

Correlation to South Carolina Academic Standards Mathematics – 2007

First Grade Developing Geometric Logic: Symmetry and Shapes

In this module, students sort collections of prisms, pyramids, cylinders, cones, and spheres and share descriptions of three-dimensional objects. Students explore the building of three dimensional structures. Students sort two-dimensional shapes by attributes which they have chosen. Two dimensional shapes are identified from drawings and models. Students recognize and create shapes that have symmetry. Students follow directions to move from one position to another and explore their position in relation to objects. Maps, grids, and geometric patterns are explored. Writing is an integral part of 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: Geometry is a means to describe the physical world.

Subconcept: Three-dimensional shapes can be analyzed and described.

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

Focus Question: What attributes can be used to classify three-dimensional shapes?

Process Standards	Content Standards	Horizontal Connections
<p>Mathematics Standard 1-1 (Process): The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation. Indicators 1-1.1 Apply substantive mathematical problem-solving strategies. 1-1.2 Generate conjectures and exchange mathematical ideas. 1-1.3 Explain and justify answers to simple problems. 1-1.4 Analyze patterns by reasoning systematically. 1-1.5 Generalize mathematical concepts. 1-1.6 Use a variety of forms of mathematical communication. 1-1.7 Generalize connections among mathematics, the environment, and other subjects. 1-1.8 Use multiple informal representations to convey mathematical ideas.</p>	<p>Mathematics Standard 1-4 (Geometry): The student will demonstrate through the mathematical processes a sense of two- and three-dimensional geometric shapes, symmetry, and relative positions and directions in space. Indicators 1-4.1 Identify the three-dimensional geometric shapes prism, pyramid, and cone. 1-4.2 Analyze the two-dimensional shapes circle, square, triangle, and rectangle.</p>	<p>Mathematics Standard 1-6 (Data Analysis and Probability): The student will demonstrate through the mathematical processes a sense of collecting, organizing and interpreting data and of making predictions on the basis of data. Indicators 1-6.2 Organize data in picture graphs, object graphs, bar graphs, and tables. 1-6.3 Interpret data in picture graphs, object graphs, bar graphs, and tables by using the comparative terms more, less, greater, fewer, greater than, and less than.</p>

Notes:

Vertical Connections	Cross Curricular Connections
<p>Grade 2 Standard 2-4 (Geometry): The student will demonstrate through the mathematical processes an understanding of basic spatial reasoning and the connection between the identification of basic attributes and the classification of three-dimensional shapes. Indicators 2-4.1 Analyze the three-dimensional shapes spheres, cubes, cylinders, prisms, pyramids, and cones according to the number and shape of the faces, edges, corners, and bases of each.</p> <p>Grade 3 Standard 3-4 (Geometry): The student will demonstrate through the mathematical processes an understanding of the connection between the identification of basic attributes and the classification of two-dimensional shapes. Indicators 3-4.1 Identify the specific attributes of circles: center, radius, circumference, and diameter. 3-4.2 Classify polygons as either triangles, quadrilaterals, pentagons, hexagons, or octagons according to the number of their sides.</p> <p>Grade 4 Standard 4-4 (Geometry): 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. Indicators 4-4.2 Analyze the relationship between three-dimensional geometric shapes in the form of cubes, rectangular prisms, and cylinders and their two-dimensional nets. 4-4.4 Represent the two-dimensional shapes trapezoids, rhombuses, and parallelograms and the three-dimensional shapes cubes, rectangular prisms, and cylinders.</p>	<p>Language Arts Standard 1-1 (Reading): The student will read and comprehend a variety of literary texts in print and nonprint formats. Indicators 1-1.1 Use pictures and words to make and revise predictions about a given literary text. 1-1.7 Create responses to literary texts through a variety of methods such as writing, creative dramatics, and the visual and performing arts.</p> <p>Standard 1-2 (Reading): The student will read and comprehend a variety of informational texts in print and nonprint formats. Indicators 1-2.2 Analyze informational texts to draw conclusions and make inferences during classroom discussions. 1-2.8 Understand functional text features.</p> <p>Standard 1-4 (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 1-4.1 Generate ideas for writing by using techniques such as participating in conversations and looking at pictures. 1-4.2 Use simple sentences in writing. 1-4.5 Use proofreading skills to edit for the correct use of written Standard American English. 1-4.6 Use revision strategies to improve word choice in written work. 1-4.7 Use appropriate spacing between words. 1-4.8 Use appropriate work formation by writing from left to right the letters that spell a word.</p> <p>Standard 1-5 (Writing): The student will write for a variety of purposes and audiences. Indicators 1-5.2 Create narratives such as stories and journal entries about people, places, actions, or things. 1-5.3 Create written pieces that describe personal experiences, people, places, or things that use words that appear to the senses.</p> <p>Standard 1-6 (Researching): The student will access and use information from a variety of sources. Indicators 1-6.1 Generate how and why questions about a topic of interest.</p>



	<p>1-6.2 Use print sources of information such as books, newspapers, pictures, charts, and graphs and nonprint media to access information.</p> <p>1-6.3 Create categories such as plants and animals to classify information.</p> <p>1-6.5 Use complete sentences when orally presenting information.</p> <p>Science Standard 1-1 (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 1-1.1 Compare, classify, and sequence objects by number, shape, texture, size, color, and motion, using standard English units of measurement where appropriate.</p> <p>Social Studies Standard 1-3 (Government): The student will demonstrate an understanding of how government functions and how government affects families.</p> <p>Indicators 1-3.4 Summarize possible consequences of an absence of laws and rules, including the potential for disorderliness and violence.</p> <p>Visual Arts Standard Grades 1 (Design): II. Using knowledge of Structures and Functions</p> <p>Indicators B. Use various elements and principles of design to communicate ideas through their artworks.</p> <p>Standard Grades 1 (Connections): VI. Making connections between visual arts and other disciplines.</p> <p>Indicators B. Identify connections between the visual arts and content areas across the curriculum.</p>
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Notes:

Big Idea: Geometry is a means to describe the physical world.

Subconcept: Two-dimensional shapes can be analyzed and described.

Lessons 7, 8, 9, 10, 11, 12

Focus Question: What attributes can be used to classify two-dimensional shapes?

Process Standards	Content Standards	Horizontal Connections
<p>Mathematics Standard 1-1 (Process): The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation. Indicators 1-1.1 Apply substantive mathematical problem-solving strategies. 1-1.2 Generate conjectures and exchange mathematical ideas. 1-1.3 Explain and justify answers to simple problems. 1-1.4 Analyze patterns by reasoning systematically. 1-1.5 Generalize mathematical concepts. 1-1.6 Use a variety of forms of mathematical communication. 1-1.7 Generalize connections among mathematics, the environment, and other subjects. 1-1.8 Use multiple informal representations to convey mathematical ideas.</p>	<p>Mathematics Standard 1-4 (Geometry): The student will demonstrate through the mathematical processes a sense of two- and three-dimensional geometric shapes, symmetry, and relative positions and directions in space. Indicators 1-4.2 Analyze the two-dimensional shapes circle, square, triangle, and rectangle. 1-4.3 Classify two-dimensional shapes as polygons or nonpolygons.</p>	<p>Mathematics Standard 1-6 (Data Analysis): The student will demonstrate through the mathematical processes a sense of collecting, organizing and interpreting data and of making predictions on the basis of data. Indicators 1-6.2 Organize data in picture graphs, object graphs, bar graphs, and tables. 1-6.3 Interpret data in picture graphs, object graphs, bar graphs, and tables by using the comparative terms <i>more</i>, <i>less</i>, <i>greater</i>, <i>fewer</i>, <i>greater than</i>, and <i>less than</i>.</p>

Notes:

Vertical Connections	Cross Curricular Connections
<p>Grade 2 Standard 2-4 (Geometry): The student will demonstrate through the mathematical processes an understanding of basic spatial reasoning and the connection between the identification of basic attributes and the classification of three-dimensional shapes. Indicators 2-4.3 Predict the results of combining and subdividing polygons and circles.</p> <p>Grade 3 Standard 3-4 (Geometry): The student will demonstrate through the mathematical processes an understanding of the connection between the identification of basic attributes and the classification of two-dimensional shapes. Indicators 3-4.2 Classify polygons as either triangles, quadrilaterals, pentagons, hexagons, or octagons according to the number of their sides. 3-4.5 Classify triangles by the length of their sides as either scalene, isosceles, or equilateral according and by the sizes of their angles as either acute, obtuse, or right. 3-4.7 Analyze the results of combining and subdividing circles, triangles, quadrilaterals, pentagons, hexagons, and octagons.</p> <p>Grade 4 Standard 4-4 (Geometry): 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. Indicators 4-4.1 Analyze the quadrilaterals squares, rectangles, trapezoids, rhombuses, and parallelograms according to their properties. 4-4.2 Analyze the relationship between three-dimensional geometric shapes in the form of cubes, rectangular prisms, and cylinders and their two-dimensional nets. 4-4.4 Represent the two-dimensional shapes trapezoids, rhombuses, and parallelograms and the three-dimensional shapes cubes, rectangular prisms, and cylinders.</p>	<p>Language Arts Standard 1-1 (Reading): The student will read and comprehend a variety of literary texts in print and nonprint formats. Indicators 1-1.7 Create responses to literary texts through a variety of methods such as writing, creative dramatics, and the visual and performing arts.</p> <p>Standard 1-3 (Reading): The student will learn to read by applying appropriate skills and strategies. Indicators 1-3.3 Use vocabulary acquired from a variety of sources. 1-3.6 Use appropriate voice level and intonation when speaking and reading aloud. 1-3.16 Use pictures and words to construct meaning.</p> <p>Standard 1-4 (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 1-4.1 Generate ideas for writing by using techniques such as participating in conversations and looking at pictures. 1-4.2 Use simple sentences in writing. 1-4.5 Use proofreading skills to edit for the correct use of written Standard American English. 1-4.6 Use revision strategies to improve word choice in written work. 1-4.7 Use appropriate spacing between words. 1-4.8 Use appropriate word formation by writing from left to right the letters that spell a word.</p> <p>Standard 1-5 (Writing): The student will write for a variety of purposes and audiences. Indicators 1-5.2 Create narratives such as stories and journal entries about people, places, actions, or things. 1-5.3 Create written pieces that describe personal experiences, people, places, or things that use words that appeal to the senses.</p> <p>Standard 1-6 (Researching): The student will access and use information from a variety of sources. Indicators 1-6.1 Generate how and why questions about a topic of interest. 1-6.2 Use print sources of information such as books,</p>



	<p>newspapers, pictures, charts, and graphs and nonprint media to access information.</p> <p>1-6.3 Create categories such as plants and animals to classify information.</p> <p>1-6.5 Use complete sentences when orally presenting information.</p> <p>Science Standard 1-1 (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 1-1.1 Compare, classify, and sequence objects by number, shape, texture, size, color, and motion, using standard English units of measurement where appropriate.</p> <p>Visual Arts Standard Grades 1 (Design) II. Using knowledge of Structures and Functions Indicators B. Use various elements and principles of design to communicate ideas through their artworks.</p> <p>Standard Grades 1 (Connections) VI. Making connections between visual arts and other disciplines. Indicators B. Identify connections between the visual arts and content areas across the curriculum.</p>
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Notes:

Big Idea: Geometry is a means to describe the physical world.
Subconcept: Geometry can be related to other areas of mathematics.
Lessons 13, 14, 15, 16

Focus Question: What strategies can be used to identify lines of symmetry?

Process Standards	Content Standards	Horizontal Connections
<p>Mathematics Standard 1-1 (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>1-1.1 Apply substantive mathematical problem-solving strategies. 1-1.2 Generate conjectures and exchange mathematical ideas. 1-1.3 Explain and justify answers to simple problems. 1-1.4 Analyze patterns by reasoning systematically. 1-1.5 Generalize mathematical concepts. 1-1.6 Use a variety of forms of mathematical communication. 1-1.7 Generalize connections among mathematics, the environment, and other subjects. 1-1.8 Use multiple informal representations to convey mathematical ideas.</p>	<p>Mathematics Standard 1-4 (Geometry): The student will demonstrate through the mathematical processes a sense of two- and three-dimensional geometric shapes, symmetry, and relative positions and directions in space.</p> <p>Indicators</p> <p>1-4.2 Analyze the two-dimensional shapes circle, square, triangle, and rectangle. 1-4.4 Identify a line of symmetry.</p>	<p>Mathematics Standard 1-3 (Algebra): The student will demonstrate through the mathematical processes a sense of numeric patterns, the relationship between addition and subtraction, and change over time.</p> <p>Indicators</p> <p>1-3.5 Classify a number as odd or even.</p>

Notes:

Vertical Connections	Cross Curricular Connections
<p>Grade 2 Standard 2-4 (Geometry): The student will demonstrate through the mathematical processes an understanding of basic spatial reasoning and the connection between the identification of basic attributes and the classification of three-dimensional shapes. Indicators 2-4.2 Identify multiple lines of symmetry. 2-4.3 Predict the results of combining and subdividing polygons and circles.</p> <p>Grade 3 Standard 3-4 (Geometry): :The student will demonstrate through the mathematical processes an understanding of the connection between the identification of basic attributes and the classification of two-dimensional shapes. Indicators 3-4.1 Identify the specific attributes of circles: center, radius, circumference, and diameter. 3-4.7 Analyze the results of combining and subdividing circles, triangles, quadrilaterals, pentagons, hexagons, and octagons. 3-4.8 Predict the results of one transformation—either slide, flip, or turn—of a geometric shape.</p> <p>Grade 4 Standard 4-4 (Geometry): 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. Indicators 4-4.3 Predict the results of multiple transformations of the same type—translation, reflection, or rotation—on a two-dimensional geometric shape. 4-4.5 Use transformation(s) to prove congruency.</p> <p>Grade 5 Standard 5-4: The student will demonstrate through the mathematical processes an understanding of congruency, spatial relationships, and relationships among the properties of quadrilaterals.</p>	<p>Language Arts Standard 1-3 (Reading): The student will learn to read by applying appropriate skills and strategies. Indicators 1-3.16 Use pictures and words to construct meaning.</p> <p>Standard 1-4 (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 1-4.1 Generate ideas for writing by using techniques such as participating in conversations and looking at pictures. 1-4.2 Use simple sentences in writing. 1-4.3 Use pictures, letters, or words to tell a story from beginning to end. 1-4.4 Use the conventions of written Standard American English. 1-4.6 Use revision strategies to improve word choice in written work. 1-4.7 Use appropriate spacing between words. 1-4.8 Use appropriate work formation by writing from left to right the letters that spell a word.</p> <p>Standard 1-6 (Researching): The student will access and use information from a variety of sources. Indicators 1-6.1 Generate how and why questions about a topic of interest. 1-6.2 Use print sources of information such as books, newspapers, pictures, charts, and graphs and nonprint media to access information. 1-6.5 Use complete sentences when orally presenting information. 1-6.6 Generate one- and two-step oral directions.</p> <p>Science Standard 1-1 (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. Indicators 1-1.1 Compare, classify, and sequence objects by number, shape, texture, size, color, and motion, using standard English units of measurement where appropriate.</p>



Big Idea: Geometry is a means to describe the physical world.

Subconcept: Conclusions can be drawn about the position and location of shapes.

Lessons 17, 18, 19, 20

Focus Question: In what ways are positional and directional words used when reading a map?

Process Standards	Content Standards	Horizontal Connections
<p>Mathematics Standard 1-1 (Process): The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation. Indicators 1-1.1 Apply substantive mathematical problem-solving strategies. 1-1.2 Generate conjectures and exchange mathematical ideas. 1-1.3 Explain and justify answers to simple problems. 1-1.4 Analyze patterns by reasoning systematically. 1-1.5 Generalize mathematical concepts. 1-1.6 Use a variety of forms of mathematical communication. 1-1.7 Generalize connections among mathematics, the environment, and other subjects. 1-1.8 Use multiple informal representations to convey mathematical ideas.</p>	<p>Mathematics Standard 1-4 (Geometry): The student will demonstrate through the mathematical processes a sense of two- and three-dimensional geometric shapes, symmetry, and relative positions and directions in space. Indicators 1-4.1 Identify the three-dimensional geometric shapes prism, pyramid, and cone. 1-4.2 Analyze the two-dimensional shapes circle, square, triangle, and rectangle. 1-4.5 Use the positional and directional terms north, south, east, and west to describe location and movement.</p>	<p>Mathematics Standard 1-5 (Measurement): The student will demonstrate through the mathematical processes a sense of the value of combinations of coins and the measurement of length, weight, time, and temperature. Indicators 1-5.4 Use whole-inch units to measure the length of an object. 1-5.5 Generate common referents for whole inches. 1-5.6 Use common referents to make estimates in whole inches.</p>

Notes:

Vertical Connections	Cross Curricular Connections
<p>Grade 2 Standard 2-4 (Geometry): The student will demonstrate through the mathematical processes an understanding of basic spatial reasoning and the connection between the identification of basic attributes and the classification of three-dimensional shapes. Indicators 2-4.1 Analyze the three-dimensional shapes spheres, cubes, cylinders, prisms, pyramids, and cones according to the number and shape of the faces, edges, corners, and bases of each. 2-4.2 Identify multiple lines of symmetry. 2-4.3 Predict the results of combining and subdividing polygons and circles.</p> <p>Grade 3 Standard 3-4 (Geometry): The student will demonstrate through the mathematical processes an understanding of the connection between the identification of basic attributes and the classification of two-dimensional shapes. Indicators 3-4.7 Analyze the results of combining and subdividing circles, triangles, quadrilaterals, pentagons, hexagons, and octagons. 3-4.8 Predict the results of one transformation—either slide, flip, or turn—of a geometric shape.</p> <p>Grade 4 Standard 4-4 (Geometry): 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. Indicators 4-4.7 Represent with ordered pairs of whole numbers the location of points in the first quadrant of a coordinate grid. 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>	<p>Language Arts Standard 1-1 (Reading): The student will read and comprehend a variety of literary texts in print and nonprint formats. Indicators 1-1.6 Use relevant details in summarizing stories read aloud. 1-1.7 Create responses to literary texts through a variety of methods such as writing, creative dramatics, and the visual and performing arts.</p> <p>Standard 1-4 (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 1-4.1 Generate ideas for writing by using techniques such as participating in conversations and looking at pictures. 1-4.2 Use simple sentences in writing. 1-4.3 Use pictures, letters, or words to tell a story from beginning to end. 1-4.5 Use proofreading skills to edit for the correct use of written Standard American English. 1-4.6 Use revision strategies to improve word choice in written work.</p> <p>Standard 1-5 (Writing): The student will write for a variety of purposes and audiences. Indicators 1-5.2 Create narratives such as stories and journal entries about people, places, actions, or things. 1-5.3 Create written pieces that describe personal experiences, people, places, or things that use words that appeal to the senses.</p> <p>Standard 1-6 (Researching): The student will access and use information from a variety of sources. Indicators 1-6.1 Generate how and why questions about a topic of interest. 1-6.5 Use complete sentences when orally presenting information. 1-6.6 Generate one- and two-step oral directions.</p>

