

A Correlation of  
**Population Connection Materials**

from

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

to

**Minnesota Academic Standards**

**Organized by:**

*1. Subject*

*2. Grade*

*3. Standard*

*4. Population Connection Activity*

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# History and Social Studies

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## Kindergarten to Grade 3

### I. U.S. History

#### A. Family Life Today and In The Past:

The student will understand how families live today and in earlier times, recognizing that some aspects change over time while others stay the same.

3. Students will compare technologies from earlier times and today, and identify the impact of invention on historical change.

The Stork and the Grim Reaper

### III. World History

#### A. Family Life Today and in the Past:

The student will understand how families live today and in earlier times, recognizing that some aspects change over time while others stay the same.

3. Students will compare technologies from earlier times and today, and identify the impact of invention on historical change.

The Stork and the Grim Reaper

### VI. Economics

#### A. Economic Choices:

The student will understand that economic choices are necessary in life.

3. Students will understand and explain that the concept of scarcity means that one cannot have all the goods and services that one wants.

Timber!

#### B. Producers and Consumers:

The student will understand the relationship between producers and consumers in regard to goods and services.

1. Students will distinguish between producers and consumers and between goods and services.

Timber!

2. Students will recognize and explain that natural resources, human resources, and human-made resources are used in the production of goods and services.

Timber!

## Grade 4 to Grade 8

### I. U.S. History

#### E. Growth and Westward Expansion, 1801-1861:

The student will demonstrate knowledge of western expansion, conflict, and reform in America.

2. Students will analyze the impact of inventions and technologies on life in America, including the cotton gin, the steamboat, and the telegraph.

The Stork and the Grim Reaper

World Real Estate

### V. Geography

#### C. Physical Features and Processes:

The student will identify and locate geographic features associated with the development of the United States.

1. Students will identify physical features and analyze their impact as either hindering or promoting settlement, establishment of cities and states, and economic development in the United States.

Every Picture Tells a Story

C. Physical Features and Processes:

The student will identify physical characteristics of places and use this knowledge to define regions, their relationships among regions, and their patterns of change.

1. Students will describe the major physical features of the United States and the regions of the world they study.

Every Picture Tells a Story

D. Interconnections:

The student will give examples that demonstrate how people are connected to each other and the environment.

2. Students will analyze how the physical environment influences human activities.

The Stork and the Grim Reaper

What Do You Think?

World Real Estate

D. Interconnections:

The student will demonstrate how various regional frameworks are used to analyze the variation in culture and human occupation of the Earth's surface.

1. Students will explain the patterns of population density on the surface of the Earth and analyze the causes of population change.

On the Double

Power of the Pyramids

The Stork and the Grim Reaper

5. Students will describe the patterns of economies on the surface of the Earth and explain how changes in technology affect patterns of change.

Every Picture Tells a Story

Power of the Pyramids

D. Interconnections:

The student will demonstrate how various regional frameworks are used to analyze the variation in physical environment.

3. Students will describe how physical processes affect different regions of the world.

Every Picture Tells a Story

How Much Space Do We Need?

4. Students will interpret regional variation in the relationships among soil, climate, plant and animal life, and landforms

Every Picture Tells a Story

World Real Estate

VI. Economics

A. Producers and Consumers:

The student will understand the concept of interdependence in relation to producers and consumers.

1. Students will compare and contrast the roles of producers and consumers.

Power of the Pyramids

Timber!

B. Economic Choices:

The student will understand basic principles of economic decision making.

1. Students will understand the concept of scarcity and its role in decision-making.

How Much Space Do We Need?

The Stork and the Grim Reaper

Timber!

What Do You Think?

A World of Difference

World Real Estate

D. The National Economy (Macro Economics):

The student will understand the concepts that measure the national economy.

1. Students will define and give examples of basic economic terms.

Every Picture Tells a Story

VII. Government And Citizenship

A. Civic Values, Skills, Rights and Responsibilities:

The student will articulate the range of rights and responsibilities in a republic

2. Students will explain some of the responsibilities of people living in a democracy.

What Do You Think?

A. Civic Values, Skills, Rights and Responsibilities:

The student will understand the importance of participation in civic life and demonstrate effective civic skills

3. Students will identify and research community problems and recommend solutions.

What Do You Think?

## Grade 9 to Grade 12

I. U.S. History

O. Contemporary United States, 1970 to the present:

The student will understand the evolution of foreign and domestic policy in the last three decades of the 20th century and the beginning of the 21st century.

2. Students will demonstrate knowledge of economic, social, and cultural developments in contemporary United States.

Global Warming Begins at Home

Power of the Pyramids

III. World History

I. The Post-War Period, 1945 AD - Present:

The student will demonstrate knowledge of significant political and cultural developments of the late 20th century that affect global relations.

2. Students will describe and analyze processes of "globalization" as well as persistent rivalries and inequalities among the world's regions, and assess the successes and failures of various approaches to address these.

Power of the Pyramids

D. Interconnections:

The student will describe how humans influence the environment and in turn are influenced by it.

1. Students will provide a range of examples illustrating how types of government systems and technology impact the ability to change the environment or adapt to it.

Transportation Tally

2. Students will analyze the advantages and drawbacks of several common proposals to change the human use of environmental resources.

Transportation Tally

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# Language Arts

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## Grade 3

### I. Reading And Literature

#### B. Vocabulary Expansion:

The student will use a variety of strategies to expand reading, listening and speaking vocabularies.

1. Acquire, understand and use new vocabulary through explicit instruction and independent reading.  
Everything Counts  
The Stork and the Grim Reaper

### III. Speaking, Listening And Viewing

#### A. Speaking and Listening:

The student will demonstrate understanding and communicate effectively through listening and speaking.

2. Demonstrate active listening and comprehension.  
The Stork and the Grim Reaper  
Timber!
3. Follow multi-step oral directions.  
The Stork and the Grim Reaper  
Timber!

## Grade 4

### I. Reading And Literature

#### B. Vocabulary Expansion:

The student will use a variety of strategies to expand reading, listening and speaking vocabularies.

1. Acquire, understand and use new vocabulary through explicit instruction and independent reading.  
The Stork and the Grim Reaper

### III. Speaking, Listening And Viewing

#### A. Speaking and Listening:

The student will demonstrate understanding and communicate effectively through listening and speaking.

2. Demonstrate active listening and comprehension.  
The Stork and the Grim Reaper  
Timber!

## Grade 5

### III. Speaking, Listening And Viewing

#### A. Speaking and Listening:

The student will demonstrate understanding and communicate effectively through listening and speaking.

2. Demonstrate active listening and comprehension.  
The Stork and the Grim Reaper  
Timber!

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# Mathematics

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## Grade 4

### I. Mathematical Reasoning

Apply skills of mathematical representation, communication and reasoning throughout the remaining four content strands.

1. Communicate, reason and represent situations mathematically.

Everything Counts

The Stork and the Grim Reaper

Timber!

5. Express a written problem in suitable mathematical language, solve the problem and interpret the result in the original context.

Timber!

6. Support mathematical results using pictures, numbers and words to explain why the steps in a solution are valid and why a particular solution method is appropriate.

Everything Counts

The Stork and the Grim Reaper

Timber!

### II. Number Sense, Computation, And Operations

#### A. Number Sense:

Represent whole numbers in various ways to quantify information and to solve real-world and mathematical problems. Understand the concept of fractions and decimals.

1. Read and write whole numbers to 100,000 in numerals and words.

Everything Counts

4. Use rounding and estimation with whole numbers to solve real-world and mathematical problems.

Everything Counts

The Stork and the Grim Reaper

### II. Number Sense, Computation, And Operations

#### B. Computation and Operation:

Compute fluently and make reasonable estimates with whole numbers in real-world and mathematical problems. Understand the meanings of arithmetic operations and how they relate to one another.

1. Use addition and subtraction of multi-digit whole numbers to solve multi-step real-world and mathematical problems.

Everything Counts

Timber!

2. Add up to three whole numbers containing up to three digits each, without a calculator.

Timber!

5. Use multiplication and division of whole numbers to solve simple real-world and mathematical problems.

Everything Counts

The Stork and the Grim Reaper

Timber!

### III. Patterns, Functions, And Algebra

A. Patterns and Functions:

Understand and describe patterns in tables and graphs.

1. Examine and describe patterns in tables and graphs.

Everything Counts  
Power of the Pyramids  
Timber!

IV. Data Analysis, Statistics And Probability

A. Data and Statistics:

Represent and interpret data in real-world and mathematical problems.

1. Collect data using observations or surveys and represent the data with tables and graphs with labeling.

Everything Counts  
Timber!

2. Use mathematical language to describe a set of data.

Everything Counts  
Power of the Pyramids

## Grade 5

I. Mathematical Reasoning

Apply skills of mathematical representation, communication and reasoning throughout the remaining four content strands.

1. Communicate, reason and represent situations mathematically.

Everything Counts  
The Stork and the Grim Reaper  
Timber!

5. Express a written problem in suitable mathematical language, solve the problem and interpret the result in the original context.

Timber!

6. Support mathematical results using pictures, numbers, and words to explain why the steps in a solution are valid and why a particular solution method is appropriate.

Everything Counts  
The Stork and the Grim Reaper  
Timber!

7. Organize, record and communicate math ideas coherently and clearly.

Everything Counts  
The Stork and the Grim Reaper  
Timber!

II. Number Sense, Computation, And Operations

A. Number Sense:

Represent fractions, decimals and whole numbers in a variety of ways, to quantify information and to solve real-world and mathematical problems. Understand the concept of negative numbers.

1. Read and write numbers up to three decimal places in numerals and words.

Power of the Pyramids

4. Use a variety of estimation strategies such as rounding, truncation, over- and underestimation and decide when an estimated solution is appropriate.

Everything Counts  
The Stork and the Grim Reaper  
Timber!

B. Computation and Operation:

Compute fluently and make reasonable estimates with fractions, decimals, and whole numbers, in real-world and mathematical problems. Understand the meanings of arithmetic operations and how they relate to one another.

1. Use addition, subtraction, multiplication and division of multi-digit whole numbers to solve multi-step, real-world and mathematical problems.

Everything Counts  
The Stork and the Grim Reaper  
Timber!  
Power of the Pyramids

4. Multiply, without a calculator, a two-digit whole number or decimal by a two-digit whole number or decimal, such as  $3.2 \times 3.4$ .

Everything Counts

5. Divide, without a calculator, a three-digit whole number or decimal by a one-digit whole number or decimal such as 3.51 divided by 3.

Power of the Pyramids

7. Interpret percents as a part of a hundred.

Power of the Pyramids

III. Patterns, Functions, And Algebra

A. Patterns and Functions:

Understand and describe patterns in numbers, shapes, tables and graphs.

1. Identify patterns in numbers, shapes, tables, and graphs and explain how to extend those patterns.

Timber!

B. Algebra (Algebraic Thinking):

Represent mathematical relationships using equations.

1. Evaluate numeric expressions in real-world and mathematical problems.

Everything Counts  
Power of the Pyramids  
Timber!

IV. Data Analysis, Statistics And Probability

A. Data and Statistics:

Represent data and use various measures associated with data to draw conclusions and identify trends.

2. Use fractions and percentages to compare data sets.

The Stork and the Grim Reaper  
Power of the Pyramids

3. Collect data using measurements, surveys or experiments and represent the data with tables and graphs with labeling.

Everything Counts  
Timber!

V. Spatial Sense, Geometry, And Measurement

C. Measurement:

Measure and calculate length, area and capacity using appropriate tools and units to solve real-world and mathematical problems.

3. Select and apply the appropriate units and tools to measure perimeter, area and capacity.

Measuring a Million  
The Stork and the Grim Reaper

## Grade 6

### II. Number Sense, Computation, And Operations

#### A. Number Sense:

Use positive and negative rational numbers, represented in a variety of ways, to quantify information and to solve real-world and mathematical problems.

2. Use rounding and estimation with integers, decimals and fractions to solve real-world and mathematical problems.

Everything Counts  
Measuring a Million  
The Stork and the Grim Reaper

#### B. Computation and Operation:

Compute fluently and make reasonable estimates with positive and negative rational numbers in real-world and mathematical problems. Understand the meanings of arithmetic operations and factorization, and how they relate to one another. Appropriately use calculators and other technologies to solve problems.

3. Use addition, subtraction, multiplication and division of multi-digit whole and decimal numbers to solve multi-step real-world and mathematical problems.

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

4. Multiply and divide, without a calculator, numbers containing up to three digits by numbers containing up to two digits, such as  $347 \div 83$  or  $4.91 \times 9.2$ .

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

8. Find, represent and use percentages in real-world and mathematical problems, including percentages greater than 100% and less than 1%.

On the Double  
The Pop Ecology Files  
Power of the Pyramids

### III. Patterns, Functions, And Algebra

#### B. Algebra (Algebraic Thinking):

Apply arithmetic operations in the correct order to simplify and evaluate numeric expressions in real-world and mathematical problems.

1. Apply the correct order of operations including addition, subtraction, multiplication, division and grouping symbols to simplify and evaluate numeric expressions.

Global Warming Begins at Home

How Much Space Do We Need?

Transportation Tally

### IV. Data Analysis, Statistics And Probability

#### A. Data and Statistics:

Represent data and use various measures associated with data to draw conclusions and identify trends.

1. Collect, organize and represent categorical and numerical data with tables and bar graphs.

All in the Family

Every Picture Tells a Story

On the Double

Power of the Pyramids

Timber!

World Real Estate

2. Understand the differences and appropriate use of mean, median and mode.

Everything Counts

What Do You Think?

3. Find the median and possible outliers.

What Do You Think?

### V. Spatial Sense, Geometry, And Measurement

#### C. Measurement:

Make calculations of time, length, area and volume within standard measuring systems, using good judgment in choice of units.

1. Solve problems requiring conversion of units within the U.S. customary system, and within the metric system.

How Much Space Do We Need?

Measuring a Million

The Stork and the Grim Reaper

2. Express measures of time and distance as fractions, mixed numbers and decimals to solve real-world and mathematical problems.

How Much Space Do We Need?

Measuring a Million

The Stork and the Grim Reaper

3. Find the area and perimeter of rectangles, squares, triangles and parallelograms by measuring, using a grid or using a formula.

How Much Space Do We Need?

Measuring a Million

## Grade 7

### II. Number Sense, Computation, And Operations

#### B. Computation and Operation:

Compute fluently and make reasonable estimates with rational numbers in real-world and mathematical problems. Understand the meanings of the basic operations, including the use of integer exponents and square roots, and how the operations relate to one another. Appropriately use calculators and other technologies to solve problems.

3. Calculate the percentage of increase and decrease of a quantity in real-world and mathematical problems.  
On the Double  
The Pop Ecology Files

4. Convert among fractions, decimals and percents and use these representations for estimations and computations in real-world and mathematical problems.  
On the Double

### III. Patterns, Functions, And Algebra

#### A. Patterns and Functions:

Demonstrate an understanding of rate of change graphically and numerically.

1. Demonstrate, numerically and graphically, an understanding that rate is a measure of change of one quantity per unit change of another quantity in real-world and mathematical problems.  
On the Double  
The Pop Ecology Files

#### B. Algebra (Algebraic Thinking):

Apply arithmetic operations in the correct order to generate equivalent algebraic expressions and to solve simple formulas in real-world and mathematical problems.

1. Apply the correct order of operations including addition, subtraction, multiplication, division and grouping symbols to generate equivalent algebraic expressions.  
Global Warming Begins at Home  
How Much Space Do We Need?  
Transportation Tally
3. Solve simple formulas with up to three variables, when the values of two of the variables are given.  
Global Warming Begins at Home  
How Much Space Do We Need?

### IV. Data Analysis, Statistics And Probability

#### A. Data and Statistics:

Represent data and use various measures associated with data to draw conclusions and identify trends.

1. Construct and analyze simple scatter plots.  
Every Picture Tells a Story
2. Understand the meaning of, and be able to compute minimum, maximum, range, median, mean and mode of a data set.  
Everything Counts  
What Do You Think?

#### B. Probability:

Calculate and express probabilities numerically and apply probability concepts to solve real-world and mathematical problems.

1. Express probabilities as percentages, fractions, proportions and decimals.  
A World of Difference
2. Use a variety of experiments to explore the relationship between experimental and theoretical probabilities.  
Everything Counts

## A World of Difference

### V. Spatial Sense, Geometry, And Measurement

#### C. Measurement:

Make calculations of time, length, area and volume within standard measuring systems using good judgment in choice of units.

1. Choose appropriate units to calculate, measure, and record length, weight, area and volume in both U.S. customary and metric systems.

How Much Space Do We Need?

Measuring a Million

The Stork and the Grim Reaper

## Grade 8

### III. Patterns, Functions, And Algebra

#### A. Patterns and Functions:

Understand and describe progressions. Use graphs and tables to solve real-world and mathematical problems.

1. Recognize when a list of numbers forms an arithmetic or geometric progression and be able to determine subsequent terms in the progression.

All in the Family

Seeing Double

Timber!

2. Represent quantitative relationships graphically and use the graphs to solve real-world and mathematical problems.

All in the Family

Every Picture Tells a Story

On the Double

The Pop Ecology Files

Population Clock

Power of the Pyramids

Timber!

What Do You Think?

World Real Estate

#### B. Algebra (Algebraic Thinking):

Use algebraic operations to generate equivalent expressions, and use proportional reasoning to solve real-world and mathematical problems. Demonstrate the ability to manipulate an equation by applying arithmetic operations to both sides to maintain equivalence.

2. Use simple formulas with more than one variable to solve real-world and mathematical problems.

Global Warming Begins at Home

How Much Space Do We Need?

3. Use proportions and percents with one unknown quantity to solve real-world and mathematical problems.

Everything Counts

Global Warming Begins at Home

Power of the Pyramids

World Real Estate

4. Apply the correct order of operations including addition, subtraction, multiplication, division, grouping symbols and powers, to simplify and evaluate algebraic expressions.

Global Warming Begins at Home

How Much Space Do We Need?

#### IV. Data Analysis, Statistics And Probability

##### A. Data and Statistics:

Represent data and use various measures associated with data to draw conclusions and identify trends.

1. Construct and analyze histograms, circle graphs, stem-and-leaf plots and box-and-whisker plots.

Every Picture Tells a Story

What Do You Think?

A World of Difference

2. Compute the quartiles of a data set.

What Do You Think?

##### B. Probability:

Calculate and express probabilities numerically and apply probability concepts to solve real-world and mathematical problems.

2. Convert between odds and probabilities.

A World of Difference

3. Use a variety of experiments to explore the relationship between experimental and theoretical probabilities and the effect of sample size on this relationship.

Everything Counts

A World of Difference

##### C. Measurement:

Make calculations of time, length, area and volume within and between standard measuring systems using good judgment in choice of units.

1. Find approximate equivalent measures of length, temperature and weight for common units in U.S. customary and metric measuring systems.

How Much Space Do We Need?

2. Use arithmetic to solve simple real-world and mathematical problems involving mixed units such as minutes and hours in elapsed time, degrees and minutes in latitude and longitude and feet and inches in distance.

How Much Space Do We Need?

Measuring a Million

The Stork and the Grim Reaper

Water, Water Everywhere (Elementary/Intermediate)

### Grade 9 to Grade 11

#### II. Number Sense, Computation, And Operations

##### A. Number Sense:

Use real numbers, represented in a variety of ways, to quantify information and to solve real-world and mathematical problems.

All in the Family

Every Picture Tells a Story

Global Warming Begins at Home

How Much Space Do We Need?

The Pop Ecology Files

Transportation Tally

What Do You Think?

A World of Difference

### III. Patterns, Functions, And Algebra

#### A. Patterns and Functions:

Represent and analyze real-world and mathematical problems using numeric, graphic and symbolic methods for a variety of functions.

2. Model exponential growth and decay, numerically, graphically and symbolically, using exponential functions with integer inputs.

All in the Family

The Pop Ecology Files

#### B. Algebra (Algebraic Thinking):

Solve simple equations and inequalities numerically, graphically, and symbolically. Use recursion to model and solve real-world and mathematical problems.

5. Use a variety of models such as equations, inequalities, algebraic formulas, written statements, tables and graphs or spreadsheets to represent functions and patterns in real-world and mathematical problems.

All in the Family

Global Warming Begins at Home

How Much Space Do We Need?

The Pop Ecology Files

Transportation Tally

7. Solve linear equations and inequalities in one variable with numeric, graphic and symbolic methods.

Global Warming Begins at Home

How Much Space Do We Need?

Transportation Tally

### IV. Data Analysis, Statistics And Probability

#### A. Data and Statistics:

Represent data and use various measures associated with data to draw conclusions and identify trends. Understand the effects of display distortion and measurement error on the interpretation of data.

1. Construct and analyze circle graphs, bar graphs, histograms, box-and-whisker plots, scatter plots and tables, and demonstrate the strengths and weaknesses of each format by choosing appropriately among them for a given situation.

All in the Family

The Pop Ecology Files

What Do You Think?

2. Use measures of central tendency and variability, such as, mean, median, maximum, minimum, range, standard deviation, quartile and percentile, to describe, compare and draw conclusions about sets of data.

What Do You Think?

#### B. Probability:

Use appropriate counting procedures, calculate probabilities in various ways and apply theoretical probability concepts to solve real-world and mathematical problems.

1. Select and apply appropriate counting procedures to solve real-world and mathematical problems, including probability problems.

All in the Family

What Do You Think?

A World of Difference

6. Use a variety of experimental, simulation and theoretical methods to calculate probabilities.

What Do You Think?

A World of Difference

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# Science

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## Grade 4

### I. History And Nature Of Science

#### A. Scientific World View:

The student will understand how science is used to investigate interactions between people and the natural world.

1. The student will explore the uses and effects of science in our interaction with the natural world.  
The Stork and the Grim Reaper
2. The student will discuss the responsible use of science.  
The Stork and the Grim Reaper  
Timber!
3. The student will recognize the impact of scientific and technological activities on the natural world.  
Timber!

#### B. Scientific Inquiry:

The student will participate in a controlled scientific investigation.

2. The student will collect, organize, analyze and present data from a controlled experiment.  
Everything Counts  
Something for Everyone  
The Stork and the Grim Reaper  
Timber!

### III. Earth And Space Science

#### A. Earth Structure and Processes:

The student will investigate the impact humans have on the environment.

1. The student will identify and investigate environmental issues and potential solutions.  
The Stork and the Grim Reaper  
Timber!

## Grade 5

### I. History And Nature Of Science

#### B. Scientific Inquiry:

The student will understand the process of scientific investigations.

1. The student will perform a controlled experiment using a specific step-by-step procedure and present conclusions supported by the evidence.  
Everything Counts  
The Stork and the Grim Reaper  
Timber!

## Grade 6

### I. History And Nature Of Science

#### B. Scientific Inquiry:

The student will understand that scientific inquiry is used in systematic ways to investigate the natural world.

3. The student will use appropriate tools and Système International (SI) units for measuring length, time, mass, volume and temperature with suitable precision and accuracy.  
Measuring a Million

Timber!

4. The student will present and explain data and findings from controlled experiments using multiple representations including tables, graphs, physical models and demonstrations.

All in the Family  
Everything Counts  
The Pop Ecology Files  
Timber!  
What Do You Think?

## Grade 7

### I. History And Nature Of Science

#### A. Scientific World View:

The student will understand that science is a way of knowing about the world that is characterized by empirical criteria, logical argument and skeptical review.

2. The student will explain natural phenomena by using appropriate physical, conceptual and mathematical models.

All in the Family  
Global Warming Begins at Home  
On the Double  
The Pop Ecology Files  
Population Clock  
The Stork and the Grim Reaper  
Timber!  
A World of Difference  
World Real Estate

#### B. Scientific Inquiry:

The student will design and conduct scientific investigations.

1. The student will formulate a testable hypothesis based on prior knowledge.

Everything Counts  
How Much Space Do We Need?  
What Do You Think?  
A World of Difference

2. The student will recognize that a variable is a condition that may influence the outcome of an investigation and know the importance of manipulating one variable at a time.

All in the Family  
Everything Counts  
Global Warming Begins at Home  
How Much Space Do We Need?

### IV. Life Science

#### C. Interdependence of Life:

The student will understand that within ecosystems, complex interactions exist between organisms and the physical environment.

1. The student will provide examples of the potentially irreversible effects of human activity on ecosystems.

Global Warming Begins at Home  
The Stork and the Grim Reaper  
Timber!  
A World of Difference  
World Real Estate

2. The student will define a population as all individuals of a species that exist together at a given place and time.

Power of the Pyramids

4. The student will explain the factors that affect the number and types of organisms an ecosystem can support, including available resources, abiotic and biotic factors and disease.

How Much Space Do We Need?

The Stork and the Grim Reaper

Timber!

A World of Difference

World Real Estate

G. Human Organism:

The student will understand human body systems and their relationship to disease.

2. The student will identify risks associated with natural, chemical and biological hazards.

All in the Family

Every Picture Tells a Story

For the Common Good

Global Warming Begins at Home

On the Double

Population Clock

The Stork and the Grim Reaper

Timber!

A World of Difference

World Real Estate

## Grade 8

I. History And Nature Of Science

A. Scientific World View:

The student will understand that science is a way of knowing about the world that is characterized by empirical criteria, logical argument and skeptical review.

1. The student will explain and give examples of how science can be used to make informed ethical decisions by identifying likely consequences of particular actions.

All in the Family

Global Warming Begins at Home

How Much Space Do We Need?

The Pop Ecology Files

The Stork and the Grim Reaper

Timber!

Transportation Tally

A World of Difference

World Real Estate

B. Scientific Inquiry:

The student will use multiple skills to design and conduct scientific investigations.

1. The student will specify variables to be changed, controlled and measured.

All in the Family

Everything Counts

Global Warming Begins at Home

2. The student will use sufficient trials and adequate sample size to ensure reliable data.

Everything Counts  
What Do You Think?

3. The student will use appropriate technology and mathematics skills to access, gather, store, retrieve and organize data.

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  
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. Historic Perspectives:

The student will understand how scientific discovery, culture, societal norms and technology have influenced one another in different time periods.

2. The student will cite examples of how science and technology contributed to changes in agriculture, manufacturing, sanitation, medicine, warfare, transportation, information processing or communication.  
Transportation Tally

III. Earth And Space Science

A. Earth Structure and Processes:

The student will investigate the impact humans have on the environment.

1. The student will identify and research an environmental issue and evaluate its impact.

All in the Family  
Global Warming Begins at Home  
How Much Space Do We Need?  
On the Double  
The Stork and the Grim Reaper  
Timber!  
Transportation Tally  
What Do You Think?  
A World of Difference  
World Real Estate

**Grade 9 to Grade 12**

I. History And Nature Of Science

A. Scientific World View:

The student will understand the nature of scientific ways of thinking and that scientific knowledge changes and accumulates over time.

5. The student will recognize that some scientific ideas are incomplete, and opportunity exists in these areas for new advances.

Global Warming Begins at Home

## B. Scientific Inquiry:

The student will design and conduct a scientific investigation.

1. The student will design and complete a scientific experiment using scientific methods by determining a testable question, making a hypothesis, designing a scientific investigation with appropriate controls, analyzing data, making conclusions based on evidence and comparing conclusions to the original hypothesis and prior knowledge.

A World of Difference

3. The student will apply mathematics and models to analyze data and support conclusions.

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Global Warming Begins at Home

How Much Space Do We Need?

The Pop Ecology Files

Power of the Pyramids

A World of Difference

## C. Scientific Enterprise:

The student will understand the relationship between science and technology and how both are used.

2. The student will provide an example of a need or problem identified by science and solved by engineering or technology.

Global Warming Begins at Home

4. The student will know that technological changes and scientific advances are often accompanied by social, political, environmental and economic changes.

Global Warming Begins at Home

5. The student will recognize that science and technology are influenced by cultural backgrounds and beliefs and by social needs, attitudes, values and limitations.

What Do You Think?

## II. Physical Science

### B. Chemical Reactions:

The student will describe chemical reactions and the factors that influence them.

1. The student will describe chemical reactions using words and symbolic equations.

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## III. Earth And Space Science

### B. The Water Cycle, Weather and Climate:

The student will explain the causes and effects of the Earth's atmospheric and hydrologic processes.

5. The student will discuss the impact of the use of natural resources and other human activities on the Earth's climate.

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## IV. Life Science

### C. Interdependence of Life:

The student will describe how the environment and interactions between organisms can affect the number of species and the diversity of species in an ecosystem.

1. The student will describe the factors related to matter and energy in an ecosystem that both influence fluctuations in population size and determine the carrying capacity of a population.

The Pop Ecology Files

4. The student will predict and analyze how a change in an ecosystem, resulting from natural causes, changes in climate, human activity or introduction of invasive species, can affect both the number of organisms in a population and the biodiversity of species in the ecosystem.

A World of Difference