On All Types Of Numbers In A Variety Of Ways.

A. Number Sense

1. Use real-life experiences, physical materials, and technology to construct meanings for numbers (unless otherwise noted, all indicators for grade 6 pertain to these sets of numbers as well).
 - All integers.
 - All fractions as part of a whole, as subset of a set, as a location on a number line, and as divisions of whole numbers.
 - All decimals.
4. Explore the use of ratios and proportions in a variety of situations.

C. Estimation

1. Use a variety of strategies for estimating both quantities and the results of computations.

Math.6.4.2 (Geometry And Measurement)

All Students Will Develop Spatial Sense And The Ability To Use Geometric Properties, Relationships, And Measurement To Model, Describe And Analyze Phenomena.

D. Units of Measurement

3. Convert measurement units within a system (e.g., 3 feet = ___ inches).
5. Use measurements and estimates to describe and compare phenomena.

Math.6.4.3 (Patterns And Algebra)

All Students Will Represent And Analyze Relationships Among Variable Quantities And Solve Problems Involving Patterns, Functions, And Algebraic Concepts And Processes.

C. Modeling

1. Use patterns, relations, and linear functions to model situations.
 - Using variables to represent unknown quantities.
 - Using concrete materials, tables, graphs, verbal rules, algebraic expressions/equations/inequalities.

Math.6.4.4 (Data Analysis, Probability, And Discrete Mathematics)

All Students Will Develop An Understanding Of The Concepts And Techniques Of Data Analysis, Probability, And Discrete Mathematics, And Will Use Them To Model Situations, Solve Problems, And Analyze And Draw Appropriate Inferences From Data.

A. Data Analysis

3. Respond to questions about data, generate their own questions and hypotheses, and formulate strategies for answering their questions and testing their hypotheses.

Grade 7

Math.7.4.1 (Number And Numerical Operations)

All Students Will Develop Number Sense And Will Perform Standard Numerical Operations And Estimations On All Types Of Numbers In A Variety Of Ways.

A. Number Sense

3. Understand and use ratios, proportions, and percents (including percents greater than 100 and less than 1) in a variety of situations.

Math.7.4.3 (Patterns And Algebra)

All Students Will Represent And Analyze Relationships Among Variable Quantities And Solve Problems Involving Patterns, Functions, And Algebraic Concepts And Processes.

C. Modeling

2. Use patterns, relations, symbolic algebra, and linear functions to model situations.
 - Using manipulatives, tables, graphs, verbal rules, algebraic expressions/ equations/ inequalities.
 - Growth situations, such as population growth and compound interest, using recursive (e.g., NOW-NEXT) formulas (cf. science standard 5.5 and social studies standard 6.6).

Grade 8

Math.8.4.1 (Number And Numerical Operations)

All Students Will Develop Number Sense And Will Perform Standard Numerical Operations And Estimations On All Types Of Numbers In A Variety Of Ways.

A. Number Sense

3. Understand and use ratios, proportions, and percents (including percents greater than 100 and less than 1) in a variety of situations.

Math.8.4.2 (Geometry And Measurement)

All Students Will Develop Spatial Sense And The Ability To Use Geometric Properties, Relationships, And Measurement To Model, Describe And Analyze Phenomena.

D. Units of Measurement

3. Recognize that the degree of precision needed in calculations depends on how the results will be used and the instruments used to generate the measurements.

Math.8.4.3 (Patterns And Algebra)

All Students Will Represent And Analyze Relationships Among Variable Quantities And Solve Problems Involving Patterns, Functions, And Algebraic Concepts And Processes.

C. Modeling

2. Use patterns, relations, symbolic algebra, and linear functions to model situations.
 - Using concrete materials (manipulatives), tables, graphs, verbal rules, algebraic expressions/ equations/ inequalities.
 - Growth situations, such as population growth and compound interest, using recursive (e.g., NOW-NEXT) formulas (cf. science standard 5.5 and social studies standard 6.6).

Grade 9 to Grade 12

Math.9-12.4.3 (Patterns And Algebra)

All Students Will Represent And Analyze Relationships Among Variable Quantities And Solve Problems Involving Patterns, Functions, And Algebraic Concepts And Processes.

C. Modeling

1. Use functions to model real-world phenomena and solve problems that involve varying quantities.
 - Linear, quadratic, exponential, periodic (sine and cosine), and step functions (e.g., price of mailing a first-class letter over the past 200 years).
 - Direct and inverse variation.
 - Absolute value.
 - Expressions, equations and inequalities.
 - Same function can model variety of phenomena.
 - Growth/decay and change in the natural world.
 - Applications in mathematics, biology, and economics (including compound interest).

Science

Grade 3 to Grade 4

Science.3-4.5.1 (Scientific Processes)

All Students Will Develop Problem-Solving, Decision-Making And Inquiry Skills, Reflected By Formulating Usable Questions And Hypotheses, Planning Experiments, Conducting Systematic Observations, Interpreting And Analyzing Data, Drawing Conclusions, And Communicating Results.

A. Habits of Mind

1. Raise questions about the world around them and be willing to seek answers through making careful observations and experimentation.

B. Inquiry and Problem Solving

1. Develop strategies and skills for information-gathering and problem-solving, using appropriate tools and technologies.
2. Identify the evidence used in an explanation.

Science.3-4.5.3 (Mathematical Applications)

All Students Will Integrate Mathematics As A Tool For Problem-Solving In Science, And As A Means Of Expressing And/Or Modeling Scientific Theories.

A. Numerical Operations

1. Determine the reasonableness of estimates, measurements, and computations of quantities when doing science.
3. Express quantities using appropriate number formats, such as:
 - integers.
 - fractions.

B. Geometry and Measurement

1. Select appropriate measuring instruments based on the degree of precision required.

2. Use a variety of measuring instruments and record measured quantities using the appropriate units.

Grade 7 to Grade 8

Science.7-8.5.3 (Mathematical Applications)

All Students Will Integrate Mathematics As A Tool For Problem-Solving In Science, And As A Means Of Expressing And/Or Modeling Scientific Theories.

C. Patterns and Algebra

1. Express physical relationships in terms of mathematical equations derived from collected data.

Grade 9 to Grade 12

Science.9-12.5.1 (Scientific Processes)

All Students Will Develop Problem-Solving, Decision-Making And Inquiry Skills, Reflected By Formulating Usable Questions And Hypotheses, Planning Experiments, Conducting Systematic Observations, Interpreting And Analyzing Data, Drawing Conclusions, And Communicating Results.

A. Habits of Mind

4. Explore cases that demonstrate the interdisciplinary nature of the scientific enterprise.

Science.9-12.5.3 (Mathematical Applications)

All Students Will Integrate Mathematics As A Tool For Problem-Solving In Science, And As A Means Of Expressing And/Or Modeling Scientific Theories.

A. Numerical Operations

1. Reinforce indicators from previous grade level.

Science.9-12.5.10 (Environmental Studies)

All Students Will Develop An Understanding Of The Environment As A System Of Interdependent Components Affected By Human Activity And Natural Phenomena.

B. Human Interactions and Impact

2. Use scientific, economic, and other data to assess environmental risks and benefits associated with societal activity.

Social Studies

Grade 3 to Grade 4

Social Studies.3-4.6.2 (Civics)

All Students Will Know, Understand And Appreciate The Values And Principles Of American Democracy And The Rights, Responsibilities, And Roles Of A Citizen In The Nation And The World.

E. International Education: Global Challenges, Cultures, and Connections

5. Identify current issues that may have a global impact (e.g., pollution, diseases) and discuss ways to address them.
9. Examine common and diverse traits of other cultures and compare to their own culture.

Grade 5 to Grade 8

Social Studies.5-8.6.1

All Students Will Utilize Historical Thinking, Problem Solving, And Research Skills To Maximize Their Understanding Of Civics, History, Geography, And Economics.

A. Social Studies Skills

2. Use critical thinking skills to interpret events, recognize bias, point of view, and context.
5. Examine current issues, events, or themes and relate them to past events.

11. Summarize information in written, graphic, and oral formats.

Social Studies.5-8.6.2 (Civics)

All Students Will Know, Understand And Appreciate The Values And Principles Of American Democracy And The Rights, Responsibilities, And Roles Of A Citizen In The Nation And The World.

E. International Education: Global Challenges, Cultures, and Connections

8. Discuss how global challenges are interrelated, complex, and changing and that even local issues may have a global dimension (e.g., environmental issues, transportation).

Social Studies.5-8.6.5 (Economics)

All Students Will Acquire An Understanding Of Key Economic Principles.

B. Economics and Society

4. Describe how inventions and innovations have improved standards of living over the course of history.

Social Studies.5-8.6.6 (Geography)

All Students Will Apply Knowledge Of Spatial Relationships And Other Geographic Skills To Understand Human Behavior In Relation To The Physical And Cultural Environment.

B. Places and Regions

1. Compare and contrast the physical and human characteristics of places in regions in New Jersey, the United States, and the world.

D. Human Systems

2. Analyze demographic characteristics to explain reasons for variations between populations.

Maria's Education

Language Arts

Grade 6

Language Arts.6.3.1 (Reading)

All Students Will Understand And Apply The Knowledge Of Sounds, Letters, And Words In Written English To Become Independent And Fluent Readers, And Will Read A Variety Of Materials And Texts With Fluency And Comprehension.

G. Comprehension Skills and Response to Text

4. Construct meaning from text by making conscious connections to self, an author, and others.

Language Arts.6.3.3 (Speaking)

All Students Will Speak In Clear, Concise, Organized Language That Varies In Content And Form For Different Audiences And Purposes.

A. Discussion (small group and whole class)

5. Participate in class discussion appropriately.

Grade 7

Language Arts.7.3.3 (Speaking)

All Students Will Speak In Clear, Concise, Organized Language That Varies In Content And Form For Different Audiences And Purposes.

A. Discussion (small group and whole class)

2. Present ideas and opinions spontaneously in response to a topic or other speakers.

7. Participate in class discussions appropriately.

Grade 8

Language Arts.8.3.3 (Speaking)

All Students Will Speak In Clear, Concise, Organized Language That Varies In Content And Form For Different Audiences And Purposes.

A. Discussion (small group and whole class)

2. Present ideas and opinions spontaneously in response to a topic or other speakers.

7. Participate in class discussion appropriately.

Social Studies

Grade 5 to Grade 8

Social Studies.5-8.6.1

All Students Will Utilize Historical Thinking, Problem Solving, And Research Skills To Maximize Their Understanding Of Civics, History, Geography, And Economics.

A. Social Studies Skills

2. Use critical thinking skills to interpret events, recognize bias, point of view, and context.

11. Summarize information in written, graphic, and oral formats.

Social Studies.5-8.6.2 (Civics)

All Students Will Know, Understand And Appreciate The Values And Principles Of American Democracy And The Rights, Responsibilities, And Roles Of A Citizen In The Nation And The World.

E. International Education: Global Challenges, Cultures, and Connections

6. Describe how one's heritage includes personal history and experiences, culture, customs, and family background.

9. Discuss how cultures may change and that individuals may identify with more than one culture.

Grade 9 to Grade 12

Social Studies.9-12.6.1

All Students Will Utilize Historical Thinking, Problem Solving, And Research Skills To Maximize Their Understanding Of Civics, History, Geography, And Economics.

A. Social Studies Skills

3. Gather, analyze, and reconcile information from primary and secondary sources to support or reject hypotheses.

6. Apply problem-solving skills to national, state, or local issues and propose reasoned solutions.

7. Analyze social, political, and cultural change and evaluate the impact of each on local, state, national, and international issues and events.

Social Studies.9-12.6.2 (Civics)

All Students Will Know, Understand And Appreciate The Values And Principles Of American Democracy And The Rights, Responsibilities, And Roles Of A Citizen In The Nation And The World.

E. International Education: Global Challenges, Cultures, and Connections

4. Analyze and evaluate the interconnections of local, regional, and national issues with global challenges and issues, and recommend possible solutions.

10. Compare and contrast common social and behavioral practices in various cultures (e.g., birth, marriage, death, gender issues, family structure, health issues).

Social Studies.9-12.6.4 (United States And New Jersey History)

All Students Will Demonstrate Knowledge Of United States And New Jersey History In Order To Understand Life And Events In The Past And How They Relate To The Present And Future.

L. Contemporary America (1968-present)

6. Compare and contrast population trends and immigration and migration patterns in the United States (e.g., growth of Hispanic population, demographic and residential mobility).

7. Discuss major contemporary social issues, such as the evolution of governmental rights for individuals with disabilities, multiculturalism, bilingual education, gay rights, free expression in the media, and the modern feminist movement.

Social Studies.9-12.6.5 (Economics)

All Students Will Acquire An Understanding Of Key Economic Principles.

B. Economics and Society

6. Analyze the connections and potential effects of the widening gap between the rich and the poor in the United States, the decline in labor union membership since 1950, rapidly advancing technology, globalization, and problems of public schools.

Social Studies.9-12.6.6 (Geography)

All Students Will Apply Knowledge Of Spatial Relationships And Other Geographic Skills To Understand Human Behavior In Relation To The Physical And Cultural Environment.

D. Human Systems

1. Analyze the impact of human migration on physical and human systems.

The More the Merrier?

Social Studies

Grade 5 to Grade 8

Social Studies.5-8.6.1

All Students Will Utilize Historical Thinking, Problem Solving, And Research Skills To Maximize Their Understanding Of Civics, History, Geography, And Economics.

A. Social Studies Skills

1. Summarize information in written, graphic, and oral formats.

Social Studies.5-8.6.2 (Civics)

All Students Will Know, Understand And Appreciate The Values And Principles Of American Democracy And The Rights, Responsibilities, And Roles Of A Citizen In The Nation And The World.

A. Civic Life, Politics, and Government

1. Discuss the sources, purposes, and functions of law and the importance of the rule of law for the preservation of individual rights and the common good.

Social Studies.5-8.6.6 (Geography)

All Students Will Apply Knowledge Of Spatial Relationships And Other Geographic Skills To Understand Human Behavior In Relation To The Physical And Cultural Environment.

B. Places and Regions

1. Compare and contrast the physical and human characteristics of places in regions in New Jersey, the United States, and the world.

6. Discuss the similarities and differences among rural, suburban, and urban communities.

C. Physical Systems

5. Describe how the physical environment affects life in different regions (e.g., population density, architecture, transportation systems, industry, building materials, land use, recreation).

D. Human Systems

2. Analyze demographic characteristics to explain reasons for variations between populations.

5. Discuss how and why people cooperate, but also engage in conflict, to control the Earth's surface.

Timber!

Language Arts

Grade 3

Language Arts.3.3.3 (Speaking)

All Students Will Speak In Clear, Concise, Organized Language That Varies In Content And Form For Different Audiences And Purposes.

A. Discussion (small group and whole class)

1. Listen and follow a discussion in order to contribute appropriately.

B. Questioning (Inquiry) and Contributing

1. Develop appropriate questions to explore a topic.

Language Arts.3.3.4 (Listening)

All Students Will Listen Actively To Information From A Variety Of Sources In A Variety Of Situations.

B. Listening Comprehension

1. Follow two-and three-step directions.

Grade 4

Language Arts.4.3.1 (Reading)

All Students Will Understand And Apply The Knowledge Of Sounds, Letters, And Words In Written English To Become Independent And Fluent Readers, And Will Read A Variety Of Materials And Texts With Fluency And Comprehension.

G. Comprehension Skills and Response to Text

5. Follow simple multiple-steps in written instructions.

Language Arts.4.3.3 (Speaking)

All Students Will Speak In Clear, Concise, Organized Language That Varies In Content And Form For Different Audiences And Purposes.

B. Questioning (Inquiry) and Contributing

6. Solve a problem or understand a task through group cooperation.

Grade 5

Language Arts.5.3.3 (Speaking)

All Students Will Speak In Clear, Concise, Organized Language That Varies In Content And Form For Different Audiences And Purposes.

A. Discussion (small group and whole class)

5. Participate in class discussions appropriately.

B. Questioning (Inquiry) and Contributing

6. Solve a problem or understand a task through group cooperation.

Language Arts.5.3.5 (Viewing And Media Literacy)

All Students Will Access, View, Evaluate, And Respond To Print, Nonprint, And Electronic Texts And Resources.

A. Constructing Meaning

2. Use graphs, charts, and diagrams to report data.

Grade 6

Language Arts.6.3.5 (Viewing And Media Literacy)

All Students Will Access, View, Evaluate, And Respond To Print, Nonprint, And Electronic Texts And Resources.

A. Constructing Meaning

4. Identify the central theme in a movie, film, or illustration.

Grade 7

Language Arts.7.3.3 (Speaking)

All Students Will Speak In Clear, Concise, Organized Language That Varies In Content And Form For Different Audiences And Purposes.

B. Questioning (Inquiry) and Contributing

4. Solve a problem or understand a task through group cooperation.

Grade 8

Language Arts.8.3.3 (Speaking)

All Students Will Speak In Clear, Concise, Organized Language That Varies In Content And Form For Different Audiences And Purposes.

B. Questioning (Inquiry) and Contributing

4. Solve a problem or understand a task through group cooperation.

Mathematics

Grades K - 12

Math.K-12.4.5 (Mathematical Processes)

All Students Will Use Mathematical Processes Of Problem Solving, Communication, Connections, Reasoning, Representations, And Technology To Solve Problems And Communicate Mathematical Ideas.

A. Problem Solving

1. Learn mathematics through problem solving, inquiry, and discovery.
2. Solve problems that arise in mathematics and in other contexts (cf. workplace readiness standard 8.3).
 - Open-ended problems.
 - Non-routine problems.
 - Problems with multiple solutions.
 - Problems that can be solved in several ways.
4. Pose problems of various types and levels of difficulty.

B. Communication

1. Use communication to organize and clarify their mathematical thinking.
 - Reading and writing.
 - Discussion, listening, and questioning.
2. Communicate their mathematical thinking coherently and clearly to peers, teachers, and others, both orally and in writing.
4. Use the language of mathematics to express mathematical ideas precisely.

C. Connections

3. Recognize that mathematics is used in a variety of contexts outside of mathematics.
4. Apply mathematics in practical situations and in other disciplines.

D. Reasoning

2. Use reasoning to support their mathematical conclusions and problem solutions.

E. Representations

1. Create and use representations to organize, record, and communicate mathematical ideas.
 - Concrete representations (e.g., base-ten blocks or algebra tiles).
 - Pictorial representations (e.g., diagrams, charts, or tables).
 - Symbolic representations (e.g., a formula).
 - Graphical representations (e.g., a line graph).

2. Select, apply, and translate among mathematical representations to solve problems.
Mathematics

3. Use representations to model and interpret physical, social, and mathematical phenomena.

Kindergarten to Grade 2

Math.K-2.4.1 (Number And Numerical Operations)

All Students Will Develop Number Sense And Will Perform Standard Numerical Operations And Estimations On All Types Of Numbers In A Variety Of Ways.

A. Number Sense

1. Use real-life experiences, physical materials, and technology to construct meanings for numbers (unless otherwise noted, all indicators for grade 2 pertain to these sets of numbers as well).

- Whole numbers through hundreds.
- Ordinals.
- Proper fractions (denominators of 2, 3, 4, 8, 10).

5. Compare and order whole numbers.

B. Numerical Operations

4. Construct, use, and explain procedures for performing addition and subtraction calculations with:

- Pencil-and-paper.
- Mental math.
- Calculator.

Grade 3

Math.3.4.1 (Number And Numerical Operations)

All Students Will Develop Number Sense And Will Perform Standard Numerical Operations And Estimations On All Types Of Numbers In A Variety Of Ways.

A. Number Sense

1. Use real-life experiences, physical materials, and technology to construct meanings for numbers (unless otherwise noted, all indicators for grade 3 pertain to these sets of numbers as well).

- Whole numbers through hundred thousands.
- Commonly used fractions (denominators of 2, 3, 4, 5, 6, 8, 10) as part of a whole, as a subset of a set, and as a location on a number line.

6. Compare and order numbers.

Math.3.4.3 (Patterns And Algebra)

All Students Will Represent And Analyze Relationships Among Variable Quantities And Solve Problems Involving Patterns, Functions, And Algebraic Concepts And Processes.

B. Functions and Relationships

1. Use concrete and pictorial models to explore the basic concept of a function.

- Input/output tables, T-charts.

C. Modeling

1. Recognize and describe change in quantities.

- Graphs representing change over time (e.g., temperature, height).

Math.3.4.4 (Data Analysis, Probability, And Discrete Mathematics)

All Students Will Develop An Understanding Of The Concepts And Techniques Of Data Analysis, Probability, And Discrete Mathematics, And Will Use Them To Model Situations, Solve Problems, And Analyze And Draw Appropriate Inferences From Data.

A. Data Analysis

2. Read, interpret, construct, analyze, generate questions about, and draw inferences from displays of data.

- Pictograph, bar graph, table.

D. Discrete Mathematics - Vertex- Edge Graphs and Algorithms

1. Follow, devise, and describe practical sets of directions (e.g., to add two 2-digit numbers).

Grade 4

Math.4.4.1 (Number And Numerical Operations)

All Students Will Develop Number Sense And Will Perform Standard Numerical Operations And Estimations On All Types Of Numbers In A Variety Of Ways.

A. Number Sense

1. Use real-life experiences, physical materials, and technology to construct meanings for numbers (unless otherwise noted, all indicators for grade 4 pertain to these sets of numbers as well).

- Whole numbers through millions
- Commonly used fractions (denominators of 2, 3, 4, 5, 6, 8, 10, 12, and 16) as part of a whole, as a subset of a set, and as a location on a number line
- Decimals through hundredths.

3. Demonstrate a sense of the relative magnitudes of numbers.

6. Compare and order numbers.

B. Numerical Operations

3. Construct, use, and explain procedures for performing whole number calculations and with:

- Pencil-and-paper.
- Mental math.
- Calculator.

Math.4.4.2 (Geometry And Measurement)

All Students Will Develop Spatial Sense And The Ability To Use Geometric Properties, Relationships, And Measurement To Model, Describe And Analyze Phenomena.

D. Units of Measurement

5. Solve problems involving elapsed time.

Math.4.4.3 (Patterns And Algebra)

All Students Will Represent And Analyze Relationships Among Variable Quantities And Solve Problems Involving Patterns, Functions, And Algebraic Concepts And Processes.

A. Patterns

1. Recognize, describe, extend, and create patterns.

- Descriptions using words, number sentences/expressions, graphs, tables, variables (e.g., shape, blank, or letter).

C. Modeling

1. Recognize and describe change in quantities.

- Graphs representing change over time (e.g., temperature, height).
- How change in one physical quantity can produce a corresponding change in another (e.g., pitch of a sound depends on the rate of vibration).

Math.4.4.4 (Data Analysis, Probability, And Discrete Mathematics)

All Students Will Develop An Understanding Of The Concepts And Techniques Of Data Analysis, Probability, And Discrete Mathematics, And Will Use Them To Model Situations, Solve Problems, And Analyze And Draw Appropriate Inferences From Data.

A. Data Analysis

1. Collect, generate, organize, and display data in response to questions, claims, or curiosity.
 - Data collected from the school environment.

2. Read, interpret, construct, analyze, generate questions about, and draw inferences from displays of data.
 - Pictograph, bar graph, line plot, line graph, table.
 - Average (mean), most frequent (mode), middle term (median).

D. Discrete Mathematics- Vertex- Edge Graphs and Algorithms

1. Follow, devise, and describe practical sets of directions (e.g., to add two 2-digit numbers).

Grade 5

Math.5.4.1 (Number And Numerical Operations)

All Students Will Develop Number Sense And Will Perform Standard Numerical Operations And Estimations On All Types Of Numbers In A Variety Of Ways.

A. Number Sense

1. Use real-life experiences, physical materials, and technology to construct meanings for numbers (unless otherwise noted, all indicators for grade 5 pertain to these sets of numbers as well).
 - All fractions as part of a whole, as subset of a set, as a location on a number line, and as divisions of whole numbers.
 - All decimals.

6. Compare and order numbers.

Math.5.4.3 (Patterns And Algebra)

All Students Will Represent And Analyze Relationships Among Variable Quantities And Solve Problems Involving Patterns, Functions, And Algebraic Concepts And Processes.

A. Patterns

1. Recognize, describe, extend, and create patterns involving whole numbers.
 - Descriptions using tables, verbal rules, simple equations, and graphs.

B. Functions & Relationships

2. Graph points satisfying a function from T-charts, from verbal rules, and from simple equations.

C. Modeling

1. Use number sentences to model situations.
 - Using variables to represent unknown quantities.
 - Using concrete materials, tables, graphs, verbal rules, algebraic expressions/equations.

2. Draw freehand sketches of graphs that model real phenomena and use such graphs to predict and interpret events.
 - Changes over time.
 - Rates of change (e.g., when is plant growing slowly/rapidly, when is temperature dropping most rapidly/slowly).

Math.5.4.4 (Data Analysis, Probability, And Discrete Mathematics)

All Students Will Develop An Understanding Of The Concepts And Techniques Of Data Analysis, Probability, And Discrete Mathematics, And Will Use Them To Model Situations, Solve Problems, And Analyze And Draw Appropriate Inferences From Data.

A. Data Analysis

2. Read, interpret, select, construct, analyze, generate questions about, and draw inferences from displays of data.

- Bar graph, line graph, circle graph, table.
- Range, median, and mean.

3. Respond to questions about data and generate their own questions and hypotheses.

Grade 6

Math.6.4.1 (Number And Numerical Operations)

All Students Will Develop Number Sense And Will Perform Standard Numerical Operations And Estimations On All Types Of Numbers In A Variety Of Ways.

A. Number Sense

1. Use real-life experiences, physical materials, and technology to construct meanings for numbers (unless otherwise noted, all indicators for grade 6 pertain to these sets of numbers as well).

- All integers.
- All fractions as part of a whole, as subset of a set, as a location on a number line, and as divisions of whole numbers.
- All decimals.

8. Compare and order numbers.

B. Numerical Operations

1. Recognize the appropriate use of each arithmetic operation in problem situations.

2. Construct, use, and explain procedures for performing calculations with fractions and decimals with:

- Pencil-and-paper.
- Mental math.
- Calculator.

Math.6.4.3 (Patterns And Algebra)

All Students Will Represent And Analyze Relationships Among Variable Quantities And Solve Problems Involving Patterns, Functions, And Algebraic Concepts And Processes.

A. Patterns

1. Recognize, describe, extend, and create patterns involving whole numbers and rational numbers.

- Descriptions using tables, verbal rules, simple equations, and graphs.
- Formal iterative formulas (e.g., NEXT = NOW * 3).
- Recursive patterns, including Pascal's Triangle (where each entry is the sum of the entries above it) and the Fibonacci Sequence: 1, 1, 2, 3, 5, 8, . . . (where NEXT = NOW + PREVIOUS).

C. Modeling

1. Use patterns, relations, and linear functions to model situations.

- Using variables to represent unknown quantities.
- Using concrete materials, tables, graphs, verbal rules, algebraic expressions/equations/inequalities.

2. Draw freehand sketches of graphs that model real phenomena and use such graphs to predict and interpret events.

- Changes over time.
- Relations between quantities.
- Rates of change (e.g., when is plant growing slowly/rapidly, when is temperature dropping most rapidly/slowly).

Math.6.4.4 (Data Analysis, Probability, And Discrete Mathematics)

All Students Will Develop An Understanding Of The Concepts And Techniques Of Data Analysis, Probability, And Discrete Mathematics, And Will Use Them To Model Situations, Solve Problems, And Analyze And Draw Appropriate Inferences From Data.

A. Data Analysis

2. Read, interpret, select, construct, analyze, generate questions about, and draw inferences from displays of data.

- Bar graph, line graph, circle graph, table, histogram.
- Range, median, and mean.
- Calculators and computers used to record and process information.

3. Respond to questions about data, generate their own questions and hypotheses, and formulate strategies for answering their questions and testing their hypotheses.

Grade 7

Math.7.4.1 (Number And Numerical Operations)

All Students Will Develop Number Sense And Will Perform Standard Numerical Operations And Estimations On All Types Of Numbers In A Variety Of Ways.

A. Number Sense

1. Extend understanding of the number system by constructing meanings for the following (unless otherwise noted, all indicators for grade 7 pertain to these sets of numbers as well):

- Rational numbers.
- Percents.
- Whole numbers with exponents.

B. Numerical Operations

1. Use and explain procedures for performing calculations with integers and all number types named above with:

- Pencil-and-paper.
- Mental math.
- Calculator.

Math.7.4.3 (Patterns And Algebra)

All Students Will Represent And Analyze Relationships Among Variable Quantities And Solve Problems Involving Patterns, Functions, And Algebraic Concepts And Processes.

A. Patterns

1. Recognize, describe, extend, and create patterns involving whole numbers, rational numbers, and integers.

- Descriptions using tables, verbal and symbolic rules, graphs, simple equations or expressions.
- Finite and infinite sequences.
- Generating sequences by using calculators to repeatedly apply a formula.

C. Modeling

2. Use patterns, relations, symbolic algebra, and linear functions to model situations.

- Using manipulatives, tables, graphs, verbal rules, algebraic expressions/ equations/ inequalities.
- Growth situations, such as population growth and compound interest, using recursive (e.g., NOW-NEXT) formulas (cf. science standard 5.5 and social studies standard 6.6).

Math.7.4.4 (Data Analysis, Probability, And Discrete Mathematics)

All Students Will Develop An Understanding Of The Concepts And Techniques Of Data Analysis, Probability, And Discrete Mathematics, And Will Use Them To Model Situations, Solve Problems, And Analyze And Draw Appropriate Inferences From Data.

A. Data Analysis

1. Select and use appropriate representations for sets of data, and measures of central tendency (mean, median, and mode).
 - Type of display most appropriate for given data.
 - Box-and-whisker plot, upper quartile, lower quartile.
 - Scatter plot.
 - Calculators and computer used to record and process information.
2. Make inferences and formulate and evaluate arguments based on displays and analysis of data.

Grade 8

Math.8.4.1 (Number And Numerical Operations)

All Students Will Develop Number Sense And Will Perform Standard Numerical Operations And Estimations On All Types Of Numbers In A Variety Of Ways.

A. Number Sense

1. Extend understanding of the number system by constructing meanings for the following (unless otherwise noted, all indicators for grade 8 pertain to these sets of numbers as well):
 - Rational numbers.
 - Percents.
 - Exponents.
 - Roots.
 - Absolute values.
 - Numbers represented in scientific notation.

B. Numerical Operations

1. Use and explain procedures for performing calculations involving addition, subtraction, multiplication, division, and exponentiation with integers and all number types named above with:
 - Pencil-and-paper.
 - Mental math.
 - Calculator.

Math.8.4.3 (Patterns And Algebra)

All Students Will Represent And Analyze Relationships Among Variable Quantities And Solve Problems Involving Patterns, Functions, And Algebraic Concepts And Processes.

A. Patterns

1. Recognize, describe, extend, and create patterns involving whole numbers, rational numbers, and integers.
 - Descriptions using tables, verbal and symbolic rules, graphs, simple equations or expressions.
 - Finite and infinite sequences.
 - Arithmetic sequences (i.e., sequences generated by repeated addition of a fixed number, positive or negative).
 - Geometric sequences (i.e., sequences generated by repeated multiplication by a fixed positive ratio, greater than 1 or less than 1).
 - Generating sequences by using calculators to repeatedly apply a formula.

B. Functions and Relationships

2. Recognize and describe the difference between linear and exponential growth, using tables, graphs, and equations.

C. Modeling

2. Use patterns, relations, symbolic algebra, and linear functions to model situations.
 - Using concrete materials (manipulatives), tables, graphs, verbal rules, algebraic expressions/ equations/ inequalities.
 - Growth situations, such as population growth and compound interest, using recursive (e.g., NOW-NEXT) formulas (cf. science standard 5.5 and social studies standard 6.6).

Math.8.4.4 (Data Analysis, Probability, And Discrete Mathematics)

All Students Will Develop An Understanding Of The Concepts And Techniques Of Data Analysis, Probability, And Discrete Mathematics, And Will Use Them To Model Situations, Solve Problems, And Analyze And Draw Appropriate Inferences From Data.

A. Data Analysis

1. Select and use appropriate representations for sets of data, and measures of central tendency (mean, median, and mode).
 - Type of display most appropriate for given data.
 - Box-and-whisker plot, upper quartile, lower quartile.
 - Scatter plot.
 - Calculators and computer used to record and process information.
 - Finding the median and mean (weighted average) using frequency data.
 - Effect of additional data on measures of central tendency.
2. Make inferences and formulate and evaluate arguments based on displays and analysis of data.

Grade 9 to Grade 12

Math.9-12.4.3 (Patterns And Algebra)

All Students Will Represent And Analyze Relationships Among Variable Quantities And Solve Problems Involving Patterns, Functions, And Algebraic Concepts And Processes.

C. Modeling

1. Use functions to model real-world phenomena and solve problems that involve varying quantities.
 - Linear, quadratic, exponential, periodic (sine and cosine), and step functions (e.g., price of mailing a first-class letter over the past 200 years).
 - Direct and inverse variation.
 - Absolute value.
 - Expressions, equations and inequalities.
 - Same function can model variety of phenomena.
 - Growth/decay and change in the natural world.
 - Applications in mathematics, biology, and economics (including compound interest).

Science

Grade 3 to Grade 4

Science.3-4.5.1 (Scientific Processes)

All Students Will Develop Problem-Solving, Decision-Making And Inquiry Skills, Reflected By Formulating Usable Questions And Hypotheses, Planning Experiments, Conducting Systematic Observations, Interpreting And Analyzing Data, Drawing Conclusions, And Communicating Results.

A. Habits of Mind

1. Raise questions about the world around them and be willing to seek answers through making careful observations and experimentation.
2. Keep records that describe observations, carefully distinguish actual observations from ideas and speculations, and are understandable weeks and months later.

B. Inquiry and Problem Solving

1. Develop strategies and skills for information-gathering and problem-solving, using appropriate tools and technologies.
2. Identify the evidence used in an explanation.

Science.3-4.5.3 (Mathematical Applications)

All Students Will Integrate Mathematics As A Tool For Problem-Solving In Science, And As A Means Of Expressing And/Or Modeling Scientific Theories.

- A. Numerical Operations
 - 3. Express quantities using appropriate number formats, such as:
 - integers.
 - fractions.
- B. Geometry and Measurement
 - 2. Use a variety of measuring instruments and record measured quantities using the appropriate units.
- D. Data Analysis and Probability
 - 1. Use tables and graphs to represent and interpret data.

Grade 5 to Grade 6

Science.5-6.5.10 (Environmental Studies)

All Students Will Develop An Understanding Of The Environment As A System Of Interdependent Components Affected By Human Activity And Natural Phenomena.

- B. Human Interactions and Impact
 - 1. Describe the effect of human activities on various ecosystems.

Grade 7 to Grade 8

Science.7-8.5.1 (Scientific Processes)

All Students Will Develop Problem-Solving, Decision-Making And Inquiry Skills, Reflected By Formulating Usable Questions And Hypotheses, Planning Experiments, Conducting Systematic Observations, Interpreting And Analyzing Data, Drawing Conclusions, And Communicating Results.

- B. Inquiry and Problem Solving
 - 1. Identify questions and make predictions that can be addressed by conducting investigations.
 - 3. Collect, organize, and interpret the data that result from experiments.

Science.7-8.5.3 (Mathematical Applications)

All Students Will Integrate Mathematics As A Tool For Problem-Solving In Science, And As A Means Of Expressing And/Or Modeling Scientific Theories.

- B. Geometry and Measurement
 - 1. Perform mathematical computations using labeled quantities and express answers in correctly derived units.
- C. Patterns and Algebra
 - 1. Express physical relationships in terms of mathematical equations derived from collected data.
- D. Data Analysis and Probability
 - 1. Represent and describe mathematical relationships among variables using:
 - graphs.
 - tables.

Science.7-8.5.10 (Environmental Studies)

All Students Will Develop An Understanding Of The Environment As A System Of Interdependent Components Affected By Human Activity And Natural Phenomena.

- B. Human Interactions and Impact
 - 1. Compare and contrast practices that affect the use and management of natural resources.

Grade 9 to Grade 12

Science.9-12.5.1 (Scientific Processes)

All Students Will Develop Problem-Solving, Decision-Making And Inquiry Skills, Reflected By Formulating Usable Questions And Hypotheses, Planning Experiments, Conducting Systematic Observations, Interpreting And Analyzing Data, Drawing Conclusions, And Communicating Results.

A. Habits of Mind

4. Explore cases that demonstrate the interdisciplinary nature of the scientific enterprise.

Science.9-12.5.3 (Mathematical Applications)

All Students Will Integrate Mathematics As A Tool For Problem-Solving In Science, And As A Means Of Expressing And/Or Modeling Scientific Theories.

A. Numerical Operations

1. Reinforce indicators from previous grade level.

D. Data Analysis and Probability

1. Construct and interpret graphs of data to represent inverse and non-linear relationships, and statistical distributions.

Science.9-12.5.10 (Environmental Studies)

All Students Will Develop An Understanding Of The Environment As A System Of Interdependent Components Affected By Human Activity And Natural Phenomena.

B. Human Interactions and Impact

2. Use scientific, economic, and other data to assess environmental risks and benefits associated with societal activity.

Social Studies

Grade 3 to Grade 4

Social Studies.3-4.6.2 (Civics)

All Students Will Know, Understand And Appreciate The Values And Principles Of American Democracy And The Rights, Responsibilities, And Roles Of A Citizen In The Nation And The World.

E. International Education: Global Challenges, Cultures, and Connections

5. Identify current issues that may have a global impact (e.g., pollution, diseases) and discuss ways to address them.

Social Studies.3-4.6.6 (Geography)

All Students Will Apply Knowledge Of Spatial Relationships And Other Geographic Skills To Understand Human Behavior In Relation To The Physical And Cultural Environment.

E. Environment and Society

1. Differentiate between living and non-living natural resources.
2. Explain the nature, characteristics, and distribution of renewable and non-renewable resources.

Grade 5 to Grade 8

Social Studies.5-8.6.1

All Students Will Utilize Historical Thinking, Problem Solving, And Research Skills To Maximize Their Understanding Of Civics, History, Geography, And Economics.

A. Social Studies Skills

4. Analyze data in order to see persons and events in context.
11. Summarize information in written, graphic, and oral formats.

Social Studies.5-8.6.5 (Economics)

All Students Will Acquire An Understanding Of Key Economic Principles.

B. Economics and Society

1. Discuss how meeting the needs and wants of a growing world population impacts the environment and economic growth.

4. Describe how inventions and innovations have improved standards of living over the course of history.

People Count: Facing the Population Challenge (Reading)

Language Arts

Grade 6

Language Arts.6.3.1 (Reading)

All Students Will Understand And Apply The Knowledge Of Sounds, Letters, And Words In Written English To Become Independent And Fluent Readers, And Will Read A Variety Of Materials And Texts With Fluency And Comprehension.

H. Inquiry and Research

4. Interpret and use graphic sources of information such as maps, graphs, timelines, or tables to address research questions.

Social Studies

Grade 5 to Grade 8

Social Studies.7-8.6.1

All Students Will Utilize Historical Thinking, Problem Solving, And Research Skills To Maximize Their Understanding Of Civics, History, Geography, And Economics.

A. Social Studies Skills

1. Analyze how events are related over time.
2. Use critical thinking skills to interpret events, recognize bias, point of view, and context.
4. Analyze data in order to see persons and events in context.
5. Examine current issues, events, or themes and relate them to past events.

Social Studies.7-8.6.2 (Civics)

All Students Will Know, Understand And Appreciate The Values And Principles Of American Democracy And The Rights, Responsibilities, And Roles Of A Citizen In The Nation And The World.

D. Citizenship

5. Discuss basic contemporary issues involving the personal, political, and economic rights of American citizens (e.g., dress codes, sexual harassment, fair trial, free press, minimum wage).

Social Studies.7-8.6.3 (World History)

All Students Will Demonstrate Knowledge Of World History In Order To Understand Life And Events In The Past And How They Relate To The Present And The Future.

A. The Birth of Civilization to 1000 BCE

1. Describe the physical and cultural changes that shaped the earliest human communities as revealed through scientific methods, including:
 - Differences between wild and domestic plants and animals.
 - Differences between hunter/gatherer, fishing, and agrarian communities.

Social Studies.7-8.6.4 (United States And New Jersey History)

All Students Will Demonstrate Knowledge Of United States And New Jersey History In Order To Understand Life And Events In The Past And How They Relate To The Present And Future.

F. Expansion and Reform (1801-1861)

1. Describe the political, economic, and social changes in New Jersey and American society preceding the Civil War, including the early stages of industrialization, the growth of cities, and the political, legal, and social controversies surrounding the expansion of slavery.

Social Studies.7-8.6.5 (Economics)

All Students Will Acquire An Understanding Of Key Economic Principles.

B. Economics and Society

1. Discuss how meeting the needs and wants of a growing world population impacts the environment and economic growth.
3. Discuss how societies have been affected by industrialization and by different political and economic philosophies.
4. Describe how inventions and innovations have improved standards of living over the course of history.

Social Studies.7-8.6.6 (Geography)

All Students Will Apply Knowledge Of Spatial Relationships And Other Geographic Skills To Understand Human Behavior In Relation To The Physical And Cultural Environment.

B. Places and Regions

1. Compare and contrast the physical and human characteristics of places in regions in New Jersey, the United States, and the world.
 2. Describe how regions change over time.
- Social Studies
6. Discuss the similarities and differences among rural, suburban, and urban communities.

C. Physical Systems

5. Describe how the physical environment affects life in different regions (e.g., population density, architecture, transportation systems, industry, building materials, land use, recreation).

D. Human Systems

2. Analyze demographic characteristics to explain reasons for variations between populations.
8. Describe how physical and human characteristics of regions change over time.

E. Environment and Society

1. Discuss the environmental impacts or intended and unintended consequences of major technological changes (e.g., autos and fossil fuels, nuclear power and nuclear waste).
2. Analyze the impact of various human activities and social policies on the natural environment and describe how humans have attempted to solve environmental problems through adaptation and modification.
5. Describe world, national, and local patterns of resource distribution and utilization, and discuss the political and social impact.