

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

**Grade Three
Developing Algebraic Thinking: Plotting and Growing**

Both repeating and growing patterns are explored. Multiplication fact arrays is one example of a growing pattern explored in this module. Other growing patterns are displayed with manipulatives and tables. A Function Generator Kit is used to determine rules and to find missing numbers in input/output tables. A fair test is set up for collecting data about a flower bulb. Tally tables, line (dot) plots, bar graphs, and line graphs are used to display collected data. Range, mode, and median are used to analyze data. A Plant Log is used to record and analyze data.

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: Data can be collected about the world around us.

Subconcept: A fair test is needed for data collection.

Lessons 1, 2

Focus Question: What strategies can be used to choose a beneficial data display?

Process Standards	Content Standards	Horizontal Connections
<p>Mathematics Standard 3-1 (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>3-1.1 Analyze information to solve increasingly more sophisticated problems.</p> <p>3-1.2 Construct arguments that lead to conclusions about general mathematical properties and relationships.</p> <p>3-1.3 Explain and justify answers on the basis of mathematical properties, structures, and relationships.</p> <p>3-1.4 Generate descriptions and mathematical statements about relationships between and among classes of objects.</p> <p>3-1.5 Use correct, complete, and clearly written and oral mathematical language to pose questions, communicate ideas, and extend problem situations.</p> <p>3-1.6 Generalize connections between new mathematical ideas and related concepts and subjects that have been previously considered.</p> <p>3-1.7 Use flexibility in mathematical representations.</p> <p>3-1.8 Recognize the limitations of various forms of mathematical representations.</p>	<p>Mathematics Standard 3-6 (Data Analysis and Probability): The student will demonstrate through the mathematical processes an understanding of organizing, interpreting, analyzing and making predictions about data, the benefits of multiple representations of a data set, and the basic concepts of probability.</p> <p>Indicators</p> <p>3-6.2 Organize data in tables, bar graphs, and dot plots.</p> <p>3-6.3 Interpret data in tables, bar graphs, pictographs, and dot plots.</p> <p>3-6.5 Compare the benefits of using tables, bar graphs, and dot plots as representations of a given data set.</p>	<p>Mathematics Standard 3-5 (Measurement): The student will demonstrate through the mathematical processes an understanding of length, time, weight, and liquid volume measurements; the relationships between systems of measure; accurate, efficient, and generalizable methods of determining the perimeters of polygon; and the values and combinations of coins required to make change.</p> <p>Indicators</p> <p>3-5.2 Use appropriate tools to measure objects to the nearest unit: measuring length in meters and half inches; measuring liquid volume in fluid ounces, pints, and liters; and measuring mass in grams.</p> <p>3-5.4 Use common referents to make comparisons and estimates associated with length, liquid volume, and mass and weight: meters compared to yards, kilometers to miles, liters to quarts, and kilograms to pounds.</p>

Notes:

Vertical Connections	Cross Curricular Connections
<p>Grade 4 Standard 4-6 (Data Analysis and Probability): 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>Indicators</p> <p>4-6.1 Compare how data-collection methods impact survey results.</p> <p>4-6.2 Interpret data in tables, line graphs, bar graphs, and double bar graphs whose scale increments are greater than or equal to 1.</p> <p>4-6.3 Organize data in tables, line graphs, and bar graphs whose scale increments are greater than or equal to 1.</p> <p>4-6.4 Distinguish between categorical and numerical data.</p> <p>4-6.5 Match categorical and numerical data to appropriate graphs.</p> <p>Grade 5 Standard 5-6 (Data Analysis and Probability): 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.</p> <p>Indicators</p> <p>5-6.1 Design a mathematical investigation to address a question.</p> <p>5-6.2 Analyze how data-collection methods affect the nature of the data set.</p> <p>Grade 6 Standard 6-6 (Data Analysis and Probability): The student will demonstrate through the mathematical processes an understanding of the relationships within one population or sample.</p> <p>Indicators</p> <p>6-6.1 Predict the characteristics of one population based on the analysis of sample data.</p> <p>6-6.2 Organize data in frequency tables, histograms, or stem-and-leaf plots as appropriate.</p> <p>6-6.3 Analyze which measure of central tendency (mean, median, or mode) is the most appropriate for a given purpose.</p>	<p>Language Arts Standard 3-2 (Reading): The student will read and comprehend a variety of informational texts in print and nonprint formats.</p> <p>Indicators</p> <p>3-2.1 Summarize evidence that supports the central idea of a given informational text.</p> <p>3-2.2 Analyze informational texts to draw conclusions and make inferences.</p> <p>3-2.5 Carry out independent reading for extended periods of time to gain information.</p> <p>3-2.7 Use graphic features such as illustrations, graphs, charts, maps, diagrams, and graphic organizers as sources of information.</p> <p>Standard 3-4 (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>3-4.1 Use prewriting techniques such as creating lists, having discussions, using graphic organizers, and using literary models to organize written works.</p> <p>3-4.6 Use revision strategies to improve word choice and the logical progression of ideas in written works.</p> <p>Science Standard 3-1 (Scientific Inquiry): The student will demonstrate an understanding of scientific inquiry, including the processes, skills, and mathematical thinking necessary to conduct a simple scientific investigation.</p> <p>Indicators</p> <p>3-1.1 Classify objects by two of their properties (attributes).</p> <p>3-1.2 Classify objects or events in sequential order.</p> <p>3-1.3 Generate questions such as “what if?” or “how?” about objects, organisms, and events in the environment and use those questions to conduct a simple scientific investigation.</p> <p>3-1.4 Predict the outcome of a simple investigation and compare the result with the prediction.</p> <p>3-1.5 Use tools (including beakers, meter tapes and sticks, forceps/tweezers, tuning forks, graduated cylinders, and graduated syringes) safely, accurately, and appropriately when gathering specific data.</p> <p>3-1.6 Infer meaning from data communicated in graphs, tables, and diagrams.</p> <p>3-1.7 Explain why similar investigations might produce different results.</p> <p>3-1.8 Use appropriate safety procedures when conducting investigations.</p>



Big Idea: Patterns are in the world around us.

Subconcept: Repeating patterns can be described, analyzed, and extended.

Lessons 3, 4, 5

Focus Question: What strategies can be used to determine rules for pattern?

Process Standards	Content Standards	Horizontal Connections
<p>Mathematics Standard 3-1 (Process): The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation. Indicators 3-1.1 Analyze information to solve increasingly more sophisticated problems. 3-1.2 Construct arguments that lead to conclusions about general mathematical properties and relationships. 3-1.3 Explain and justify answers on the basis of mathematical properties, structures, and relationships. 3-1.4 Generate descriptions and mathematical statements about relationships between and among classes of objects. 3-1.5 Use correct, complete, and clearly written and oral mathematical language to pose questions, communicate ideas, and extend problem situations. 3-1.6 Generalize connections between new mathematical ideas and related concepts and subjects that have been previously considered. 3-1.7 Use flexibility in mathematical representations. 3-1.8 Recognize the limitations of various forms of mathematical representations.</p>	<p>Mathematics Standard 3-3 (Algebra): The student will demonstrate through the mathematical processes an understanding of numeric patterns, symbols as representations of unknown quantity, and situations showing increase over time. Indicators 3-3.1 Create numeric patterns that involve whole-number operations. 3-3.2 Apply procedures to find missing numbers in numeric patterns that involve whole-number operations.</p>	<p>Mathematics Standard 3-2 (Numbers and Operations): The student will demonstrate through the mathematical processes an understanding of the representation of whole numbers and fractional parts; the addition and subtraction of whole numbers; accurate, efficient, and generalizable methods of multiplying whole numbers; and the relationships among multiplication, division, and related basic facts. Indicators 3-2.9 Analyze the effect that adding, subtracting, or multiplying odd and/or even numbers has on the outcome.</p>

Notes:

Vertical Connections	Cross Curricular Connections
<p>Grade 4 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>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>5-3.2 Analyze patterns and functions with words, tables, and graphs.</p> <p>5-3.3 Match tables, graphs, expressions, equations, and verbal descriptions of the same problem situation.</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>6-3.1 Analyze numeric and algebraic patterns and pattern relationships.</p>	<p>Language Arts Standard 3-1 (Reading): The student will read and comprehend a variety of literary texts in print and nonprint formats.</p> <p>Indicators</p> <p>3-1.8 Carry out independent reading for extended periods of time to derive pleasure.</p> <p>3-1.10 Understand the characteristics of poetry (including stanzas, rhyme, and the use of repetition).</p> <p>Standard 3-2 (Reading): The student will read and comprehend a variety of informational texts in print and nonprint formats.</p> <p>Indicators</p> <p>3-2.1 Summarize evidence that supports the central idea of a given informational text.</p> <p>3-2.2 Analyze informational texts to draw conclusions and make inferences.</p> <p>3-2.5 Carry out independent reading for extended periods of time to gain information.</p> <p>3-2.7 Use graphic features such as illustrations, graphs, charts, maps, diagrams, and graphic organizers as sources of information.</p> <p>Standard 3-4 (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>3-4.1 Use prewriting techniques such as creating lists, having discussions, using graphic organizers, and using literary models to organize written works.</p> <p>3-4.6 Use revision strategies to improve word choice and the logical progression of ideas in written works.</p>

Notes:

Big Idea: Patterns are in the world around us.

Subconcept: Growing patterns can be described, analyzed, and extended.

Lessons 6, 7, 8

Focus Question: What patterns can be observed in multiplication tables?

Process Standards	Content Standards	Horizontal Connections
<p>Mathematics Standard 3-1 (Process): The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation. Indicators 3-1.1 Analyze information to solve increasingly more sophisticated problems. 3-1.2 Construct arguments that lead to conclusions about general mathematical properties and relationships. 3-1.3 Explain and justify answers on the basis of mathematical properties, structures, and relationships. 3-1.4 Generate descriptions and mathematical statements about relationships between and among classes of objects. 3-1.5 Use correct, complete, and clearly written and oral mathematical language to pose questions, communicate ideas, and extend problem situations. 3-1.6 Generalize connections between new mathematical ideas and related concepts and subjects that have been previously considered. 3-1.7 Use flexibility in mathematical representations. 3-1.8 Recognize the limitations of various forms of mathematical representations.</p>	<p>Mathematics Standard 3-3 (Algebra): The student will demonstrate through the mathematical processes an understanding of numeric patterns, symbols as representations of unknown quantity, and situations showing increase over time. Indicators 3-3.1 Create numeric patterns that involve whole-number operations. 3-3.2 Apply procedures to find missing numbers in numeric patterns that involve whole-number operations. 3-3.3 Use symbols to represent an unknown quantity in a simple addition, subtraction, or multiplication equation. 3-3.4 Illustrate situations that show change over time as increasing.</p>	<p>Mathematics Standard 3-2 (Numbers and Operations): The student will demonstrate through the mathematical processes an understanding of the representation of whole numbers and fractional parts; the addition and subtraction of whole numbers; accurate, efficient, and generalizable methods of multiplying whole numbers; and the relationships among multiplication, division, and related basic facts. Indicators 3-2.7 Recall basic multiplication facts through 12 x 12 and the corresponding division facts.</p> <p>Standard 3-6: (Data Analysis and Probability): The student will demonstrate through the mathematical processes an understanding of organizing, interpreting, analyzing and making predictions about data, the benefits of multiple representations of a data set, and the basic concepts of probability. Indicators 3-6.2 Organize data in tables, bar graphs, and dot plots. 3-6.3 Interpret data in tables, bar graphs, pictographs, and dot plots.</p>

Notes:



Vertical Connections	Cross Curricular Connections
<p>Grade 4 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. Indicators 4-3.1 Analyze numeric, nonnumeric, and repeating patterns involving all operations and decimal patterns through hundredths. 4-3.2 Generalize a rule for numeric, nonnumeric, and repeating patterns involving all operations. 4-3.3 Use a rule to complete a sequence or a table.</p> <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. Indicators 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.</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. Indicators 6-3.1 Analyze numeric and algebraic patterns and pattern relationships.</p>	<p>Language Arts Standard 3-1 (Reading): The student will read and comprehend a variety of literary texts in print and nonprint formats. Indicators 3-1.8 Carry out independent reading for extended periods of time to derive pleasure. 3-1.10 Understand the characteristics of poetry (including stanzas, rhyme, and the use of repetition).</p> <p>Standard 3-4 (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 3-4.1 Use prewriting techniques such as creating lists, having discussions, using graphic organizers, and using literary models to organize written works. 3-4.3 Create paragraphs that include a topic sentence with supporting details and logical transitions. 3-4.6 Use revision strategies to improve word choice and the logical progression of ideas in written works.</p>

Notes:

Big Idea: Patterns are in the world around us.

Subconcept: Relationships can be analyzed to determine rules.

Lessons 9, 10, 11, 12

Focus Question: What strategies can be used to determine missing numbers in patterns?

Process Standards	Content Standards	Horizontal Connections
<p>Mathematics Standard 3-1 (Process): The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation. Indicators 3-1.1 Analyze information to solve increasingly more sophisticated problems. 3-1.2 Construct arguments that lead to conclusions about general mathematical properties and relationships. 3-1.3 Explain and justify answers on the basis of mathematical properties, structures, and relationships. 3-1.4 Generate descriptions and mathematical statements about relationships between and among classes of objects. 3-1.5 Use correct, complete, and clearly written and oral mathematical language to pose questions, communicate ideas, and extend problem situations. 3-1.6 Generalize connections between new mathematical ideas and related concepts and subjects that have been previously considered. 3-1.7 Use flexibility in mathematical representations. 3-1.8 Recognize the limitations of various forms of mathematical representations.</p>	<p>Mathematics Standard 3-3 (Algebra): The student will demonstrate through the mathematical processes an understanding of numeric patterns, symbols as representations of unknown quantity, and situations showing increase over time. Indicators 3-3.1 Create numeric patterns that involve whole-number operations. 3-3.2 Apply procedures to find missing numbers in numeric patterns that involve whole-number operations. 3-3.3 Use symbols to represent an unknown quantity in a simple addition, subtraction, or multiplication equation. 3-3.4 Illustrate situations that show change over time as increasing.</p>	<p>Mathematics Standard 3-2 (Number and Operations): The student will demonstrate through the mathematical processes an understanding of the representation of whole numbers and fractional parts; the addition and subtraction of whole numbers; accurate, efficient, and generalizable methods of multiplying whole numbers; and the relationships among multiplication, division, and related basic facts. Indicators 3-2.3 Apply an algorithm to add and subtract whole numbers fluently. 3-2.8 Compare the inverse relationship between multiplication and division. 3-2.9 Analyze the effect that adding, subtracting, or multiplying odd and/or even numbers has on the outcome. Standard 3-6: (Data Analysis and Probability): The student will demonstrate through the mathematical processes an understanding of organizing, interpreting, analyzing and making predictions about data, the benefits of multiple representations of a data set, and the basic concepts of probability. Indicators 3-6.2 Organize data in tables, bar graphs, and dot plots. 3-6.3 Interpret data in tables, bar graphs, pictographs, and dot plots.</p>

Notes:

Vertical Connections	Cross Curricular Connections
<p>Grade 4 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 4-3.1 Analyze numeric, nonnumeric, and repeating patterns involving all operations and decimal patterns through hundredths. 4-3.2 Generalize a rule for numeric, nonnumeric, and repeating patterns involving all operations. 4-3.3 Use a rule to complete a sequence or a table.</p> <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 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.</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 6-3.1 Analyze numeric and algebraic patterns and pattern relationships.</p>	<p>Language Arts Standard 3-1 (Reading): The student will read and comprehend a variety of literary texts in print and nonprint formats.</p> <p>Indicators 3-1.8 Carry out independent reading for extended periods of time to derive pleasure. 3-1.10 Understand the characteristics of poetry (including stanzas, rhyme, and the use of repetition).</p> <p>Standard 3-4 (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 3-4.1 Use prewriting techniques such as creating lists, having discussions, using graphic organizers, and using literary models to organize written works. 3-4.3 Create paragraphs that include a topic sentence with supporting details and logical transitions. 3-4.6 Use revision strategies to improve word choice and the logical progression of ideas in written works.</p> <p>Standard 3-6 (Researching): The student will access and use information from a variety of sources.</p> <p>Indicators 3-6.3 Organize information by classifying or sequencing. 3-6.6 Use vocabulary (including Standard American English) that is appropriate for the particular audience or purpose. 3-6.7 Use appropriate visual aids such as pictures, objects, and charts to support oral presentations.</p>

Notes:

Big Idea: Data can be collected about the world around us.

Subconcept: Data sets can be analyzed based on how they are centered.

Lessons 13, 14

Focus Question: What procedures can be used to determine the range of a data set?

Process Standards	Content Standards	Horizontal Connections
<p>Mathematics Standard 3-1 (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>3-1.1 Analyze information to solve increasingly more sophisticated problems.</p> <p>3-1.2 Construct arguments that lead to conclusions about general mathematical properties and relationships.</p> <p>3-1.3 Explain and justify answers on the basis of mathematical properties, structures, and relationships.</p> <p>3-1.4 Generate descriptions and mathematical statements about relationships between and among classes of objects.</p> <p>3-1.5 Use correct, complete, and clearly written and oral mathematical language to pose questions, communicate ideas, and extend problem situations.</p> <p>3-1.6 Generalize connections between new mathematical ideas and related concepts and subjects that have been previously considered.</p> <p>3-1.7 Use flexibility in mathematical representations.</p> <p>3-1.8 Recognize the limitations of various forms of mathematical representations.</p>	<p>Mathematics Standard 3-6 (Data Analysis and Probability): The student will demonstrate through the mathematical processes an understanding of organizing, interpreting, analyzing and making predictions about data, the benefits of multiple representations of a data set, and the basic concepts of probability.</p> <p>Indicators</p> <p>3-6.1 Apply a procedure to find the range of a data set.</p> <p>3-6.2 Organize data in tables, bar graphs, and dot plots.</p> <p>3-6.3 Interpret data in tables, bar graphs, pictographs, and dot plots.</p> <p>3-6.4 Analyze dot plots and bar graphs to make predictions about populations.</p> <p>3-6.5 Compare the benefits of using tables, bar graphs, and dot plots as representations of a given data set.</p>	<p>Mathematics Standard 3-5 (Measurement): The student will demonstrate through the mathematical processes an understanding of length, time, weight, and liquid volume measurements; the relationships between systems of measure; accurate, efficient, and generalizable methods of determining the perimeters of polygon; and the values and combinations of coins required to make change.</p> <p>Indicators</p> <p>3-5.2 Use appropriate tools to measure objects to the nearest unit: measuring length in meters and half inches; measuring liquid volume in fluid ounces, pints, and liters; and measuring mass in grams.</p> <p>3-5.4 Use common referents to make comparisons and estimates associated with length, liquid volume, and mass and weight: meters compared to yards, kilometers to miles, liters to quarts, and kilograms to pounds.</p>

Notes:



Vertical Connections	Cross Curricular Connections
<p>Grade 4 Standard 4-6 (Data Analysis and Probability): 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>Indicators</p> <p>4-6.1 Compare how data-collection methods impact survey results.</p> <p>4-6.2 Interpret data in tables, line graphs, bar graphs, and double bar graphs whose scale increments are greater than or equal to 1.</p> <p>4-6.3 Organize data in tables, line graphs, and bar graphs whose scale increments are greater than or equal to 1.</p> <p>4-6.4 Distinguish between categorical and numerical data.</p> <p>4-6.5 Match categorical and numerical data to appropriate graphs.</p> <p>Grade 5 Standard 5-6 (Data Analysis and Probability): 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.</p> <p>Indicators</p> <p>5-6.1 Design a mathematical investigation to address a question.</p> <p>5-6.2 Analyze how data-collection methods affect the nature of the data set.</p> <p>Grade 6 Standard 6-6 (Data Analysis and Probability): The student will demonstrate through the mathematical processes an understanding of the relationships within one population or sample.</p> <p>Indicators</p> <p>6-6.1 Predict the characteristics of one population based on the analysis of sample data.</p> <p>6-6.2 Organize data in frequency tables, histograms, or stem-and-leaf plots as appropriate.</p> <p>6-6.3 Analyze which measure of central tendency (mean, median, or mode) is the most appropriate for a given purpose.</p>	<p>Language Arts Standard 3-4 (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>3-4.1 Use prewriting techniques such as creating lists, having discussions, using graphic organizers, and using literary models to organize written works.</p> <p>3-4.3 Create paragraphs that include a topic sentence with supporting details and logical transitions.</p> <p>3-4.6 Use revision strategies to improve word choice and the logical progression of ideas in written works.</p> <p>Standard 3-6 (Researching): The student will access and use information from a variety of sources.</p> <p>Indicators</p> <p>3-6.3 Organize information by classifying or sequencing.</p> <p>3-6.6 Use vocabulary (including Standard American English) that is appropriate for the particular audience or purpose.</p> <p>3-6.7 Use appropriate visual aids such as pictures, objects, and charts to support oral presentations.</p> <p>Science Standard 3-1 (Scientific Inquiry): The student will demonstrate an understanding of scientific inquiry, including the processes, skills, and mathematical thinking necessary to conduct a simple scientific investigation.</p> <p>Indicators</p> <p>3-1.1 Classify objects by two of their properties (attributes).</p> <p>3-1.2 Classify objects or events in sequential order.</p> <p>3-1.3 Generate questions such as “what if?” or “how?” about objects, organisms, and events in the environment and use those questions to conduct a simple scientific investigation.</p> <p>3-1.4 Predict the outcome of a simple investigation and compare the result with the prediction.</p> <p>3-1.5 Use tools (including beakers, meter tapes and sticks, forceps/tweezers, tuning forks, graduated cylinders, and graduated syringes) safely, accurately, and appropriately when gathering specific data.</p> <p>3-1.6 Infer meaning from data communicated in graphs, tables, and diagrams.</p> <p>3-1.7 Explain why similar investigations might produce different results.</p> <p>3-1.8 Use appropriate safety procedures when conducting investigations.</p>



Big Idea: Data can be collected about the world around us.

Subconcept: Data can be analyzed and described.

Lessons 15, 16, 17

Focus Question: In what ways do different data displays impact the analysis of the data?

Process Standards	Content Standards	Horizontal Connections
<p>Mathematics Standard 3-1 (Process): The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation. Indicators 3-1.1 Analyze information to solve increasingly more sophisticated problems. 3-1.2 Construct arguments that lead to conclusions about general mathematical properties and relationships. 3-1.3 Explain and justify answers on the basis of mathematical properties, structures, and relationships. 3-1.4 Generate descriptions and mathematical statements about relationships between and among classes of objects. 3-1.5 Use correct, complete, and clearly written and oral mathematical language to pose questions, communicate ideas, and extend problem situations. 3-1.6 Generalize connections between new mathematical ideas and related concepts and subjects that have been previously considered. 3-1.7 Use flexibility in mathematical representations. 3-1.8 Recognize the limitations of various forms of mathematical representations.</p>	<p>Mathematics Standard 3-6 (Data Analysis and Probability): The student will demonstrate through the mathematical processes an understanding of organizing, interpreting, analyzing and making predictions about data, the benefits of multiple representations of a data set, and the basic concepts of probability. Indicators 3-6.1 Apply a procedure to find the range of a data set. 3-6.2 Organize data in tables, bar graphs, and dot plots. 3-6.3 Interpret data in tables, bar graphs, pictographs, and dot plots. 3-6.4 Analyze dot plots and bar graphs to make predictions about populations. 3-6.5 Compare the benefits of using tables, bar graphs, and dot plots as representations of a given data set.</p>	<p>Mathematics Standard 3-5 (Measurement): The student will demonstrate through the mathematical processes an understanding of length, time, weight, and liquid volume measurements; the relationships between systems of measure; accurate, efficient, and generalizable methods of determining the perimeters of polygon; and the values and combinations of coins required to make change. Indicators 3-5.2 Use appropriate tools to measure objects to the nearest unit: measuring length in meters and half inches; measuring liquid volume in fluid ounces, pints, and liters; and measuring mass in grams. 3-5.4 Use common referents to make comparisons and estimates associated with length, liquid volume, and mass and weight: meters compared to yards, kilometers to miles, liters to quarts, and kilograms to pounds.</p>

Notes:

Vertical Connections	Cross Curricular Connections
<p>Grade 4 Standard 4-6 (Data Analysis and Probability): 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>Indicators</p> <p>4-6.1 Compare how data-collection methods impact survey results.</p> <p>4-6.2 Interpret data in tables, line graphs, bar graphs, and double bar graphs whose scale increments are greater than or equal to 1.</p> <p>4-6.3 Organize data in tables, line graphs, and bar graphs whose scale increments are greater than or equal to 1.</p> <p>4-6.4 Distinguish between categorical and numerical data.</p> <p>4-6.5 Match categorical and numerical data to appropriate graphs.</p> <p>Grade 5 Standard 5-6 (Data Analysis and Probability): 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.</p> <p>Indicators</p> <p>5-6.1 Design a mathematical investigation to address a question.</p> <p>5-6.2 Analyze how data-collection methods affect the nature of the data set.</p> <p>5-6.3 Apply procedures to calculate the measures of central tendency (mean, median, and mode).</p> <p>5-6.4 Interpret the meaning and application of the measures of central tendency.</p> <p>Grade 6 Standard 6-6 (Data Analysis and Probability): The student will demonstrate through the mathematical processes an understanding of the relationships within one population or sample.</p> <p>Indicators</p> <p>6-6.1 Predict the characteristics of one population based on the analysis of sample data.</p> <p>6-6.2 Organize data in frequency tables, histograms, or stem-and-leaf plots as appropriate.</p> <p>6-6.3 Analyze which measure of central tendency (mean, median, or mode) is the most appropriate for a given purpose.</p>	<p>Language Arts Standard 3-2 (Reading): The student will read and comprehend a variety of informational texts in print and nonprint formats.</p> <p>Indicators</p> <p>3-2.2 Analyze informational texts to draw conclusions and make inferences.</p> <p>3-2.5 Carry out independent reading for extended periods of time to gain information.</p> <p>3-2.7 Use graphic features such as illustrations, graphs, charts, maps, diagrams, and graphic organizers as sources of information.</p> <p>Standard 3-4 (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>3-4.1 Use prewriting techniques such as creating lists, having discussions, using graphic organizers, and using literary models to organize written works.</p> <p>3-4.3 Create paragraphs that include a topic sentence with supporting details and logical transitions.</p> <p>3-4.6 Use revision strategies to improve word choice and the logical progression of ideas in written works.</p> <p>Science Standard 3-1 (Scientific Inquiry): The student will demonstrate an understanding of scientific inquiry, including the processes, skills, and mathematical thinking necessary to conduct a simple scientific investigation.</p> <p>Indicators</p> <p>3-1.1 Classify objects by two of their properties (attributes).</p> <p>3-1.2 Classify objects or events in sequential order.</p> <p>3-1.3 Generate questions such as “what if?” or “how?” about objects, organisms, and events in the environment and use those questions to conduct a simple scientific investigation.</p> <p>3-1.4 Predict the outcome of a simple investigation and compare the result with the prediction.</p> <p>3-1.5 Use tools (including beakers, meter tapes and sticks, forceps/tweezers, tuning forks, graduated cylinders, and graduated syringes) safely, accurately, and appropriately when gathering specific data.</p> <p>3-1.6 Infer meaning from data communicated in graphs, tables, and diagrams.</p> <p>3-1.7 Explain why similar investigations might produce different results.</p> <p>3-1.8 Use appropriate safety procedures when conducting investigations.</p>



Big Idea: Data can be collected about the world around us.

Subconcept: A story can be told about the data.

Lessons 18, 19, 20

Focus Question: What are the similarities and differences among tables, bar graphs, and dot plots?

Process Standards	Content Standards	Horizontal Connections
<p>Mathematics Standard 3-1 (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>3-1.1 Analyze information to solve increasingly more sophisticated problems.</p> <p>3-1.2 Construct arguments that lead to conclusions about general mathematical properties and relationships.</p> <p>3-1.3 Explain and justify answers on the basis of mathematical properties, structures, and relationships.</p> <p>3-1.4 Generate descriptions and mathematical statements about relationships between and among classes of objects.</p> <p>3-1.5 Use correct, complete, and clearly written and oral mathematical language to pose questions, communicate ideas, and extend problem situations.</p> <p>3-1.6 Generalize connections between new mathematical ideas and related concepts and subjects that have been previously considered.</p> <p>3-1.7 Use flexibility in mathematical representations.</p> <p>3-1.8 Recognize the limitations of various forms of mathematical representations.</p>	<p>Mathematics Standard 3-6 (Data Analysis and Probability): The student will demonstrate through the mathematical processes an understanding of organizing, interpreting, analyzing and making predictions about data, the benefits of multiple representations of a data set, and the basic concepts of probability.</p> <p>Indicators</p> <p>3-6.1 Apply a procedure to find the range of a data set.</p> <p>3-6.2 Organize data in tables, bar graphs, and dot plots.</p> <p>3-6.3 Interpret data in tables, bar graphs, pictographs, and dot plots.</p> <p>3-6.4 Analyze dot plots and bar graphs to make predictions about populations.</p> <p>3-6.5 Compare the benefits of using tables, bar graphs, and dot plots as representations of a given data set.</p>	<p>Mathematics Standard 3-5 (Measurement): The student will demonstrate through the mathematical processes an understanding of length, time, weight, and liquid volume measurements; the relationships between systems of measure; accurate, efficient, and generalizable methods of determining the perimeters of polygon; and the values and combinations of coins required to make change.</p> <p>Indicators</p> <p>3-5.2 Use appropriate tools to measure objects to the nearest unit: measuring length in meters and half inches; measuring liquid volume in fluid ounces, pints, and liters; and measuring mass in grams.</p> <p>3-5.4 Use common referents to make comparisons and estimates associated with length, liquid volume, and mass and weight: meters compared to yards, kilometers to miles, liters to quarts, and kilograms to pounds.</p> <p>Standard 3-3 (Algebra): The student will demonstrate through the mathematical processes an understanding of numeric patterns, symbols as representations of unknown quantity, and situations showing increase over time.</p> <p>Indicators</p> <p>3-3.4 Illustrate situations that show change over time as increasing.</p>

Notes:

Vertical Connections	Cross Curricular Connections
<p>Grade 4 Standard 4-6 (Data Analysis and Probability): 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>Indicators</p> <p>4-6.1 Compare how data-collection methods impact survey results.</p> <p>4-6.2 Interpret data in tables, line graphs, bar graphs, and double bar graphs whose scale increments are greater than or equal to 1.</p> <p>4-6.3 Organize data in tables, line graphs, and bar graphs whose scale increments are greater than or equal to 1.</p> <p>4-6.4 Distinguish between categorical and numerical data.</p> <p>4-6.5 Match categorical and numerical data to appropriate graphs.</p> <p>Grade 5 Standard 5-6 (Data Analysis and Probability): 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.</p> <p>Indicators</p> <p>5-6.1 Design a mathematical investigation to address a question.</p> <p>5-6.2 Analyze how data-collection methods affect the nature of the data set.</p> <p>5-6.3 Apply procedures to calculate the measures of central tendency (mean, median, and mode).</p> <p>5-6.4 Interpret the meaning and application of the measures of central tendency.</p> <p>Grade 6 Standard 6-6 (Data Analysis and Probability): The student will demonstrate through the mathematical processes an understanding of the relationships within one population or sample.</p> <p>Indicators</p> <p>6-6.1 Predict the characteristics of one population based on the analysis of sample data.</p> <p>6-6.2 Organize data in frequency tables, histograms, or stem-and-leaf plots as appropriate.</p> <p>6-6.3 Analyze which measure of central tendency (mean, median, or mode) is the most appropriate for a given purpose.</p>	<p>Language Arts Standard 3-4 (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>3-4.1 Use prewriting techniques such as creating lists, having discussions, using graphic organizers, and using literary models to organize written works.</p> <p>3-4.3 Create paragraphs that include a topic sentence with supporting details and logical transitions.</p> <p>3-4.6 Use revision strategies to improve word choice and the logical progression of ideas in written works.</p> <p>Science Standard 3-1 (Scientific Inquiry): The student will demonstrate an understanding of scientific inquiry, including the processes, skills, and mathematical thinking necessary to conduct a simple scientific investigation.</p> <p>Indicators</p> <p>3-1.1 Classify objects by two of their properties (attributes).</p> <p>3-1.2 Classify objects or events in sequential order.</p> <p>3-1.3 Generate questions such as “what if?” or “how?” about objects, organisms, and events in the environment and use those questions to conduct a simple scientific investigation.</p> <p>3-1.4 Predict the outcome of a simple investigation and compare the result with the prediction.</p> <p>3-1.5 Use tools (including beakers, meter tapes and sticks, forceps/tweezers, tuning forks, graduated cylinders, and graduated syringes) safely, accurately, and appropriately when gathering specific data.</p> <p>3-1.6 Infer meaning from data communicated in graphs, tables, and diagrams.</p> <p>3-1.7 Explain why similar investigations might produce different results.</p> <p>3-1.8 Use appropriate safety procedures when conducting investigations.</p>

