

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

**Grade Four
Developing Number Concepts: Stories and Statements
Module A**

Place value of numbers through the billions is analyzed and described. Properties of numbers are applied to addition and subtraction. Algorithms for operations on whole numbers are analyzed for efficiency and reasonableness. Estimates are made and revised. A variety of manipulatives including fact cards and base-10 sets are included in the kit. A Student Record Book supports the lessons.

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

Send email to 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: Fact families can be analyzed for patterns using a variety of representations.

Lessons 1, 2, 3, 4, 5, 6, 7

Focus Question: In what ways do patterns aid in solving problems?

Process Standards	Content Standards	Horizontal Connections
<p>Mathematics Standard 4-1 (Process): The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation.</p> <p>Indicators</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>Mathematics Standard 4-3 (Algebra): 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>Indicators</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>4-3.4 Translate among, letters, symbols, and words to represent quantities in simple mathematical expressions or equations.</p> <p>4-3.5 Apply procedures to find the value of an unknown letter or symbol in a whole-number equation.</p>	<p>Mathematics Standard 4-2 (Number and Operations): 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>Indicators</p> <p>4-2.3 Apply an algorithm to multiply whole numbers fluently.</p> <p>4-2.4 Explain the effect on the product when one of the factors is changed.</p>

Notes:

Vertical Connections	Cross Curricular Connections
<p>Grade 5 Standard 5-3 (Algebra): 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.</p> <p>Indicators</p> <p>5-3.1 Represent numeric, algebraic, and geometric patterns in words, symbols, algebraic expressions, and algebraic equations.</p> <p>5-3.4 Identify applications of commutative, associative, and distributive properties with whole numbers.</p> <p>Grade 6 Standard 6-3 (Algebra): The student will demonstrate through the mathematical processes an understanding of writing, interpreting, and using mathematical expressions, equations, and inequalities.</p> <p>Indicators</p> <p>6-3.2 Apply order of operations to simplify whole-number expressions.</p> <p>6-3.3 Represent algebraic relationships with variables in expressions, simple equations, and simple inequalities.</p> <p>6-3.4 Use the commutative, associative, and distributive properties to show that two expressions are equivalent.</p> <p>6-3.5 Use inverse operations to solve one-step equations that have whole-number solutions and variables with whole-number coefficients.</p> <p>Grade 7 Standard 7-3 (Algebra): The student will demonstrate through the mathematical processes an understanding of proportional relationships.</p> <p>Indicators</p> <p>7-3.4 Use inverse operations to solve two-step equations and two-step inequalities.</p> <p>7-3.5 Represent on a number line the solution of a two-step inequality.</p>	<p>Language Arts Standard 4-4 (Writing): 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>Indicators</p> <p>4-4.1 Use prewriting techniques to organize written works.</p> <p>4-4.2 Use complete sentences in a variety of types (including simple and compound sentences) in writing.</p> <p>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: The base-10 number system and its place-value structure can be analyzed for patterns using a variety of representations.

Lessons 8, 9, 10, 11, 12

Focus Question: What patterns can be described in the base-10 number system?

Process Standards	Content Standards	Horizontal Connections
<p>Mathematics Standard 4-1 (Process): The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation.</p> <p>Indicators</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>Mathematics Standard 4-2 (Numbers and Operations): 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>Indicators</p> <p>4-2.1 Recognize the period in the place-value structure of whole numbers: units, thousands, millions, and billions.</p> <p>4-2.6 Analyze the magnitude of digits through hundredths on the basis of their place value.</p>	<p>Mathematics Standard 4-3 (Algebra): 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>Indicators</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>Grade 5 Standard 5-2 (Numbers and Operations): 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>Indicators</p> <p>5-2.1 Analyze the magnitude of a digit on the basis of its place value, using whole numbers and decimal numbers through thousandths.</p> <p>5-2.4 Compare whole numbers, decimals, and fractions by using the symbols $<$, $>$, and $=$.</p> <p>Grade 6 Standard 6-2 (Numbers and Operations): 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>Indicators</p> <p>6-2.2 Understand integers.</p> <p>6-2.3 Compare rational numbers and whole-number percentages through 100 by using the symbols \leq, \geq, $<$, $>$, and $=$.</p> <p>6-2.7 Apply strategies and procedures to determine values of powers of 10, up to 10^6.</p> <p>6-2.8 Represent the prime factorization of numbers by using exponents.</p> <p>6-2.9 Represent whole numbers in exponential form.</p> <p>Grade 7 Standard 7-2 (Numbers and Operations): 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>Indicators</p> <p>7-2.3 Compare rational numbers, percentages, and square roots of perfect squares by using the symbols \leq, \geq, $<$, $>$, and $=$.</p> <p>7-2.6 Translate between standard form and exponential form.</p> <p>7-2.7 Translate between standard form and scientific</p>	<p>Language Arts Standard 4-4 (Writing): 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>Indicators</p> <p>4-4.1 Use prewriting techniques to organize written works.</p> <p>4-4.2 Use complete sentences in a variety of types (including simple and compound sentences) in writing.</p> <p>4-4.6 Use revision strategies to improve word choice and the organization and development of ideas in written works.</p>



notation.

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

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

Lessons 13, 14, 15, 16, 17, 18

Focus Question: In what ways can place-value patterns be used to solve addition and subtraction problems?

Process Standards	Content Standards	Horizontal Connections
<p>Mathematics Standard 4-1 (Process): The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation.</p> <p>Indicators</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>Mathematics Standard 4-2 (Numbers and Operations): 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>Indicators</p> <p>4-2.1 Recognize the period in the place-value structure of whole numbers: units, thousands, millions, and billions.</p> <p>4-2.6 Analyze the magnitude of digits through hundredths on the basis of their place value.</p>	<p>Mathematics Standard 4-3 (Algebra): 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>Indicators</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>

Notes:



Vertical Connections	Cross Curricular Connections
<p>Grade 5 Standard 5-2 (Number and Operations): 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>Indicators</p> <p>5-2.1 Analyze the magnitude of a digit on the basis of its place value, using whole numbers and decimal numbers through thousandths.</p> <p>5-2.5 Apply an algorithm to add and subtract decimals through thousandths.</p> <p>5-2.8 Generate strategies to add and subtract fractions with like and unlike denominators.</p> <p>Grade 6 Standard 6-2 (Numbers and Operations): 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>Indicators</p> <p>6-2.2 Understand integers.</p> <p>6-2.4 Apply an algorithm to add and subtract fractions.</p> <p>6-2.5 Generate strategies to multiply and divide fractions and decimals.</p> <p>Grade 7 Standard 7-2 (Numbers and Operations): 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>Indicators</p> <p>7-2.3 Compare rational numbers, percentages, and square roots of perfect squares by using the symbols \leq, \geq, $<$, $>$, and $=$.</p> <p>7-2.8 Generate strategies to add, subtract, multiply, and divide integers.</p>	<p>Language Arts Standard 4-2 (Reading): The student will read and comprehend a variety of informational texts in print and nonprint formats.</p> <p>Indicators</p> <p>4-2.1 Summarize evidence that supports the central idea of a given informational text.</p> <p>4-2.2 Analyze informational texts to draw conclusions and make inferences.</p> <p>4-2.3 Analyze informational texts to locate and identify facts and opinions.</p> <p>4-2.5 Carry out independent reading for extended periods of time to gain information.</p> <p>4-2.6 Understand that headings, subheadings, print styles, white space, captions, and chapter headings provide information to the reader.</p> <p>4-2.7 Use graphic features such as illustrations, graphs, charts, maps, diagrams, and graphic organizers as sources of information.</p> <p>4-2.8 Use functional text features (including tables of contents, glossaries, indexes, and appendixes).</p> <p>Standard 4-4 (Writing): 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>Indicators</p> <p>4-4.1 Use prewriting techniques to organize written works.</p> <p>4-4.2 Use complete sentences in a variety of types (including simple and compound sentences) in writing.</p> <p>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 multiplication and division can be developed by constructing a variety of models and strategies.

Lessons 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30

Focus Question: In what ways can place-value patterns be used to solve addition and subtraction problems?

Process Standards	Content Standards	Horizontal Connections
<p>Mathematics Standard 4-1 (Process): The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation.</p> <p>Indicators</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>Mathematics Standard 4-2 (Numbers and Operations): 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>Indicators</p> <p>4-2.1 Recognize the period in the place-value structure of whole numbers: units, thousands, millions, and billions.</p> <p>4-2.2 Apply divisibility rules for 2, 5, and 10.</p> <p>4-2.3 Apply an algorithm to multiply whole numbers fluently.</p> <p>4-2.4 Explain the effect on the product when one of the factors is changed.</p> <p>4-2.5 Generate strategies to divide whole numbers by single-digit divisors.</p> <p>4-2.6 Analyze the magnitude of digits through hundredths on the basis of their place value.</p>	<p>Standard 4-3 (Algebra): 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>Indicators</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>Standard 4-5 (Measurement): 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>Indicators</p> <p>4-5.6 Apply strategies and procedures to determine the amount of elapsed time in hours and minutes within a 12-hour period, either a.m. or p.m.</p>

Vertical Connections	Cross Curricular Connections
<p>Grade 5 Standard 5-2 (Numbers and Operations): 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. Indicators 5-2.2 Apply an algorithm to divide whole numbers fluently. 5-2.3 Understand the relationship among the divisor, dividend, and quotient. 5-2.9 Apply divisibility rules for 3, 6, and 9.</p> <p>Grade 6 Standard 6-2 (Numbers and Operations): 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. Indicators 6-2.2 Understand integers. 6-2.5 Generate strategies to multiply and divide fractions and decimals. 6-2.6 Understand the relationship between ratio/rate and multiplication/division. 6-2.8 Represent the prime factorization of numbers by using exponents.</p> <p>Grade 7 Standard 7-2 (Numbers and Operations): 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. Indicators 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 \leq, \geq, $<$, $>$, and $=$. 7-2.8 Generate strategies to add, subtract, multiply, and divide integers. 7-2.9 Apply an algorithm to multiply and divide fractions and decimals.</p>	<p>Language Arts Standard 4-2 (Reading): The student will read and comprehend a variety of informational texts in print and nonprint formats. Indicators 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. 4-2.7 Use graphic features such as illustrations, graphs, charts, maps, diagrams, and graphic organizers as sources of information.</p> <p>Standard 4-4 (Writing): 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. Indicators 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>

