

**Math Out of the Box Correlation  
to  
South Carolina Academic Standards  
for  
Mathematics – 2007**

**Fourth Grade  
Developing Number Concepts: Stories and Statements  
Module B**

Fractions, decimals, and numbers less than one are represented in pictures, words, and symbols. Problem-solving strategies are planned, described, tested, and revised. Probability is explored in this kit. Manipulatives include number lines, cards, objects, and game pieces. Vertex-edge graphs and other concepts relating to discrete mathematics are explored. A Student Record Book supports the lessons by providing reflective practice and connections between mathematical concepts.

This correlation was developed by the Math Out of the Box Staff.

Send email to [mootb@clemson.edu](mailto:mootb@clemson.edu) with questions and comments.



## Correlation Information

The purpose of this document is to provide a correlation of Math Out of the Box lessons to the South Carolina Academic Standards for Mathematics, 2007. These correlations are intended to aid classroom teachers with lesson planning, schools with vertical planning, and districts with curriculum planning.

The correlation document is arranged in the following order:

### **Process Standards**

Process standards that are used in the lessons of the subconcept to develop conceptual understanding of mathematics are listed in this column. It is recommended that one process standard be selected for formative assessment in each subconcept.

### **Content Standards**

The content standards listed in this column are those that are addressed in one or more of the phases of the learning cycle in the listed lessons. Standards are connected by subconcept because conceptual knowledge is built in sets of lessons in the Math Out of the Box curriculum. These subconcepts are connected to a big idea of mathematics. The first lesson of a subconcept is an embedded pre-assessment, connecting to prior learning. The final lesson in a subconcept is designed to be formative and summative.

### **Horizontal Connections**

Connections to mathematics standards in other strands are listed here to show the horizontal weave of the Math Out of the Box curriculum. These connections provide opportunities for the development of connections between mathematical concepts, maintenance of skills, and additional practice.

### **Vertical Connections**

Foundation standards show the vertical articulation of the lessons. At times, an investigation is planned in a lesson to specifically build a foundation for the standards in the next grade or grades. These lessons, or parts of lessons, are essential so that concepts are connected from grade to grade.

### **Cross Curricular Connections**

Connections to standards from other subject areas are listed to aid in cross curricular integration and the development of curriculum maps.



**Big Idea: Representations of numbers can be used to describe and learn about the world around us.**

**Subconcept: Meaning for fractional relationships can be developed by constructing a variety of models.**

**Lessons 1, 2, 3**

**Focus Question: What strategies can be used to identify equivalent fractions?**

Process Standards	Content Standards	Horizontal Connections
<p><b>Mathematics</b>  <b>Standard 4-1 (Process):</b>            The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation.</p> <p><b>Indicators</b></p> <p>4-1.1 Analyze information to solve increasingly more sophisticated problems.</p> <p>4-1.2 Construct arguments that lead to conclusions about general mathematical properties and relationships.</p> <p>4-1.3 Explain and justify answers to problems on the basis of mathematical properties, structures, and relationships on mathematical properties, structures, and relationships.</p> <p>4-1.4 Generate descriptions and mathematical statements about relationships between and among classes of objects.</p> <p>4-1.5 Use correct, complete, and clearly written and oral mathematical language to pose questions, communicate ideas, and extend problem situations.</p> <p>4-1.6 Generalize connections between new mathematical ideas and related concepts and subjects that have been previously considered.</p> <p>4-1.7 Use flexibility in mathematical representations.</p> <p>4-1.8 Recognize the limitations of various forms of mathematical representations.</p>	<p><b>Mathematics</b>  <b>Standard 4-2 (Number and Operations):</b>            The student will demonstrate through the mathematical processes an understanding of decimal notation as an extension of the place-value system; the relationships between fractions and decimals; the multiplication of whole numbers; and accurate, efficient, and generalizable methods of dividing whole numbers, adding decimals, and subtracting decimals.</p> <p><b>Indicators</b></p> <p>4-2.8 Apply strategies and procedures to find equivalent forms of fractions.</p> <p>4-2.9 Compare the relative size of fractions to the benchmarks 0, <math>\frac{1}{2}</math>, and 1.</p>	<p><b>Mathematics</b>  <b>Standard 4-3 (Algebra):</b>            The student will demonstrate through the mathematical processes an understanding of numeric and nonnumeric patterns, the representation of simple mathematical relationships, and the application of procedures to find the value of an unknown.</p> <p><b>Indicators</b></p> <p>4-3.1 Analyze numeric, nonnumeric, and repeating patterns involving all operations and decimal patterns through hundredths.</p> <p>4-3.2 Generalize a rule for numeric, nonnumeric, and repeating patterns involving all operations.</p> <p>4-3.3 Use a rule to complete a sequence or a table.</p> <p><b>Standard 4-5 (Measurement):</b>            The student will demonstrate through the mathematical processes an understanding of elapsed time; conversions within the U.S. Customary System; and accurate, efficient, and generalizable methods of determining area.</p> <p><b>Indicators</b></p> <p>4-5.5 Generate strategies to determine the area of rectangles and triangles.</p>

**Notes:**

Vertical Connections	Cross Curricular Connections
<p><b>Grade 5</b>  <b>Standard 5-2 (Numbers and Operations):</b>            The student will demonstrate through the mathematical processes an understanding of the place value system; the division of whole numbers; the addition and subtraction of decimals; the relationships among whole numbers, fractions, and decimals; and accurate, efficient, and generalizable methods of adding and subtracting fractions.</p> <p><b>Indicators</b>            5-2.4 Compare whole numbers, decimals, and fractions by using the symbols <math>&lt;</math>, <math>&gt;</math>, and <math>=</math>.            5-2.7 Generate strategies to find the greatest common factor and the least common multiple of two whole numbers.            5-2.8 Generate strategies to add and subtract fractions with like and unlike denominators.</p> <p><b>Grade 6</b>  <b>Standard 6-2 (Numbers and Operations):</b>            The student will demonstrate through the mathematical processes an understanding of the concept of whole-number percentages, integers, and ratio and rate; the addition and subtraction of fractions; accurate, efficient, and generalizable methods of multiplying and dividing fractions and decimals; and the use of exponential notation to represent whole numbers.</p> <p><b>Indicators</b>            6-2.3 Compare rational numbers and whole-number percentages through 100 by using the symbols <math>\leq</math>, <math>\geq</math>, <math>&lt;</math>, <math>&gt;</math>, and <math>=</math>.            6-2.4 Apply an algorithm to add and subtract fractions.            6-2.5 Generate strategies to multiply and divide fractions and decimals.</p> <p><b>Grade 7</b>  <b>Standard 7-2 (Numbers and Operations):</b>            The student will demonstrate through the mathematical processes an understanding of the representation of rational numbers, percentages, and square roots of perfect squares; the application of ratios, rates, and proportions to solve problems; accurate, efficient, and generalizable methods for operations with integers; the multiplication and division of fractions and decimals; and the inverse relationship between squaring and finding the square roots of perfect squares.</p> <p><b>Indicators</b>            7-2.9 Apply an algorithm to multiply and divide fractions and decimals.</p>	<p><b>Language Arts</b>  <b>Standard 4-1(Reading):</b>            The student will read and comprehend a variety of literary texts in print and nonprint formats.</p> <p><b>Indicators</b>            4-1.1 Analyze literary texts to draw conclusions and make inferences.            4-1.6 Analyze the details that support the expression of the main idea in a given literary text.            4-1.8 Carry out independent reading for extended periods of time to derive pleasure.</p> <p><b>Standard 4-2 (Reading):</b>            The student will read and comprehend a variety of informational texts in print and nonprint formats.</p> <p><b>Indicators</b>            4-2.1 Summarize evidence that supports the central idea of a given informational text.            4-2.2 Analyze informational texts to draw conclusions and make inferences.            4-2.3 Analyze informational texts to locate and identify facts and opinions.            4-2.5 Carry out independent reading for extended periods of time to gain information.            4-2.6 Understand that headings, subheadings, print styles, white space, captions, and chapter headings provide information to the reader.            4-2.7 Use graphic features such as illustrations, graphs, charts, maps, diagrams, and graphic organizers as sources of information.            4-2.8 Use functional text features (including tables of contents, glossaries, indexes, and appendixes).</p> <p><b>Standard 4-4 (Writing):</b>            The student will create written work that has a clear focus, sufficient detail, coherent organization, effective use of voice, and correct use of the conventions of written Standard American English.</p> <p><b>Indicators</b>            4-4.1 Use prewriting techniques to organize written works.            4-4.2 Use complete sentences in a variety of types (including simple and compound sentences) in writing.            4-4.6 Use revision strategies to improve word choice and the organization and development of ideas in written works.</p>



**Big Idea: Representations of numbers can be used to describe and learn about the world around us.**

**Subconcept: Meaning for decimals can be developed by constructing a variety of models.**

**Lessons 4, 5, 6, 7, 8, 9**

**Focus Question: What strategies can be used to compare decimals?**

Process Standards	Content Standards	Horizontal Connections
<p><b>Mathematics Standard 4-1 (Process):</b> The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation.</p> <p><b>Indicators</b></p> <p>4-1.1 Analyze information to solve increasingly more sophisticated problems.</p> <p>4-1.2 Construct arguments that lead to conclusions about general mathematical properties and relationships.</p> <p>4-1.3 Explain and justify answers to problems on the basis of mathematical properties, structures, and relationships on mathematical properties, structures, and relationships.</p> <p>4-1.4 Generate descriptions and mathematical statements about relationships between and among classes of objects.</p> <p>4-1.5 Use correct, complete, and clearly written and oral mathematical language to pose questions, communicate ideas, and extend problem situations.</p> <p>4-1.6 Generalize connections between new mathematical ideas and related concepts and subjects that have been previously considered.</p> <p>4-1.7 Use flexibility in mathematical representations.</p> <p>4-1.8 Recognize the limitations of various forms of mathematical representations.</p>	<p><b>Mathematics Standard 4-2 (Number and Operations):</b> The student will demonstrate through the mathematical processes an understanding of decimal notation as an extension of the place-value system; the relationships between fractions and decimals; the multiplication of whole numbers; and accurate, efficient, and generalizable methods of dividing whole numbers, adding decimals, and subtracting decimals.</p> <p><b>Indicators</b></p> <p>4-2.6 Analyze the magnitude of digits through hundredths on the basis of their place value.</p> <p>4-2.7 Compare decimals through hundredths by using the terms <i>is less than</i>, <i>is greater than</i>, and <i>is equal to</i> and the symbols <math>&lt;</math>, <math>&gt;</math>, and <math>=</math>.</p> <p>4-2.8 Apply strategies and procedures to find equivalent forms of fractions.</p> <p>4-2.11 Represent improper fractions, mixed numbers, and decimals.</p>	<p><b>Mathematics Standard 4-3 (Algebra):</b> The student will demonstrate through the mathematical processes an understanding of numeric and nonnumeric patterns, the representation of simple mathematical relationships, and the application of procedures to find the value of an unknown.</p> <p><b>Indicators</b></p> <p>4-3.1 Analyze numeric, nonnumeric, and repeating patterns involving all operations and decimal patterns through hundredths.</p> <p>4-3.2 Generalize a rule for numeric, nonnumeric, and repeating patterns involving all operations.</p> <p>4-3.3 Use a rule to complete a sequence or a table.</p>

Vertical Connections	Cross Curricular Connections
<p><b>Grade 5</b>  <b>Standard 5-2 (Numbers and Operations):</b>            The student will demonstrate through the mathematical processes an understanding of the place value system; the division of whole numbers; the addition and subtraction of decimals; the relationships among whole numbers, fractions, and decimals; and accurate, efficient, and generalizable methods of adding and subtracting fractions.</p> <p><b>Indicators</b>            5-2.4 Compare whole numbers, decimals, and fractions by using the symbols <math>&lt;</math>, <math>&gt;</math>, and <math>=</math>.            5-2.7 Generate strategies to find the greatest common factor and the least common multiple of two whole numbers.            5-2.8 Generate strategies to add and subtract fractions with like and unlike denominators.</p> <p><b>Grade 6</b>  <b>Standard 6-2 (Numbers and Operations):</b>            The student will demonstrate through the mathematical processes an understanding of the concept of whole-number percentages, integers, and ratio and rate; the addition and subtraction of fractions; accurate, efficient, and generalizable methods of multiplying and dividing fractions and decimals; and the use of exponential notation to represent whole numbers.</p> <p><b>Indicators</b>            6-2.3 Compare rational numbers and whole-number percentages through 100 by using the symbols <math>\leq</math>, <math>\geq</math>, <math>&lt;</math>, <math>&gt;</math>, and <math>=</math>.            6-2.4 Apply an algorithm to add and subtract fractions.            6-2.5 Generate strategies to multiply and divide fractions and decimals.</p> <p><b>Grade 7</b>  <b>Standard 7-2 (Numbers and Operations):</b>            The student will demonstrate through the mathematical processes an understanding of the representation of rational numbers, percentages, and square roots of perfect squares; the application of ratios, rates, and proportions to solve problems; accurate, efficient, and generalizable methods for operations with integers; the multiplication and division of fractions and decimals; and the inverse relationship between squaring and finding the square roots of perfect squares.</p> <p><b>Indicators</b>            7-2.9 Apply an algorithm to multiply and divide fractions and decimals.            8-2.4 Compare rational and irrational numbers by using the symbols <math>\leq</math>, <math>\geq</math>, <math>&lt;</math>, <math>&gt;</math>, and <math>=</math>.</p>	<p><b>Language Arts</b>  <b>Standard 4-4 (Writing):</b>            The student will create written work that has a clear focus, sufficient detail, coherent organization, effective use of voice, and correct use of the conventions of written Standard American English.</p> <p><b>Indicators</b>            4-4.1 Use prewriting techniques to organize written works.            4-4.2 Use complete sentences in a variety of types (including simple and compound sentences) in writing.            4-4.6 Use revision strategies to improve word choice and the organization and development of ideas in written works.</p>



**Big Idea: Representations of numbers can be used to describe and learn about the world around us.**

**Subconcept: Meaning for addition and subtraction of decimals can be developed by constructing a variety of models.**

**Lessons 10, 11, 12**

**Focus Question: What strategies can be used to solve addition and subtraction problems with decimal numbers?**

Process Standards	Content Standards	Horizontal Connections
<p><b>Mathematics</b>  <b>Standard 4-1 (Process):</b>            The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation.</p> <p><b>Indicators</b></p> <p>4-1.1 Analyze information to solve increasingly more sophisticated problems.</p> <p>4-1.2 Construct arguments that lead to conclusions about general mathematical properties and relationships.</p> <p>4-1.3 Explain and justify answers to problems on the basis of mathematical properties, structures, and relationships on mathematical properties, structures, and relationships.</p> <p>4-1.4 Generate descriptions and mathematical statements about relationships between and among classes of objects.</p> <p>4-1.5 Use correct, complete, and clearly written and oral mathematical language to pose questions, communicate ideas, and extend problem situations.</p> <p>4-1.6 Generalize connections between new mathematical ideas and related concepts and subjects that have been previously considered.</p> <p>4-1.7 Use flexibility in mathematical representations.</p> <p>4-1.8 Recognize the limitations of various forms of mathematical representations.</p>	<p><b>Mathematics</b>  <b>Standard 4-2 (Number and Operations):</b>            The student will demonstrate through the mathematical processes an understanding of decimal notation as an extension of the place-value system; the relationships between fractions and decimals; the multiplication of whole numbers; and accurate, efficient, and generalizable methods of dividing whole numbers, adding decimals, and subtracting decimals.</p> <p><b>Indicators</b></p> <p>4-2.6 Analyze the magnitude of digits through hundredths on the basis of their place value.</p> <p>4-2.11 Represent improper fractions, mixed numbers, and decimals.</p> <p>4-2.12 Generate strategies to add and subtract decimals through hundredths.</p>	<p><b>Mathematics</b>  <b>Standard 4-3 (Algebra):</b>            The student will demonstrate through the mathematical processes an understanding of numeric and nonnumeric patterns, the representation of simple mathematical relationships, and the application of procedures to find the value of an unknown.</p> <p><b>Indicators</b></p> <p>4-3.1 Analyze numeric, nonnumeric, and repeating patterns involving all operations and decimal patterns through hundredths.</p> <p>4-3.2 Generalize a rule for numeric, nonnumeric, and repeating patterns involving all operations.</p> <p>4-3.3 Use a rule to complete a sequence or a table.</p>

Vertical Connections	Cross Curricular Connections
<p><b>Grade 5</b>  <b>Standard 5-2 (Numbers and Operations):</b>            The student will demonstrate through the mathematical processes an understanding of the place value system; the division of whole numbers; the addition and subtraction of decimals; the relationships among whole numbers, fractions, and decimals; and accurate, efficient, and generalizable methods of adding and subtracting fractions.</p> <p><b>Indicators</b>            5-2.4 Compare whole numbers, decimals, and fractions by using the symbols <math>&lt;</math>, <math>&gt;</math>, and <math>=</math>.            5-2.7 Generate strategies to find the greatest common factor and the least common multiple of two whole numbers.            5-2.8 Generate strategies to add and subtract fractions with like and unlike denominators.</p> <p><b>Grade 6</b>  <b>Standard 6-2 (Numbers and Operations):</b>            The student will demonstrate through the mathematical processes an understanding of the concept of whole-number percentages, integers, and ratio and rate; the addition and subtraction of fractions; accurate, efficient, and generalizable methods of multiplying and dividing fractions and decimals; and the use of exponential notation to represent whole numbers.</p> <p><b>Indicators</b>            6-2.3 Compare rational numbers and whole-number percentages through 100 by using the symbols <math>\leq</math>, <math>\geq</math>, <math>&lt;</math>, <math>&gt;</math>, and <math>=</math>.            6-2.4 Apply an algorithm to add and subtract fractions.            6-2.5 Generate strategies to multiply and divide fractions and decimals.</p> <p><b>Grade 7</b>  <b>Standard 7-2 (Numbers and Operations):</b>            The student will demonstrate through the mathematical processes an understanding of the representation of rational numbers, percentages, and square roots of perfect squares; the application of ratios, rates, and proportions to solve problems; accurate, efficient, and generalizable methods for operations with integers; the multiplication and division of fractions and decimals; and the inverse relationship between squaring and finding the square roots of perfect squares.</p> <p><b>Indicators</b>            7-2.9 Apply an algorithm to multiply and divide fractions and decimals.            8-2.4 Compare rational and irrational numbers by using the symbols <math>\leq</math>, <math>\geq</math>, <math>&lt;</math>, <math>&gt;</math>, and <math>=</math>.</p>	<p><b>Language Arts</b>  <b>Standard 4-4 (Writing):</b>            The student will create written work that has a clear focus, sufficient detail, coherent organization, effective use of voice, and correct use of the conventions of written Standard American English.</p> <p><b>Indicators</b>            4-4.1 Use prewriting techniques to organize written works.            4-4.2 Use complete sentences in a variety of types (including simple and compound sentences) in writing.            4-4.6 Use revision strategies to improve word choice and the organization and development of ideas in written works.</p>



**Big Idea: Representations of numbers can be used to describe and learn about the world around us.**

**Subconcept: Attributes of money can be analyzed, described, and modeled.**

**Lessons 13, 14, 15**

**Focus Question: In what ways does knowledge of decimals aid in solving problems about money?**

Process Standards	Content Standards	Horizontal Connections
<p><b>Mathematics</b>  <b>Standard 4-1 (Process):</b>            The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation.</p> <p><b>Indicators</b></p> <p>4-1.1 Analyze information to solve increasingly more sophisticated problems.</p> <p>4-1.2 Construct arguments that lead to conclusions about general mathematical properties and relationships.</p> <p>4-1.3 Explain and justify answers to problems on the basis of mathematical properties, structures, and relationships on mathematical properties, structures, and relationships.</p> <p>4-1.4 Generate descriptions and mathematical statements about relationships between and among classes of objects.</p> <p>4-1.5 Use correct, complete, and clearly written and oral mathematical language to pose questions, communicate ideas, and extend problem situations.</p> <p>4-1.6 Generalize connections between new mathematical ideas and related concepts and subjects that have been previously considered.</p> <p>4-1.7 Use flexibility in mathematical representations.</p> <p>4-1.8 Recognize the limitations of various forms of mathematical representations.</p>	<p><b>Mathematics</b>  <b>Standard 4-2 (Number and Operations):</b>            The student will demonstrate through the mathematical processes an understanding of decimal notation as an extension of the place-value system; the relationships between fractions and decimals; the multiplication of whole numbers; and accurate, efficient, and generalizable methods of dividing whole numbers, adding decimals, and subtracting decimals.</p> <p><b>Indicators</b></p> <p>4-2.6 Analyze the magnitude of digits through hundredths on the basis of their place value.</p> <p>4-2.10 Identify the common fraction/decimal equivalents <math>\frac{1}{2} = .5</math>, <math>\frac{1}{4} = .25</math>, <math>\frac{3}{4} = .75</math>, <math>\frac{1}{3} \approx .33</math>, <math>\frac{2}{3} \approx .67</math>, multiples of <math>\frac{1}{10}</math>, and multiples of <math>\frac{1}{100}</math>.</p> <p>4-2.11 Represent improper fractions, mixed numbers, and decimals.</p> <p>4-2.12 Generate strategies to add and subtract decimals through hundredths.</p>	<p><b>Mathematics</b>  <b>Standard 4-3 (Algebra):</b>            The student will demonstrate through the mathematical processes an understanding of numeric and nonnumeric patterns, the representation of simple mathematical relationships, and the application of procedures to find the value of an unknown.</p> <p><b>Indicators</b></p> <p>4-3.1 Analyze numeric, nonnumeric, and repeating patterns involving all operations and decimal patterns through hundredths.</p> <p>4-3.2 Generalize a rule for numeric, nonnumeric, and repeating patterns involving all operations.</p> <p>4-3.3 Use a rule to complete a sequence or a table.</p>

**Notes:**

Vertical Connections	Cross Curricular Connections
<p><b>Grade 5</b>  <b>Standard 5-2 (Numbers and Operations):</b>            The student will demonstrate through the mathematical processes an understanding of the place value system; the division of whole numbers; the addition and subtraction of decimals; the relationships among whole numbers, fractions, and decimals; and accurate, efficient, and generalizable methods of adding and subtracting fractions.  <b>Indicators</b>            5-2.4 Compare whole numbers, decimals, and fractions by using the symbols <math>&lt;</math>, <math>&gt;</math>, and <math>=</math>.</p> <p><b>Grade 6</b>  <b>Standard 6-2 (Numbers and Operations):</b>            The student will demonstrate through the mathematical processes an understanding of the concept of whole-number percentages, integers, and ratio and rate; the addition and subtraction of fractions; accurate, efficient, and generalizable methods of multiplying and dividing fractions and decimals; and the use of exponential notation to represent whole numbers.  <b>Indicators</b>            6-2.1 Understand whole-number percentages through 100.            6-2.3 Compare rational numbers and whole-number percentages through 100 by using the symbols <math>\leq</math>, <math>\geq</math>, <math>&lt;</math>, <math>&gt;</math>, and <math>=</math>.</p> <p><b>Grade 7</b>  <b>Standard 7-2 (Numbers and Operations):</b>            The student will demonstrate through the mathematical processes an understanding of the representation of rational numbers, percentages, and square roots of perfect squares; the application of ratios, rates, and proportions to solve problems; accurate, efficient, and generalizable methods for operations with integers; the multiplication and division of fractions and decimals; and the inverse relationship between squaring and finding the square roots of perfect squares.  <b>Indicators</b>            7-2.1 Understand fractional percentages and percentages greater than one hundred.            7-2.3 Compare rational numbers, percentages, and square roots of perfect squares by using the symbols <math>\leq</math>, <math>\geq</math>, <math>&lt;</math>, <math>&gt;</math>, and <math>=</math>.            7-2.5 Apply ratios, rates, and proportions to discounts, taxes, tips, interest, unit costs, and similar shapes.</p>	<p><b>Language Arts</b>  <b>Standard 4-2 (Reading):</b>            The student will read and comprehend a variety of informational texts in print and nonprint formats.  <b>Indicators</b>            4-2.1 Summarize evidence that supports the central idea of a given informational text.            4-2.2 Analyze informational texts to draw conclusions and make inferences.            4-2.4 Create responses to informational texts through a variety of methods such as drawings, written works, and oral presentations.            4-2.5 Carry out independent reading for extended periods of time to gain information.            4-2.7 Use graphic features such as illustrations, graphs, charts, maps, diagrams, and graphic organizers as sources of information.</p> <p><b>Standard 4-4 (Writing):</b>            The student will create written work that has a clear focus, sufficient detail, coherent organization, effective use of voice, and correct use of the conventions of written Standard American English.  <b>Indicators</b>            4-4.1 Use prewriting techniques to organize written works.            4-4.2 Use complete sentences in a variety of types (including simple and compound sentences) in writing.            4-4.6 Use revision strategies to improve word choice and the organization and development of ideas in written works.</p>

**Notes:**

**Big Idea: Representations of numbers can be used to describe and learn about the world around us.**

**Subconcept: Attributes of negative numbers can be analyzed, described, and modeled.**

**Lessons 16, 17, 18**

**Focus Question: What patterns can be observed with negative numbers?**

Process Standards	Content Standards	Horizontal Connections
<p><b>Mathematics Standard 4-1 (Process):</b> The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation.</p> <p><b>Indicators</b></p> <p>4-1.1 Analyze information to solve increasingly more sophisticated problems.</p> <p>4-1.2 Construct arguments that lead to conclusions about general mathematical properties and relationships.</p> <p>4-1.3 Explain and justify answers to problems on the basis of mathematical properties, structures, and relationships on mathematical properties, structures, and relationships.</p> <p>4-1.4 Generate descriptions and mathematical statements about relationships between and among classes of objects.</p> <p>4-1.5 Use correct, complete, and clearly written and oral mathematical language to pose questions, communicate ideas, and extend problem situations.</p> <p>4-1.6 Generalize connections between new mathematical ideas and related concepts and subjects that have been previously considered.</p> <p>4-1.7 Use flexibility in mathematical representations.</p> <p>4-1.8 Recognize the limitations of various forms of mathematical representations.</p>	<p><b>Mathematics Standard 4-3 (Algebra):</b> The student will demonstrate through the mathematical processes an understanding of numeric and nonnumeric patterns, the representation of simple mathematical relationships, and the application of procedures to find the value of an unknown.</p> <p><b>Indicators</b></p> <p>4-3.1 Analyze numeric, nonnumeric, and repeating patterns involving all operations and decimal patterns through hundredths.</p> <p>4-3.2 Generalize a rule for numeric, nonnumeric, and repeating patterns involving all operations.</p> <p>4-3.3 Use a rule to complete a sequence or a table.</p> <p>4-3.6 Illustrate situations that show change over time as either increasing, decreasing, or varying.</p>	<p><b>Mathematics Standard 4-2 (Number and Operations):</b> The student will demonstrate through the mathematical processes an understanding of decimal notation as an extension of the place-value system; the relationships between fractions and decimals; the multiplication of whole numbers; and accurate, efficient, and generalizable methods of dividing whole numbers, adding decimals, and subtracting decimals.</p> <p><b>Indicators</b></p> <p>4-2.11 Represent improper fractions, mixed numbers, and decimals.</p> <p>4-2.12 Generate strategies to add and subtract decimals through hundredths.</p> <p><b>Standard 4-5 (Measurement):</b> The student will demonstrate through the mathematical processes an understanding of elapsed time; conversions within the U.S. Customary System; and accurate, efficient, and generalizable methods of determining area.</p> <p><b>Indicators</b></p> <p>4-5.7 Use Celsius and Fahrenheit thermometers to determine temperature changes during time intervals.</p>

**Notes:**

Vertical Connections	Cross Curricular Connections
<p><b>Grade 5</b>  <b>Standard 5-3 (Algebra):</b>  The student will demonstrate through the mathematical processes an understanding of the use of patterns, relations, functions models, structures, and algebraic symbols to represent quantitative relationships and will analyze change in various contexts.  <b>Indicators</b>  5-3.1 Represent numeric, algebraic, and geometric patterns in words, symbols, algebraic expressions, and algebraic equations.  5-3.2 Analyze patterns and functions with words, tables, and graphs.  5-3.3 Match tables, graphs, expressions, equations, and verbal descriptions of the same problem situation.  5-3.5 Analyze situations that show change over time.</p> <p><b>Grade 6</b>  <b>Standard 6-3 (Algebra):</b>  The student will demonstrate through the mathematical processes an understanding of writing, interpreting, and using mathematical expressions, equations, and inequalities.  <b>Indicators</b>  6-3.1 Analyze numeric and algebraic patterns and pattern relationships.  6-3.3 Represent algebraic relationships with variables in expressions, simple equations, and simple inequalities.</p> <p><b>Grade 7</b>  <b>Standard 7-3 (Algebra):</b>  The student will demonstrate through the mathematical processes an understanding of proportional relationships.  <b>Indicators</b>  7-3.1 Analyze geometric patterns and pattern relationships.  7-3.2 Analyze tables and graphs to describe the rate of change between and among quantities.  7-3.3 Understand slope as a constant rate of change.</p>	<p><b>Language Arts</b>  <b>Standard 4-1(Reading):</b>  The student will read and comprehend a variety of literary texts in print and nonprint formats.  <b>Indicators</b>  4-1.1 Analyze literary texts to draw conclusions and make inferences.  4-1.6 Analyze the details that support the expression of the main idea in a given literary text.  4-1.8 Carry out independent reading for extended periods of time to derive pleasure.</p> <p><b>Standard 4-2 (Reading):</b>  The student will read and comprehend a variety of informational texts in print and nonprint formats.  <b>Indicators</b>  4-2.1 Summarize evidence that supports the central idea of a given informational text.  4-2.2 Analyze informational texts to draw conclusions and make inferences.  4-2.5 Carry out independent reading for extended periods of time to gain information.  4-2.7 Use graphic features such as illustrations, graphs, charts, maps, diagrams, and graphic organizers as sources of information.</p> <p><b>Standard 4-4 (Writing):</b>  The student will create written work that has a clear focus, sufficient detail, coherent organization, effective use of voice, and correct use of the conventions of written Standard American English.  <b>Indicators</b>  4-4.1 Use prewriting techniques to organize written works.  4-4.2 Use complete sentences in a variety of types (including simple and compound sentences) in writing.  4-4.6 Use revision strategies to improve word choice and the organization and development of ideas in written works.</p> <p><b>Science</b>  <b>Standard 4-1 (Scientific Inquiry):</b>  The student will demonstrate an understanding of scientific inquiry, including the processes, skills, and mathematical thinking necessary to conduct a simple scientific investigation.  <b>Indicators</b>  4-1.5 Recognize the correct placement of variables on a line graph.  4-1.6 Construct and interpret diagrams, tables, and graphs made from recorded measurements and observations.</p>

**Big Idea: Representations of numbers can be used to describe and learn about the world around us.**

**Subconcept: Basic concepts of probability can be applied to everyday experiences.**

**Lessons 19, 20, 21**

**Focus Question: In what way does a number line aid in describing probability?**

Process Standards	Content Standards	Horizontal Connections
<p><b>Mathematics</b>  <b>Standard 4-1 (Process):</b>            The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation.</p> <p><b>Indicators</b></p> <p>4-1.1 Analyze information to solve increasingly more sophisticated problems.</p> <p>4-1.2 Construct arguments that lead to conclusions about general mathematical properties and relationships.</p> <p>4-1.3 Explain and justify answers to problems on the basis of mathematical properties, structures, and relationships on mathematical properties, structures, and relationships.</p> <p>4-1.4 Generate descriptions and mathematical statements about relationships between and among classes of objects.</p> <p>4-1.5 Use correct, complete, and clearly written and oral mathematical language to pose questions, communicate ideas, and extend problem situations.</p> <p>4-1.6 Generalize connections between new mathematical ideas and related concepts and subjects that have been previously considered.</p> <p>4-1.7 Use flexibility in mathematical representations.</p> <p>4-1.8 Recognize the limitations of various forms of mathematical representations.</p>	<p><b>Mathematics</b>  <b>Standard 4-6: (Data Analysis and Probability)</b>            The student will demonstrate through the mathematical processes an understanding of the impact of data-collection methods, the appropriate graph for categorical or numerical data, and the analysis of possible outcomes for a simple event.</p> <p><b>Indicators</b></p> <p>4-6.1 Compare how data-collection methods impact survey results.</p> <p>4-6.6 Predict on the basis of data whether events are <i>likely</i>, <i>unlikely</i>, <i>certain</i>, <i>impossible</i>, or <i>equally likely</i> to occur.</p> <p>4-6.7 Analyze possible outcomes for a simple event.</p>	<p><b>Mathematics</b>  <b>Standard 4-2 (Number and Operations):</b>            The student will demonstrate through the mathematical processes an understanding of decimal notation as an extension of the place-value system; the relationships between fractions and decimals; the multiplication of whole numbers; and accurate, efficient, and generalizable methods of dividing whole numbers, adding decimals, and subtracting decimals.</p> <p><b>Indicators</b></p> <p>4-2.9 Compare the relative size of fractions to the benchmarks 0, <math>\frac{1}{2}</math>, and 1.</p> <p><b>Standard 4-3(Algebra):</b>            The student will demonstrate through the mathematical processes an understanding of numeric and nonnumeric patterns, the representation of simple mathematical relationships, and the application of procedures to find the value of an unknown.</p> <p><b>Indicators</b></p> <p>4-3.3 Use a rule to complete a sequence or a table.</p> <p>4-3.4 Translate among, letters, symbols, and words to represent quantities in simple mathematical expressions or equations.</p>

**Notes:**

Vertical Connections	Cross Curricular Connections
<p><b>Grade 5</b>  <b>Standard 5-6 (Data Analysis and Probability):</b>  The student will demonstrate through the mathematical processes an understanding of investigation design, the effect of data-collection methods on a data set, the interpretation and application of the measures of central tendency, and the application of basic concepts of probability.  <b>Indicators</b>  5-6.1 Design a mathematical investigation to address a question.  5-6.2 Analyze how data-collection methods affect the nature of the data set.  5-6.5 Represent the probability of a single-stage event in words and fractions.  5-6.6 Conclude why the sum of the probabilities of the outcomes of an experiment must equal 1.</p> <p><b>Grade 6</b>  <b>Standard 6-6 (Data Analysis and Probability):</b>  The student will demonstrate through the mathematical processes an understanding of the relationships within one population or sample.  <b>Indicators</b>  6-6.4 Use theoretical probability to determine the sample space and probability for one- and two-stage events such as tree diagrams, models, lists, charts, and pictures.  6-6.5 Apply procedures to calculate the probability of complementary events.</p> <p><b>Grade 7</b>  <b>Standard 7-6 (Data Analysis and Probability):</b>  The student will demonstrate through the mathematical processes an understanding of the relationships between two populations or samples.  <b>Indicators</b>  7-6.5 Apply procedures to calculate the probability of mutually exclusive simple or compound events.  7-6.6 Interpret the probability of mutually exclusive simple or compound events.  7-6.7 Differentiate between experimental and theoretical probability of the same event.  7-6.8 Use the fundamental counting principle to determine the number of possible outcomes for a multistage event.</p>	<p><b>Language Arts</b>  <b>Standard 4-4 (Writing):</b>  The student will create written work that has a clear focus, sufficient detail, coherent organization, effective use of voice, and correct use of the conventions of written Standard American English.  <b>Indicators</b>  4-4.1 Use prewriting techniques to organize written works.  4-4.2 Use complete sentences in a variety of types (including simple and compound sentences) in writing.  4-4.6 Use revision strategies to improve word choice and the organization and development of ideas in written works.</p> <p><b>Science</b>  <b>Standard 4-1 (Scientific Inquiry):</b>  The student will demonstrate an understanding of scientific inquiry, including the processes, skills, and mathematical thinking necessary to conduct a simple scientific investigation.  <b>Indicators</b>  4-1.3 Summarize the characteristics of a simple scientific investigation that represent a fair test (including a question that identifies the problem, a prediction that indicates a possible outcome, a process that tests one manipulated variable at a time, and results that are communicated and explained).  4-1.5 Recognize the correct placement of variables on a line graph.  4-1.6 Construct and interpret diagrams, tables, and graphs made from recorded measurements and observations.</p>

**Notes:**

**Big Idea: Representations of numbers can be used to describe and learn about the world around us.**

**Subconcept: Situations that occur in everyday life can be modeled mathematically.**

**Lessons 22, 23, 24**

**Focus Question: What are examples of everyday use of mathematics?**

<b>Process Standards</b>	<b>Content Standards</b>	<b>Horizontal Connections</b>
<p><b>Mathematics</b>  <b>Standard 4-1 (Process):</b>            The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation.</p> <p><b>Indicators</b></p> <p>4-1.1 Analyze information to solve increasingly more sophisticated problems.</p> <p>4-1.2 Construct arguments that lead to conclusions about general mathematical properties and relationships.</p> <p>4-1.3 Explain and justify answers to problems on the basis of mathematical properties, structures, and relationships on mathematical properties, structures, and relationships.</p> <p>4-1.4 Generate descriptions and mathematical statements about relationships between and among classes of objects.</p> <p>4-1.5 Use correct, complete, and clearly written and oral mathematical language to pose questions, communicate ideas, and extend problem situations.</p> <p>4-1.6 Generalize connections between new mathematical ideas and related concepts and subjects that have been previously considered.</p> <p>4-1.7 Use flexibility in mathematical representations.</p> <p>4-1.8 Recognize the limitations of various forms of mathematical representations.</p>	<p><b>Mathematics</b>  <b>Standard 4-6: (Data Analysis and Probability)</b>            The student will demonstrate through the mathematical processes an understanding of the impact of data-collection methods, the appropriate graph for categorical or numerical data, and the analysis of possible outcomes for a simple event.</p> <p><b>Indicators</b></p> <p>4-6.1 Compare how data-collection methods impact survey results.</p> <p>4-6.7 Analyze possible outcomes for a simple event.</p>	<p><b>Mathematics</b>  <b>Standard 4-4 (Geometry):</b>            The student will demonstrate through the mathematical processes an understanding of the relationship between two- and three-dimensional shapes, the use of transformations to determine congruency, and the representation of location and movement within the first quadrant of a coordinate system.</p> <p><b>Indicators</b></p> <p>4-4.1 Analyze the quadrilaterals squares, rectangles, trapezoids, rhombuses, and parallelograms according to their properties.</p> <p>4-4.7 Represent with ordered pairs of whole numbers the location of points in the first quadrant of a coordinate grid.</p> <p>4-4.8 Illustrate possible paths from one point to another along vertical and horizontal grid lines in the first quadrant of the coordinate plane.</p>

**Notes:**

Vertical Connections	Cross Curricular Connections
<p><b>Grade 5</b>  <b>Standard 5-6 (Data Analysis and Probability):</b>  The student will demonstrate through the mathematical processes an understanding of investigation design, the effect of data-collection methods on a data set, the interpretation and application of the measures of central tendency, and the application of basic concepts of probability.  <b>Indicators</b>  5-6.1 Design a mathematical investigation to address a question.  5-6.2 Analyze how data-collection methods affect the nature of the data set.  5-6.5 Represent the probability of a single-stage event in words and fractions.  5-6.6 Conclude why the sum of the probabilities of the outcomes of an experiment must equal 1.</p> <p><b>Grade 6</b>  <b>Standard 6-6 (Data Analysis and Probability):</b>  The student will demonstrate through the mathematical processes an understanding of the relationships within one population or sample.  <b>Indicators</b>  6-6.4 Use theoretical probability to determine the sample space and probability for one- and two-stage events such as tree diagrams, models, lists, charts, and pictures.  6-6.5 Apply procedures to calculate the probability of complementary events.</p> <p><b>Grade 7</b>  <b>Standard 7-6 (Data Analysis and Probability):</b>  The student will demonstrate through the mathematical processes an understanding of the relationships between two populations or samples.  <b>Indicators</b>  7-6.5 Apply procedures to calculate the probability of mutually exclusive simple or compound events.  7-6.6 Interpret the probability of mutually exclusive simple or compound events.  7-6.7 Differentiate between experimental and theoretical probability of the same event.  7-6.8 Use the fundamental counting principle to determine the number of possible outcomes for a multistage event.</p>	<p><b>Language Arts</b>  <b>Standard 4-4 (Writing):</b>  The student will create written work that has a clear focus, sufficient detail, coherent organization, effective use of voice, and correct use of the conventions of written Standard American English.  <b>Indicators</b>  4-4.1 Use prewriting techniques to organize written works.  4-4.2 Use complete sentences in a variety of types (including simple and compound sentences) in writing.  4-4.6 Use revision strategies to improve word choice and the organization and development of ideas in written works.</p> <p><b>Science</b>  <b>Standard 4-1 (Scientific Inquiry):</b>  The student will demonstrate an understanding of scientific inquiry, including the processes, skills, and mathematical thinking necessary to conduct a simple scientific investigation.  <b>Indicators</b>  4-1.3 Summarize the characteristics of a simple scientific investigation that represent a fair test (including a question that identifies the problem, a prediction that indicates a possible outcome, a process that tests one manipulated variable at a time, and results that are communicated and explained).  4-1.5 Recognize the correct placement of variables on a line graph.  4-1.6 Construct and interpret diagrams, tables, and graphs made from recorded measurements and observations.</p>

