

A Correlation of  
**Population Connection Materials**

from

**Multiplying People, Dividing Resources:**  
*Global Math Activities*

to

**New Jersey Core Curriculum  
Content Standards**

**Organized by:**

*1. Grade*

*2. Subject*

*3. Standard*

*4. Population Connection Activity*

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# Kindergarten to Grade 2

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## Mathematics

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).

Timber!

5. Compare and order whole numbers.

Timber!

### B. Numerical Operations

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

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

Timber!

### 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.

Everything Counts

The Stork and the Grim Reaper

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# Kindergarten to Grade 12

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## Mathematics

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.

- All in the Family
- Every Picture Tells a Story
- Everything Counts
- Global Warming Begins at Home
- How Much Space Do We Need?
- Measuring a Million
- On the Double
- The Pop Ecology Files
- Population Clock
- Population Riddles
- Power of the Pyramids
- The Stork and the Grim Reaper
- Timber!
- Transportation Tally
- What Do You Think?
- A World of Difference

#### 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.
  - Every Picture Tells a Story
  - Everything Counts
  - Global Warming Begins at Home
  - How Much Space Do We Need?
  - Measuring a Million
  - Population Clock
  - The Stork and the Grim Reaper
  - Timber!
  - What Do You Think?
  - A World of Difference

#### 4. Pose problems of various types and levels of difficulty.

- All in the Family
- Every Picture Tells a Story
- Everything Counts
- Global Warming Begins at Home
- How Much Space Do We Need?
- Measuring a Million
- On the Double
- The Pop Ecology Files
- Population Clock
- Power of the Pyramids
- The Stork and the Grim Reaper

Timber!  
Transportation Tally  
What Do You Think?  
A World of Difference  
World Real Estate

B. Communication

1. Use communication to organize and clarify their mathematical thinking.

- Reading and writing.
- Discussion, listening, and questioning.

Every Picture Tells a Story  
Everything Counts  
The Pop Ecology Files  
Power of the Pyramids  
The Stork and the Grim Reaper  
Timber!  
What Do You Think?  
A World of Difference

2. Communicate their mathematical thinking coherently and clearly to peers, teachers, and others, both orally and in writing.

All in the Family  
Every Picture Tells a Story  
Everything Counts  
Global Warming Begins at Home  
How Much Space Do We Need?  
Measuring a Million  
On the Double  
The Pop Ecology Files  
Population Clock  
Power of the Pyramids  
The Stork and the Grim Reaper  
Timber!  
Transportation Tally  
What Do You Think?  
A World of Difference  
World Real Estate

4. Use the language of mathematics to express mathematical ideas precisely.

All in the Family  
Every Picture Tells a Story  
Everything Counts  
Global Warming Begins at Home  
How Much Space Do We Need?  
Measuring a Million  
On the Double  
The Pop Ecology Files  
Population Clock  
Power of the Pyramids  
The Stork and the Grim Reaper  
Timber!  
Transportation Tally  
What Do You Think?  
A World of Difference  
World Real Estate

### C. Connections

#### 3. Recognize that mathematics is used in a variety of contexts outside of mathematics.

All in the Family  
Every Picture Tells a Story  
Everything Counts  
Global Warming Begins at Home  
How Much Space Do We Need?  
Measuring a Million  
On the Double  
The Pop Ecology Files  
Population Clock  
Power of the Pyramids  
The Stork and the Grim Reaper  
Timber!  
Transportation Tally  
What Do You Think?  
A World of Difference  
World Real Estate

#### 4. Apply mathematics in practical situations and in other disciplines.

All in the Family  
Every Picture Tells a Story  
Everything Counts  
Global Warming Begins at Home  
How Much Space Do We Need?  
Measuring a Million  
On the Double  
The Pop Ecology Files  
Population Clock  
Power of the Pyramids  
The Stork and the Grim Reaper  
Timber!  
Transportation Tally  
What Do You Think?  
A World of Difference  
World Real Estate

### D. Reasoning

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

Every Picture Tells a Story  
Everything Counts  
Global Warming Begins at Home  
How Much Space Do We Need?  
Power of the Pyramids  
Seeing Double  
The Pop Ecology Files  
The Stork and the Grim Reaper  
Timber!  
A World of Difference

### 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).

All in the Family  
Every Picture Tells a Story  
Everything Counts  
How Much Space Do We Need?  
Population Circle  
Power of the Pyramids  
Stage Stepping  
The Stork and the Grim Reaper  
Timber!  
Transportation Tally  
What Do You Think?  
A World of Difference

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

All in the Family  
Every Picture Tells a Story  
The Pop Ecology Files  
The Stork and the Grim Reaper  
Timber!

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

The Stork and the Grim Reaper  
Timber!  
A World of Difference

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# Grade 3

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## Language Arts

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.

Timber!

B. Questioning (Inquiry) and Contributing

1. Develop appropriate questions to explore a topic.

Timber!

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.

Everything Counts

Timber!

## Mathematics

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.

The Stork and the Grim Reaper

Timber!

6. Compare and order numbers.

Timber!

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.

Everything Counts

The Stork and the Grim Reaper

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 (1/4, 1/2), mile, decimeter, kilometer.

- Area - square inch, square centimeter.

- Weight - ounce.
  - Capacity - fluid ounce, cup, gallon, milliliter.
- The Stork and the Grim Reaper

#### 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.

The Stork and the Grim Reaper  
Timber!

##### C. Modeling

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

The Stork and the Grim Reaper  
Timber!

#### 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.

Timber!

##### 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).
- Timber!

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## Grade 3 to Grade 4

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### Science

#### 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.

Measuring a Million

The Stork and the Grim Reaper

Timber!

2. Keep records that describe observations, carefully distinguish actual observations from ideas and speculations, and are understandable weeks and months later.

Everything Counts

Measuring a Million

Timber!

##### B. Inquiry and Problem Solving

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

Measuring a Million

Power of the Pyramids

The Stork and the Grim Reaper

Timber!

2. Identify the evidence used in an explanation.

Measuring a Million

Power of the Pyramids

The Stork and the Grim Reaper

Timber!

#### 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.

Measuring a Million

The Stork and the Grim Reaper

3. Express quantities using appropriate number formats, such as:

- integers.

- fractions.

Measuring a Million

The Stork and the Grim Reaper

Timber!

##### B. Geometry and Measurement

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

Measuring a Million  
The Stork and the Grim Reaper

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

Measuring a Million  
The Stork and the Grim Reaper  
Timber!

D. Data Analysis and Probability

1. Use tables and graphs to represent and interpret data.

Power of the Pyramids  
Timber!

## Social Studies

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.

The Stork and the Grim Reaper  
Timber!

9. Examine common and diverse traits of other cultures and compare to their own culture.

The Stork and the Grim Reaper

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.

D. Human Systems

2. Identify the distribution and characteristics of populations for different regions of New Jersey and the United States.

Everything Counts

E. Environment and Society

1. Differentiate between living and non-living natural resources.

Timber!

2. Explain the nature, characteristics, and distribution of renewable and non-renewable resources.

Timber!

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# Grade 4

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## Language Arts

### 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.  
Timber!

### 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.

#### A. Discussion (small group and whole class)

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

## Mathematics

### 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.
    - Everything Counts
    - Power of the Pyramids
    - The Stork and the Grim Reaper
    - Timber!
3. Demonstrate a sense of the relative magnitudes of numbers.
  - Everything Counts
  - The Stork and the Grim Reaper
  - Timber!

6. Compare and order numbers.  
Timber!

#### B. Numerical Operations

3. Construct, use, and explain procedures for performing whole number calculations and with:
  - Pencil-and-paper.
  - Mental math.
  - Calculator.
    - Everything Counts
    - Population Clock
    - The Stork and the Grim Reaper
    - Timber!

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.

Everything Counts

The Stork and the Grim Reaper

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.

Measuring a Million

The Stork and the Grim Reaper

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

The Stork and the Grim Reaper

Measuring a Million

5. Solve problems involving elapsed time.

On the Double

Population Clock

Timber!

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).

Multiplying Mice

The Pop Ecology Files

Population Clock

Timber!

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).

The Pop Ecology Files

The Stork and the Grim Reaper

Timber!

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.

Everything Counts

Timber!

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).

Every Picture Tells a Story

Everything Counts

The Pop Ecology Files

Power of the Pyramids

Timber!

C. Discrete Mathematics- Systematic Listing and Counting

1. Represent and classify data according to attributes, such as shape or color, and relationships.

- Venn diagrams.

- Numerical and alphabetical order.

Everything Counts

Power of the Pyramids

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).

Everything Counts

On the Double

Population Clock

The Stork and the Grim Reaper

Timber!

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# Grade 5

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## Language Arts

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.  
Timber!

B. Questioning (Inquiry) and Contributing

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

Language Arts.5.3.4 (Listening)

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

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.  
Timber!

## Mathematics

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.
    - Everything Counts
    - The Stork and the Grim Reaper
    - Timber!
    - Transportation Tally

6. Compare and order numbers.

- On the Double
- Population Clock
- Timber!

B. Numerical Operations

1. Recognize the appropriate use of each arithmetic operation in problem situations.
  - Everything Counts
  - On the Double
  - Population Clock
  - Power of the Pyramids
  - Transportation Tally

### C. Estimation

1. Use a variety of estimation strategies for both number and computation.  
Everything Counts  
The Stork and the Grim Reaper

### 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).  
Measuring a Million  
The Stork and the Grim Reaper
3. Know approximate equivalents between the standard and metric systems (e.g., one kilometer is approximately 6/10 of a mile).  
Measuring a Million
4. Use measurements and estimates to describe and compare phenomena.  
The Stork and the Grim Reaper

### 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.  
Global Warming Begins at Home  
The Pop Ecology Files  
The Stork and the Grim Reaper  
Timber!  
Transportation Tally

### B. Functions & Relationships

2. Graph points satisfying a function from T-charts, from verbal rules, and from simple equations.  
The Pop Ecology Files  
Power of the Pyramids  
Timber!

### 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.  
Everything Counts  
Global Warming Begins at Home  
On the Double  
Population Clock  
The Stork and the Grim Reaper  
Timber!  
Transportation Tally
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).

Every Picture Tells a Story

The Pop Ecology Files

Timber!

#### 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

1. Collect, generate, organize, and display data.

- Data generated from surveys.

Everything Counts

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.

Every Picture Tells a Story

The Pop Ecology Files

Power of the Pyramids

Timber!

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

Every Picture Tells a Story

Everything Counts

Global Warming Begins at Home

On the Double

The Pop Ecology Files

Population Clock

Power of the Pyramids

Stage Stepping

The Stork and the Grim Reaper

Timber!

Transportation Tally

World Real Estate

##### B. Probability

1. Determine probabilities of events.

- Event, probability of an event.

- Probability of certain event is 1 and of impossible event is 0.

A World of Difference

2. Determine probability using intuitive, experimental, and theoretical methods (e.g., using model of picking items of different colors from a bag).

- Given numbers of various types of items in a bag, what is the probability that an item of one type will be picked.

- Given data obtained experimentally, what is the likely distribution of items in the bag.

A World of Difference

3. Model situations involving probability using simulations (with spinners, dice) and theoretical models.

A World of Difference

##### C. Discrete Mathematics- Systematic Listing and Counting

1. Solve counting problems and justify that all possibilities have been enumerated without duplication.
  - Organized lists, charts, tree diagrams, tables.
    - Everything Counts
    - Power of the Pyramids

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## Grade 5 to Grade 6

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### Science

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.

Global Warming Begins at Home

Timber!

Transportation Tally

A World of Difference

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

Global Warming Begins at Home

Transportation Tally

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## Grade 5 to Grade 8

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### Social Studies

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. Analyze how events are related over time.

Power of the Pyramids  
World Real Estate

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

Power of the Pyramids  
The Stork and the Grim Reaper  
What Do You Think?  
A World of Difference

4. Analyze data in order to see persons and events in context.

All in the Family  
Every Picture Tells a Story  
Global Warming Begins at Home  
How Much Space Do We Need?  
On the Double  
The Pop Ecology Files  
Population Clock  
Power of the Pyramids  
Timber!  
Transportation Tally  
What Do You Think?  
A World of Difference  
World Real Estate

5. Examine current issues, events, or themes and relate them to past events.

All in the Family  
Power of the Pyramids  
The Stork and the Grim Reaper  
World Real Estate

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

All in the Family  
Every Picture Tells a Story  
Everything Counts  
How Much Space Do We Need?  
On the Double  
The Pop Ecology Files  
Population Clock  
Power of the Pyramids  
The Stork and the Grim Reaper  
Timber!  
What Do You Think?  
A World of Difference  
World Real Estate

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.

What Do You Think?

5. Discuss examples of domestic policies and agencies that impact American lives, including the Environmental Protection Agency (e.g., clean air and water), the Department of Labor (e.g., minimum wage) and the Internal Revenue Service (e.g., Social Security, income tax).

What Do You Think?

D. Citizenship

1. Discuss the rights and responsibilities of American citizens, including obeying laws, paying taxes, serving on juries, and voting in local, state, and national elections.

What Do You Think?

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).

What Do You Think?

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).

Global Warming Begins at Home

How Much Space Do We Need?

On the Double

Power of the Pyramids

The Stork and the Grim Reaper

What Do You Think?

A World of Difference

World Real Estate

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.

Every Picture Tells a Story

How Much Space Do We Need?

Power of the Pyramids

Timber!

What Do You Think?

A World of Difference

World Real Estate

3. Discuss how societies have been affected by industrialization and by different political and economic philosophies.

Power of the Pyramids

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

The Stork and the Grim Reaper

Timber!

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

Transportation Tally  
What Do You Think?

#### 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.

Every Picture Tells a Story  
Everything Counts  
How Much Space Do We Need?  
World Real Estate

##### 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.

On the Double  
Population Clock  
Power of the Pyramids  
The Stork and the Grim Reaper

2. Describe how regions change over time.

World Real Estate

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

World Real Estate

##### C. Physical Systems

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

World Real Estate

2. Discuss how ecosystems function locally and globally.

World Real Estate

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

A World of Difference  
World Real Estate

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

How Much Space Do We Need?  
What Do You Think?  
World Real Estate

##### D. Human Systems

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

All in the Family  
Every Picture Tells a Story  
Everything Counts  
On the Double  
Population Clock  
Power of the Pyramids  
The Stork and the Grim Reaper

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).

Global Warming Begins at Home

Transportation Tally

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

How Much Space Do We Need?

What Do You Think?

World Real Estate

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# Grade 6

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## Language Arts

### 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.

Power of the Pyramids

### Language Arts.6.3.4 (Listening)

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

#### A. Active Listening

1. Listen actively for a variety of purposes such as enjoyment and obtaining information.

What Do You Think?

### 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.

All in the Family

The Pop Ecology Files

Timber!

## Mathematics

### 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.

All in the Family

Everything Counts

Global Warming Begins at Home

How Much Space Do We Need?

Measuring a Million

People Count

Population Circle

The Stork and the Grim Reaper

Timber!

Transportation Tally

World Real Estate

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

Measuring a Million  
On the Double  
Population Clock

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

Population Clock  
The Stork and the Grim Reaper  
World Real Estate  
A World of Difference

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

On the Double  
Power of the Pyramids  
World Real Estate

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

World Real Estate

8. Compare and order numbers.

All in the Family  
Food for Thought  
On the Double  
Population Clock  
Timber!  
What Do You Think?

#### B. Numerical Operations

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

Everything Counts  
Global Warming Begins at Home  
How Much Space Do We Need?  
Measuring a Million  
On the Double  
Population Clock  
Power of the Pyramids  
Timber!  
Transportation Tally  
World Real Estate

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

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

Everything Counts  
Global Warming Begins at Home  
How Much Space Do We Need?  
Measuring a Million  
On the Double  
Population Clock  
Power of the Pyramids  
Timber!  
Transportation Tally  
World Real Estate

#### C. Estimation

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

All in the Family  
Everything Counts  
The Stork and the Grim Reaper

#### 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).

How Much Space Do We Need?  
Measuring a Million  
The Stork and the Grim Reaper

4. Know approximate equivalents between the standard and metric systems (e.g., one kilometer is approximately 6/10 of a mile).

How Much Space Do We Need?  
Measuring a Million

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

Global Warming Begins at Home  
How Much Space Do We Need?  
The Stork and the Grim Reaper

#### 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).

The Pop Ecology Files  
Timber!

##### 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.

All in the Family  
Every Picture Tells a Story  
Everything Counts  
Global Warming Begins at Home  
How Much Space Do We Need?  
Multiplying Mice  
The Pop Ecology Files  
The Stork and the Grim Reaper  
Timber!  
Transportation Tally  
World Real Estate

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).

All in the Family  
 Multiplying Mice  
 The Pop Ecology Files  
 Timber!

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

1. Collect, generate, organize, and display data.

- Data generated from surveys.
  - Everything Counts
  - What Do You Think?

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.
  - All in the Family
  - Every Picture Tells a Story
  - Everything Counts
  - The Pop Ecology Files
  - Population Clock
  - Power of the Pyramids
  - Timber!
  - What Do You Think?
  - World Real Estate

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

All in the Family  
 Every Picture Tells a Story  
 Everything Counts  
 Global Warming Begins at Home  
 How Much Space Do We Need?  
 Measuring a Million  
 On the Double  
 The Pop Ecology Files  
 Population Clock  
 Power of the Pyramids  
 The Stork and the Grim Reaper  
 Timber!  
 Transportation Tally  
 Water, Water Everywhere (Elementary/Intermediate)  
 What Do You Think?  
 A World of Difference  
 World Real Estate

B. Probability

2. Determine probability using intuitive, experimental, and theoretical methods (e.g., using model of picking items of different colors from a bag).
  - Given numbers of various types of items in a bag, what is the probability that an item of one type will be picked.
  - Given data obtained experimentally, what is the likely distribution of items in the bag.
    - Everything Counts
    - A World of Difference
3. Explore compound events.
  - A World of Difference
4. Model situations involving probability using simulations (with spinners, dice) and theoretical models.
  - Everything Counts
  - A World of Difference
5. Recognize and understand the connections among the concepts of independent outcomes, picking at random, and fairness.
  - Everything Counts
  - A World of Difference

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# Grade 7

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## Language Arts

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.

Transportation Tally

A World of Difference

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.

Transportation Tally

B. Questioning (Inquiry) and Contributing

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

Timber!

A World of Difference

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).

What Do You Think?

## Mathematics

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.

All in the Family

Measuring a Million

On the Double

Population Clock

Power of the Pyramids

Timber!

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

Measuring a Million

On the Double

## Population Clock

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

Food for Thought  
On the Double  
Population Clock  
Power of the Pyramids  
The Stork and the Grim Reaper  
A World of Difference  
World Real Estate

### 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.
- All in the Family  
Everything Counts  
Global Warming Begins at Home  
How Much Space Do We Need?  
Measuring a Million  
On the Double  
Population Clock  
Power of the Pyramids  
Timber!  
Transportation Tally  
World Real Estate

### 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.
- The Pop Ecology Files  
Stage Stepping  
Timber!

#### 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).

All in the Family  
Earth: The Apple of Our Eye (Intermediate/Secondary)  
Everything Counts  
Global Warming Begins at Home  
On the Double  
The Pop Ecology Files  
Population Clock  
The Stork and the Grim Reaper

Timber!  
Water, Water Everywhere (Elementary/Intermediate)  
World Population Video  
World Real Estate

D. Procedures

2. Solve simple linear equations informally and graphically.
  - Multi-step, integer coefficients only (although answers may not be integers).
  - Using paper-and-pencil, calculators, graphing calculators, spreadsheets, and other technology.
    - Global Warming Begins at Home
    - The Pop Ecology Files

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.
    - Every Picture Tells a Story
    - The Pop Ecology Files
    - Timber!
    - What Do You Think?
    - World Real Estate
2. Make inferences and formulate and evaluate arguments based on displays and analysis of data.
  - All in the Family
  - Every Picture Tells a Story
  - The Pop Ecology Files
  - Population Circle
  - Power of the Pyramids
  - Timber!
  - World Population Video
  - World Real Estate

B. Probability

1. Interpret probabilities as ratios, percents, and decimals.
  - A World of Difference
2. Model situations involving probability with simulations (using spinners, dice, calculators and computers) and theoretical models.
  - Frequency, relative frequency.
    - A World of Difference
3. Estimate probabilities and make predictions based on experimental and theoretical probabilities.
  - Everything Counts
  - A World of Difference
4. Play and analyze probability-based games, and discuss the concepts of fairness and expected value.
  - Everything Counts
  - A World of Difference

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## Grade 7 to Grade 8

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### Science

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.

All in the Family  
Everything Counts  
Global Warming Begins at Home  
How Much Space Do We Need?  
The Pop Ecology Files  
Timber!  
Transportation Tally  
What Do You Think?  
A World of Difference

3. Collect, organize, and interpret the data that result from experiments.

All in the Family  
Everything Counts  
Global Warming Begins at Home  
How Much Space Do We Need?  
The Pop Ecology Files  
Timber!  
What Do You Think?  
A World of Difference

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.

#### A. Numerical Operations

1. Express quantities using appropriate number formats, such as:

- percents.  
On the Double  
Power of the Pyramids

#### B. Geometry and Measurement

1. Perform mathematical computations using labeled quantities and express answers in correctly derived units.

All in the Family  
Global Warming Begins at Home  
How Much Space Do We Need?  
On the Double  
Population Clock  
Power of the Pyramids  
Timber!  
Transportation Tally  
A World of Difference

#### C. Patterns and Algebra

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

Everything Counts  
Global Warming Begins at Home  
How Much Space Do We Need?  
On the Double  
Population Clock  
Power of the Pyramids  
The Stork and the Grim Reaper  
Timber!  
Transportation Tally  
What Do You Think?

D. Data Analysis and Probability

1. Represent and describe mathematical relationships among variables using:

- graphs.
- tables.

Every Picture Tells a Story  
Everything Counts  
On the Double  
Population Clock  
Power of the Pyramids  
The Pop Ecology Files  
Timber!  
What Do You Think?  
World Real Estate

2. Analyze experimental data sets using measures of central tendency:

- mean.
- mode.
- median.

What Do You Think?

Science.7-8.5.5 (Characteristics Of Life)

All Students Will Gain An Understanding Of The Structure, Characteristics, And Basic Needs Of Organisms And Will Investigate The Diversity Of Life.

B. Diversity and Biological Evolution

2. Discuss how changing environmental conditions can result in evolution or extinction of a species.

The Pop Ecology Files  
A World of Difference

Science.7-8.5.6 (Chemistry)

All Students Will Gain An Understanding Of The Structure And Behavior Of Matter.

B. Chemical Reactions

3. Demonstrate that regardless how substances within a simple closed system interact, the total mass of the system remains the same.

Global Warming Begins at Home

4. Illustrate how atoms are rearranged when substances react, but that the total number of atoms and the total mass of the products remain the same as the original substances.

Global Warming Begins at Home

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.

All in the Family

Global Warming Begins at Home

How Much Space Do We Need?

Timber!

Transportation Tally

A World of Difference

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# Grade 8

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## Language Arts

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.

Timber!

A World of Difference

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).

What Do You Think?

## Mathematics

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.

All in the Family

Measuring a Million

On the Double

Population Clock

Power of the Pyramids

Timber!

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

Measuring a Million

Population Clock

Seeing Double

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

Food for Thought

On the Double

Population Clock

Power of the Pyramids

The Stork and the Grim Reaper

World Real Estate

A World of Difference

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

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.

All in the Family

Everything Counts

Global Warming Begins at Home

How Much Space Do We Need?

Measuring a Million

On the Double

Population Clock

Power of the Pyramids

Timber!

Transportation Tally

World Real Estate

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.

Measuring a Million

The Stork and the Grim Reaper

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.

The Pop Ecology Files

Timber!

B. Functions and Relationships

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

All in the Family

On the Double

The Pop Ecology Files

Population Clock

Timber!

### 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).

All in the Family  
Everything Counts  
Global Warming Begins at Home  
On the Double  
The Pop Ecology Files  
Population Clock  
The Stork and the Grim Reaper  
Timber!  
Water, Water Everywhere (Elementary/Intermediate)  
World Population Video  
World Real Estate

### 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.

Every Picture Tells a Story  
The Pop Ecology Files  
Timber!  
What Do You Think?  
World Real Estate

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

All in the Family  
Every Picture Tells a Story  
The Pop Ecology Files  
Population Circle  
Power of the Pyramids  
Timber!  
What Do You Think?  
World Population Video  
World Real Estate

4. Use surveys and sampling techniques to generate data and draw conclusions about large groups.

Everything Counts  
What Do You Think?

#### B. Probability

1. Interpret probabilities as ratios, percents, and decimals.

A World of Difference

2. Determine probabilities of compound events.

A World of Difference

4. Model situations involving probability with simulations (using spinners, dice, calculators and computers) and theoretical models.

- Frequency, relative frequency.

A World of Difference

5. Estimate probabilities and make predictions based on experimental and theoretical probabilities.

Everything Counts

A World of Difference

6. Play and analyze probability-based games, and discuss the concepts of fairness and expected value.

Everything Counts

A World of Difference

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## Grade 9 to Grade 12

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### Language Arts

Language Arts.9-12.3.3 (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

1. Ask prepared and follow-up questions in interviews and other discussions.  
What Do You Think?

### Mathematics

Math.9-12.4.1 (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.

B. Numerical Operations

1. Extend understanding and use of operations to real numbers and algebraic procedures.  
Global Warming Begins at Home  
How Much Space Do We Need?  
Transportation Tally

Math.9-12.4.2 (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

1. Understand and use the concept of significant digits.  
Global Warming Begins at Home  
How Much Space Do We Need?  
On the Double  
Population Clock  
Transportation Tally

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).  
Global Warming Begins at Home  
On the Double  
The Pop Ecology Files  
Population Clock  
The Stork and the Grim Reaper  
Timber!

## What Do You Think?

### Math.9-12.4.4 (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. Use surveys and sampling techniques to generate data and draw conclusions about large groups.
  - Advantages/disadvantages of sample selection methods (e.g., convenience sampling, responses to survey, random sampling).

Everything Counts

What Do You Think?

A World of Difference

2. Evaluate the use of data in real-world contexts.

- Accuracy and reasonableness of conclusions drawn.
- Bias in conclusions drawn (e.g., influence of how data is displayed).
- Statistical claims based on sampling.

Everything Counts

Global Warming Begins at Home

How Much Space Do We Need?

On the Double

Population Clock

Power of the Pyramids

Transportation Tally

What Do You Think?

A World of Difference

3. Design a statistical experiment, conduct the experiment, and interpret and communicate the outcome.

Everything Counts

What Do You Think?

A World of Difference

#### B. Probability

1. Calculate the expected value of a probability-based game, given the probabilities and payoffs of the various outcomes, and determine whether the game is fair.

A World of Difference

3. Model situations involving probability with simulations (using spinners, dice, calculators and computers) and theoretical models, and solve problems using these models.

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## Science

### 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.

What Do You Think?

2. Assess the risks and benefits associated with alternative solutions.

What Do You Think?

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

All in the Family  
Everything Counts  
Global Warming Begins at Home  
How Much Space Do We Need?  
Power of the Pyramids  
The Stork and the Grim Reaper  
Timber!  
Transportation Tally  
What Do You Think?

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.

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Everything Counts  
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Transportation Tally  
What Do You Think?  
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C. Patterns and Algebra

1. Apply mathematical models that describe physical phenomena to predict real world events.

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The Pop Ecology Files  
Population Clock  
Power of the Pyramids  
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D. Data Analysis and Probability

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

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The Pop Ecology Files  
Timber!

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.

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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.

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Global Warming Begins at Home  
How Much Space Do We Need?  
On the Double  
Population Clock  
The Stork and the Grim Reaper  
Timber!  
Transportation Tally  
A World of Difference  
World Real Estate

**Social Studies**

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

1. Analyze how historical events shape the modern world.  
Power of the Pyramids

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.

D. Citizenship

6. Investigate a global challenge (e.g., hunger, AIDS, nuclear defense, global warming) in depth and over time, predict the impact if the current situation does not change, and offer possible solutions.  
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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)

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.  
Global Warming Begins at Home  
How Much Space Do We Need?

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

5. Apply spatial thinking to understand the interrelationship of history, geography economics, and the environment, including domestic and international migrations, changing environmental preferences and settlement patterns, and frictions between population groups.

Power of the Pyramids

B. Places and Regions

2. Evaluate how human interaction with the physical environment shapes the features of places and regions.

A World of Difference

3. Analyze why places and regions are important factors to individual and social identity.

Power of the Pyramids

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.

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E. Environment and Society

2. Discuss the importance of maintaining biodiversity.

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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.

Global Warming Begins at Home

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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.

All in the Family

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