

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

**Second Grade
Developing Geometric Logic: Rows and Columns**

In this module, students sort a three-dimensional shape collection focusing on the attributes of prism including number of faces, edges, and vertices. Students identify three-dimensional shapes in the world around them. Three-dimensional structures are built from pictures, taken apart, and put together. The attributes of two-dimensional shapes are used to sort a collection of magnetic shapes. Students will explore the position of objects on a grid and use positional words to describe the location of objects. Congruency, symmetry, transformations, 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 2-1 (Process): The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation. Indicators 2-1.1 Apply substantive mathematical problem-solving strategies. 2-1.2 Generate conjectures and exchange mathematical ideas. 2-1.3 Explain and justify answers to simple problems. 2-1.4 Analyze patterns by reasoning systematically. 2-1.5 Generalize mathematical concepts. 2-1.6 Use a variety of forms of mathematical communication. 2-1.7 Generalize connections among mathematics, the environment, and other subjects. 2-1.8 Use multiple informal representations to convey mathematical ideas.</p>	<p>Mathematics 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. 2-4.3 Predict the results of combining and subdividing polygons and circles.</p>	<p>Mathematics Standard 2-3 (Algebra): The student will demonstrate through the mathematical processes an understanding of numeric patterns and quantitative and qualitative change. Indicators 2-3.3 Analyze relationships to complete and extend growing and repeating patterns involving numbers, symbols, and objects.</p> <p>Standard 2-6 (Data Analysis and Probability): The student will demonstrate through the mathematical processes an understanding of creating questions to collect data, organizing data, describing trends of a data set, and making predictions based on data. Indicators 2-6.2 Organize data in charts, pictographs, and tables.</p>

Notes:

<p style="text-align: center;">Vertical Connections</p>	<p style="text-align: center;">Cross Curricular Connections</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.</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>Grade 5 Standard 5-4 (Geometry): The student will demonstrate through the mathematical processes an understanding of congruency, spatial relationships, and relationships among the properties of quadrilaterals. Indicators 5-4.1 Apply the relationships of quadrilaterals to make logical arguments about their properties. 5-4.2 Compare the angles, side lengths, and perimeters of congruent shapes. 5-4.3 Classify shapes as congruent. 5-4.4 Translate between two-dimensional representations and three-dimensional objects.</p>	<p>Language Arts Standard 2-1 (Reading): The student will read and comprehend a variety of literary texts in print and nonprint formats. Indicators 2-1.6 Analyze the details that support the expression of the main idea in a given literary text. 2-1.7 Create responses to literary texts through a variety of methods such as writing, creative dramatics, and the visual and performing arts. 2-1.8 Carry out independent reading for extended periods of time to derive pleasure.</p> <p>Standard 2-4 (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 2-4.1 Generate ideas for writing using prewriting techniques such as creating lists, having discussions, and examining literary models. 2-4.2 Use complete sentences (including simple sentences with compound subjects and predicates) in writing. 2-4.5 Use proofreading skills to edit for the correct use of written Standard American English: 2-4.6 Use revision strategies to improve word choice and the logical progression of ideas in written work.</p> <p>Science Standard 2-1 (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 2-1.3 Represent and communicate simple data and explanations through drawings, tables, pictographs, bar graphs, and oral and written language.</p>



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 2-1 (Process): The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation. Indicators 2-1.1 Apply substantive mathematical problem-solving strategies. 2-1.2 Generate conjectures and exchange mathematical ideas. 2-1.3 Explain and justify answers to simple problems. 2-1.4 Analyze patterns by reasoning systematically. 2-1.5 Generalize mathematical concepts. 2-1.6 Use a variety of forms of mathematical communication. 2-1.7 Generalize connections among mathematics, the environment, and other subjects. 2-1.8 Use multiple informal representations to convey mathematical ideas.</p>	<p>Mathematics 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>Mathematics Standard 2-3 (Algebra): The student will demonstrate through the mathematical processes an understanding of numeric patterns and quantitative and qualitative change. Indicators 2-3.3 Analyze relationships to complete and extend growing and repeating patterns involving numbers, symbols, and objects.</p> <p>Standard 2-6 (Data Analysis and Probability): The student will demonstrate through the mathematical processes an understanding of creating questions to collect data, organizing data, describing trends of a data set, and making predictions based on data. Indicators 2-6.2 Organize data in charts, pictographs, and tables.</p>

Notes:

Vertical Connections	Cross Curricular Connections
<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.</p> <p>Indicators</p> <p>3-4.2 Classify polygons as either triangles, quadrilaterals, pentagons, hexagons, or octagons according to the number of their sides.</p> <p>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.</p> <p>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.</p> <p>Indicators</p> <p>4-4.1 Analyze the quadrilaterals squares, rectangles, trapezoids, rhombuses, and parallelograms according to their properties.</p> <p>4-4.4 Represent the two-dimensional shapes trapezoids, rhombuses, and parallelograms and the three-dimensional shapes cubes, rectangular prisms, and cylinders.</p> <p>Grade 5 Standard 5-4 (Geometry): The student will demonstrate through the mathematical processes an understanding of congruency, spatial relationships, and relationships among the properties of quadrilaterals.</p> <p>Indicators</p> <p>5-4.1 Apply the relationships of quadrilaterals to make logical arguments about their properties.</p> <p>5-4.4 Translate between two-dimensional representations and three-dimensional objects.</p>	<p>Language Arts Standard 2-1 (Reading): The student will read and comprehend a variety of literary texts in print and nonprint formats.</p> <p>Indicators</p> <p>2-1.6 Analyze the details that support the expression of the main idea in a given literary text.</p> <p>2-1.7 Create responses to literary texts through a variety of methods such as writing, creative dramatics, and the visual and performing arts.</p> <p>2-1.8 Carry out independent reading for extended periods of time to derive pleasure.</p> <p>Standard 2-4 (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>2-4.1 Generate ideas for writing using prewriting techniques such as creating lists, having discussions, and examining literary models.</p> <p>2-4.2 Use complete sentences (including simple sentences with compound subjects and predicates) in writing.</p> <p>2-4.5 Use proofreading skills to edit for the correct use of written Standard American English:</p> <p>2-4.6 Use revision strategies to improve word choice and the logical progression of ideas in written work.</p> <p>Science Standard 2-1 (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>2-1.3 Represent and communicate simple data and explanations through drawings, tables, pictographs, bar graphs, and oral and written language.</p>

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 2-1 (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>2-1.1 Apply substantive mathematical problem-solving strategies.</p> <p>2-1.2 Generate conjectures and exchange mathematical ideas.</p> <p>2-1.3 Explain and justify answers to simple problems.</p> <p>2-1.4 Analyze patterns by reasoning systematically.</p> <p>2-1.5 Generalize mathematical concepts.</p> <p>2-1.6 Use a variety of forms of mathematical communication.</p> <p>2-1.7 Generalize connections among mathematics, the environment, and other subjects.</p> <p>2-1.8 Use multiple informal representations to convey mathematical ideas.</p>	<p>Mathematics 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.</p> <p>Indicators</p> <p>2-4.2 Identify multiple lines of symmetry.</p> <p>2-4.3 Predict the results of combining and subdividing polygons and circles.</p>	<p>Mathematics Standard 2-3 (Algebra): The student will demonstrate through the mathematical processes an understanding of numeric patterns and quantitative and qualitative change.</p> <p>Indicators</p> <p>2-3.3 Analyze relationships to complete and extend growing and repeating patterns involving numbers, symbols, and objects.</p> <p>Standard 2-6 (Data Analysis and Probability): The student will demonstrate through the mathematical processes an understanding of creating questions to collect data, organizing data, describing trends of a data set, and making predictions based on data.</p> <p>Indicators</p> <p>2-6.2 Organize data in charts, pictographs, and tables.</p>

Notes:

Vertical Connections	Cross Curricular Connections
<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 3-4.8 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 (Geometry): The student will demonstrate through the mathematical processes an understanding of congruency, spatial relationships, and relationships among the properties of quadrilaterals. Indicators 5-4.3 Classify shapes as congruent. 5-4.5 Predict the results of multiple transformations on a geometric shape when combinations of translation, reflection, and rotation are used.</p>	<p>Language Arts Standard 2-1 (Reading): The student will read and comprehend a variety of literary texts in print and nonprint formats. Indicators 2-1.6 Analyze the details that support the expression of the main idea in a given literary text. 2-1.7 Create responses to literary texts through a variety of methods such as writing, creative dramatics, and the visual and performing arts. 2-1.8 Carry out independent reading for extended periods of time to derive pleasure.</p> <p>Standard 2-4 (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 2-4.1 Generate ideas for writing using prewriting techniques such as creating lists, having discussions, and examining literary models. 2-4.2 Use complete sentences (including simple sentences with compound subjects and predicates) in writing. 2-4.5 Use proofreading skills to edit for the correct use of written Standard American English: 2-4.6 Use revision strategies to improve word choice and the logical progression of ideas in written work.</p> <p>Science Standard 2-1 (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 2-1.3 Represent and communicate simple data and explanations through drawings, tables, pictographs, bar graphs, and oral and written language.</p>

Notes:

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: What three-dimensional shapes are represented in the world around us?

Process Standards	Content Standards	Horizontal Connections
<p>Mathematics Standard 2-1 (Process): The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation. Indicators 2-1.1 Apply substantive mathematical problem-solving strategies. 2-1.2 Generate conjectures and exchange mathematical ideas. 2-1.3 Explain and justify answers to simple problems. 2-1.4 Analyze patterns by reasoning systematically. 2-1.5 Generalize mathematical concepts. 2-1.6 Use a variety of forms of mathematical communication. 2-1.7 Generalize connections among mathematics, the environment, and other subjects. 2-1.8 Use multiple informal representations to convey mathematical ideas.</p>	<p>Mathematics 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. 2-4.3 Predict the results of combining and subdividing polygons and circles.</p>	<p>Mathematics Standard 2-3(Algebra): The student will demonstrate through the mathematical processes an understanding of numeric patterns and quantitative and qualitative change. Indicators 2-3.3 Analyze relationships to complete and extend growing and repeating patterns involving numbers, symbols, and objects.</p> <p>Standard 2-6 (Data Analysis and Probability): The student will demonstrate through the mathematical processes an understanding of creating questions to collect data, organizing data, describing trends of a data set, and making predictions based on data. Indicators 2-6.2 Organize data in charts, pictographs, and tables.</p>

Notes:

Vertical Connections	Cross Curricular Connections
<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.</p> <p>Indicators</p> <p>3-4.7 Analyze the results of combining and subdividing circles, triangles, quadrilaterals, pentagons, hexagons, and octagons.</p> <p>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.</p> <p>Indicators</p> <p>4-4.3 Predict the results of multiple transformations of the same type—translation, reflection, or rotation—on a two-dimensional geometric shape.</p> <p>4-4.8 Illustrate possible paths from one point to another along vertical and horizontal grid lines in the first quadrant of the coordinate plane.</p> <p>Grade 5 Standard 5-4 (Geometry): The student will demonstrate through the mathematical processes an understanding of congruency, spatial relationships, and relationships among the properties of quadrilaterals.</p> <p>Indicators</p> <p>5-4.3 Classify shapes as congruent.</p> <p>5-4.5 Predict the results of multiple transformations on a geometric shape when combinations of translation, reflection, and rotation are used.</p>	<p>Language Arts Standard 2-1 (Reading): The student will read and comprehend a variety of literary texts in print and nonprint formats.</p> <p>Indicators</p> <p>2-1.6 Analyze the details that support the expression of the main idea in a given literary text.</p> <p>2-1.7 Create responses to literary texts through a variety of methods such as writing, creative dramatics, and the visual and performing arts.</p> <p>2-1.8 Carry out independent reading for extended periods of time to derive pleasure.</p> <p>Standard 2-4 (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>2-4.1 Generate ideas for writing using prewriting techniques such as creating lists, having discussions, and examining literary models.</p> <p>2-4.2 Use complete sentences (including simple sentences with compound subjects and predicates) in writing.</p> <p>2-4.5 Use proofreading skills to edit for the correct use of written Standard American English:</p> <p>2-4.6 Use revision strategies to improve word choice and the logical progression of ideas in written work.</p>

Notes: