

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

**Grade Five  
Developing Geometric Logic: Conjectures and Transformations**

Students explore a set of three-dimensional shapes to develop comparisons of polyhedra, cones, and cylinders. Students draw the front, top, and side views of a three-dimensional shape built with cubes and identify nets for a variety of polyhedra from drawings. Triangles and quadrilaterals are classified according to their properties. Transformations and tessellations are explored. Conjectures about the perimeter and area of regular two-dimensional shapes are made and tested. Coordinate grids are explored for position and location. A Bright Idea Geometry Journal is kept throughout the lessons.

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

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



## Correlation Information

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

The correlation document is arranged in the following order:

### **Process Standards**

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

### **Content Standards**

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

### **Horizontal Connections**

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

### **Vertical Connections**

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

### **Cross Curricular Connections**

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



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

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

**Lessons 1, 2, 3, 4, 5**

**Focus Question: In what ways are congruent shapes alike?**

Process Standards	Content Standards	Horizontal Connections
<p><b>Mathematics</b>  <b>Standard 5-1 (Process):</b>                      The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation.</p> <p><b>Indicators</b></p> <p>5-1.1 Analyze information to solve increasingly more sophisticated problems.</p> <p>5-1.2 Construct arguments that lead to conclusions about general mathematical properties and relationships.</p> <p>5-1.3 Explain and justify answers based on mathematical properties, structures, and relationships.</p> <p>5-1.4 Generate descriptions and mathematical statements about relationships between and among classes of objects.</p> <p>5-1.5 Use correct, clear, and complete oral and written mathematical language to pose questions, communicate ideas, and extend problem situations.</p> <p>5-1.6 Generalize connections between new mathematical ideas and related concepts and subjects that have been previously considered.</p> <p>5-1.7 Use flexibility in mathematical representations.</p> <p>5-1.8 Recognize the limitations of various forms of mathematical representations.</p>	<p><b>Mathematics</b>  <b>Standard 5-4 (Geometry):</b>                      The student will demonstrate through the mathematical processes an understanding of congruency, spatial relationships, and relationships among the properties of quadrilaterals.</p> <p><b>Indicators</b></p> <p>5-4.3 Classify shapes as congruent.</p> <p>5-4.4 Translate between two-dimensional representations and three-dimensional objects.</p>	<p><b>Mathematics</b>  <b>Standard 5-3 (Algebra):</b>                      The student will demonstrate through the mathematical processes an understanding of the use of patterns, relations, functions models, structures, and algebraic symbols to represent quantitative relationships and will analyze change in various contexts.</p> <p><b>Indicators</b></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><b>Standard 5-5 (Measurement):</b>                      The student will demonstrate through the mathematical processes an understanding of the units and systems of measurement and the application of tools and formulas to determine measurement.</p> <p><b>Indicators</b></p> <p>5-5.5 Apply strategies and formulas to determine the volume of rectangular prisms.</p> <p><b>Standard 5-6 (Data Analysis and Probability):</b>                      The student will demonstrate through the mathematical processes an understanding of investigation design, the effect of data-collection methods on a data set, the interpretation and application of the measures of central tendency, and the application of basic concepts of probability.</p> <p><b>Indicators</b></p> <p>5-6.1 Design a mathematical investigation to address a question.</p>



Vertical Connections	Cross Curricular Connections
<p><b>Grade 6</b>  <b>Standard 6-5 (Measurement):</b>  The student will demonstrate through the mathematical processes an understanding of surface area; the perimeter and area of irregular shapes; the relationships among the circumference, diameter, and radius of a circle; the use of proportions to determine unit rates; and the use of scale to determine distance.</p> <p><b>Indicators</b>  6-5.3 Generate strategies to determine the surface area of a rectangular prism and a cylinder.  6-5.6 Use proportions to determine unit rates.</p> <p><b>Grade 7</b>  <b>Standard 7-5 (Measurement):</b>  The student will demonstrate through the mathematical processes an understanding of how to use ratio and proportion to solve problems involving scale factors and rates and how to use one-step unit analysis to convert between and within the U.S. Customary System and the metric system.</p> <p><b>Indicators</b>  7-5.1 Use ratio and proportion to solve problems involving scale factors and rates.  7-5.2 Apply strategies and formulas to determine the surface area and volume of the three-dimensional shapes prism, pyramid, and cylinder.</p> <p><b>Grade 8</b>  <b>Standard 8-5 (Measurement):</b>  The student will demonstrate through the mathematical processes an understanding of the proportionality of similar figures; the necessary levels of accuracy and precision in measurement; the use of formulas to determine circumference, perimeter, area, and volume; and the use of conversions within and between the U.S. Customary System and the metric system.</p> <p><b>Indicators</b>  8-5.2 Explain the effect on the area of two-dimensional shapes and on the volume of three-dimensional shapes when one or more of the dimensions are changed.  8-5.3 Apply strategies and formulas to determine the volume of the three-dimensional shapes cone and sphere.</p>	<p><b>Language Arts</b>  <b>Standard 5.1 (Reading):</b>  The student will read and comprehend a variety of literary texts in print and nonprint formats.</p> <p><b>Indicators</b>  5-1.1 Analyze literary texts to draw conclusions and make inferences.  5-1.7 Create responses to literary texts through a variety of methods such as writing, creative dramatics, and the visual and performing arts.  5-1.8 Carry out independent reading for extended periods of time to derive pleasure.</p> <p><b>Standard 5.2 (Reading):</b>  The student will read and comprehend a variety of informational texts in print and nonprint formats.</p> <p><b>Indicators</b>  5-2.1 Summarize the central idea and supporting evidence of a given informational text.  5-2.2 Analyze informational texts to draw conclusions and make inferences.  5-2.4 Create responses to informational texts through a variety of methods such as drawings, written works, and oral presentations.  5-2.5 Carry out independent reading for extended periods of time to gain information.  5-2.7 Use graphic features such as illustrations, graphs, charts, maps, diagrams, and graphic organizers as sources of information.</p> <p><b>Standard 5.4 (Writing):</b>  The student will create written work that has a clear focus, sufficient detail, coherent organization, effective use of voice, and correct use of the conventions of written Standard American English.</p> <p><b>Indicators</b>  5-4.1 Use prewriting techniques to organize written works.  5-4.2 Use complete sentences in a variety of types (including simple, compound, and complex sentences) in writing.  5-4.5 Use proofreading skills to edit for the correct use of written Standard American English:  5-4.6 Use revision strategies to improve word choice and the organization and development of ideas in written works.</p> <p><b>Science</b>  <b>Standard 5-1 (Scientific Inquiry):</b>  The student will demonstrate an understanding of scientific inquiry, including the foundations of technological design and the processes, skills, and mathematical thinking</p>



	necessary to conduct a controlled scientific investigation. Indicators 5-1.1 Identify questions suitable for generating a hypothesis. 5-1.3 Evaluate results of an investigation to formulate a valid conclusion based on evidence and communicate the findings of the evaluation in oral or written form.
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**Notes:**

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

**Subconcept: Attributes of two-dimensional figures can be identified and described.**

**Lessons 6, 7, 8, 9, 10**

**Focus Question: Why can squares be classified in so many ways?**

Process Standards	Content Standards	Horizontal Connections
<p><b>Mathematics</b>  <b>Standard 5-1 (Process):</b>                      The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation.  <b>Indicators</b>                      5-1.1 Analyze information to solve increasingly more sophisticated problems.                      5-1.2 Construct arguments that lead to conclusions about general mathematical properties and relationships.                      5-1.3 Explain and justify answers based on mathematical properties, structures, and relationships.                      5-1.4 Generate descriptions and mathematical statements about relationships between and among classes of objects.                      5-1.5 Use correct, clear, and complete oral and written mathematical language to pose questions, communicate ideas, and extend problem situations.                      5-1.6 Generalize connections between new mathematical ideas and related concepts and subjects that have been previously considered.                      5-1.7 Use flexibility in mathematical representations.                      5-1.8 Recognize the limitations of various forms of mathematical representations.</p>	<p><b>Mathematics</b>  <b>Standard 5-4 (Geometry):</b>                      The student will demonstrate through the mathematical processes an understanding of congruency, spatial relationships, and relationships among the properties of quadrilaterals.  <b>Indicators</b>                      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.   <b>Standard 5-5 (Measurement):</b>                      The student will demonstrate through the mathematical processes an understanding of the units and systems of measurement and the application of tools and formulas to determine measurement.  <b>Indicators</b>                      5-5.2 Use a protractor to measure angles from 0 to 180 degrees.</p>	<p><b>Mathematics</b>  <b>Standard 5-3 (Algebra):</b>                      The student will demonstrate through the mathematical processes an understanding of the use of patterns, relations, functions models, structures, and algebraic symbols to represent quantitative relationships and will analyze change in various contexts.  <b>Indicators</b>                      5-3.1 Represent numeric, algebraic, and geometric patterns in words, symbols, algebraic expressions, and algebraic equations.                      5-3.2 Analyze patterns and functions with words, tables, and graphs.   <b>Standard 5-6 (Data Analysis and Probability):</b>                      The student will demonstrate through the mathematical processes an understanding of investigation design, the effect of data-collection methods on a data set, the interpretation and application of the measures of central tendency, and the application of basic concepts of probability.  <b>Indicators</b>                      5-6.1 Design a mathematical investigation to address a question.</p>

Vertical Connections	Cross Curricular Connections
<p><b>Grade 6</b>  <b>Standard 6-4 (Geometry):</b>  The student will demonstrate through the mathematical processes an understanding of shape, location, and movement within a coordinate system; similarity, complementary, and supplementary angles; and the relationship between line and rotational symmetry.</p> <p><b>Indicators</b></p> <p>6-4.2 Apply strategies and procedures to find the coordinates of the missing vertex of a square, rectangle, or right triangle when given the coordinates of the polygon's other vertices.</p> <p>6-4.7 Compare the angles, side lengths, and perimeters of similar shapes.</p> <p>6-4.8 Classify shapes as similar.</p> <p>6-4.9 Classify pairs of angles as either complementary or supplementary.</p> <p><b>Grade 7</b>  <b>Standard 7-4 (Geometry):</b>  The student will demonstrate through the mathematical processes an understanding of proportional reasoning, tessellations, the use of geometric properties to make deductive arguments, the results of the intersection of geometric shapes in a plane, and the relationship among angles formed when a transversal intersects two parallel lines.</p> <p><b>Indicators</b></p> <p>7-4.1 Analyze geometric properties and the relationships among the properties of triangles, congruence, similarity, and transformations to make deductive arguments.</p> <p>7-4.5 Analyze the congruent and supplementary relationships—specifically, alternate interior, alternate exterior, corresponding, and adjacent—of the angles formed by parallel lines and a transversal.</p> <p>7-4.10 Explain the relationship of the angle measurements among shapes that tessellate.</p> <p><b>Grade 8</b>  <b>Standard 8-4 (Geometry):</b>  The student will demonstrate through the mathematical processes an understanding of the Pythagorean theorem; the use of ordered pairs, equations, intercepts, and intersections to locate points and lines in a coordinate plane; and the effect of a dilation in a coordinate plane.</p> <p><b>Indicators</b></p> <p>8-4.1 Apply the Pythagorean theorem.</p>	<p><b>Language Arts</b>  <b>Standard 5-1 (Reading):</b>  The student will read and comprehend a variety of literary texts in print and nonprint formats.</p> <p><b>Indicators</b></p> <p>5-1.1 Analyze literary texts to draw conclusions and make inferences.</p> <p>5-1.8 Carry out independent reading for extended periods of time to derive pleasure.</p> <p><b>Standard 5-4 (Writing):</b>  The student will create written work that has a clear focus, sufficient detail, coherent organization, effective use of voice, and correct use of the conventions of written Standard American English.</p> <p><b>Indicators</b></p> <p>5-4.1 Use prewriting techniques to organize written works.</p> <p>5-4.2 Use complete sentences in a variety of types (including simple, compound, and complex sentences) in writing.</p> <p>5-4.5 Use proofreading skills to edit for the correct use of written Standard American English:</p> <p>5-4.6 Use revision strategies to improve word choice and the organization and development of ideas in written works.</p> <p><b>Science</b>  <b>Standard 5-1 (Scientific Inquiry):</b>  The student will demonstrate an understanding of scientific inquiry, including the foundations of technological design and the processes, skills, and mathematical thinking necessary to conduct a controlled scientific investigation.</p> <p><b>Indicators</b></p> <p>5-1.1 Identify questions suitable for generating a hypothesis.</p> <p>5-1.4 Evaluate results of an investigation to formulate a valid conclusion based on evidence and communicate the findings of the evaluation in oral or written form.</p>



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

**Subconcept: Conjectures about geometric properties can be made and tested.**

**Lessons 11, 12, 13**

**Focus Question: In what way are the properties of polygons used to describe three-dimensional shapes?**

Process Standards	Content Standards	Horizontal Connections
<p><b>Mathematics Standard 5-1 Process):</b> The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation.</p> <p><b>Indicators</b></p> <p>5-1.1 Analyze information to solve increasingly more sophisticated problems.</p> <p>5-1.2 Construct arguments that lead to conclusions about general mathematical properties and relationships.</p> <p>5-1.3 Explain and justify answers based on mathematical properties, structures, and relationships.</p> <p>5-1.4 Generate descriptions and mathematical statements about relationships between and among classes of objects.</p> <p>5-1.5 Use correct, clear, and complete oral and written mathematical language to pose questions, communicate ideas, and extend problem situations.</p> <p>5-1.6 Generalize connections between new mathematical ideas and related concepts and subjects that have been previously considered.</p> <p>5-1.7 Use flexibility in mathematical representations.</p> <p>5-1.8 Recognize the limitations of various forms of mathematical representations.</p>	<p><b>Mathematics Standard 5-4 (Geometry):</b> The student will demonstrate through the mathematical processes an understanding of congruency, spatial relationships, and relationships among the properties of quadrilaterals.</p> <p><b>Indicators</b></p> <p>5-4.1 Apply the relationships of quadrilaterals to make logical arguments about their properties.</p> <p>5-4.2 Compare the angles, side lengths, and perimeters of congruent shapes.</p> <p>5-4.3 Classify shapes as congruent.</p>	<p><b>Mathematics Standard 5-2 (Number and Operations):</b> The student will demonstrate through the mathematical processes an understanding of the place value system; the division of whole numbers; the addition and subtraction of decimals; the relationships among whole numbers, fractions, and decimals; and accurate, efficient, and generalizable methods of adding and subtracting fractions.</p> <p><b>Indicators</b></p> <p>5-2.8 Generate strategies to add and subtract fractions with like and unlike denominators.</p> <p><b>Standard 5-3 (Algebra):</b> The student will demonstrate through the mathematical processes an understanding of the use of patterns, relations, functions models, structures, and algebraic symbols to represent quantitative relationships and will analyze change in various contexts.</p> <p><b>Indicators</b></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><b>Standard 5-5 (Measurement):</b> The student will demonstrate through the mathematical processes an understanding of the units and systems of measurement and the application of tools and formulas to determine measurement.</p> <p><b>Indicators</b></p> <p>5-5.2 Use a protractor to measure angles from 0 to 180 degrees.</p> <p>5-5.4 Apply formulas to determine the perimeters and areas of triangles, rectangles, and parallelograms.</p>



		<p><b>Standard 5-6 (Data Analysis and Probability):</b>  The student will demonstrate through the mathematical processes an understanding of investigation design, the effect of data-collection methods on a data set, the interpretation and application of the measures of central tendency, and the application of basic concepts of probability.</p> <p><b>Indicators</b></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>
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**Notes:**

Vertical Connections	Cross Curricular Connections
<p><b>Grade 6</b>  <b>Standard 6-5 (Measurement):</b>  The student will demonstrate through the mathematical processes an understanding of surface area; the perimeter and area of irregular shapes; the relationships among the circumference, diameter, and radius of a circle; the use of proportions to determine unit rates; and the use of scale to determine distance.</p> <p><b>Indicators</b>  6-5.3 Generate strategies to determine the surface area of a rectangular prism and a cylinder.  6-5.5 Apply strategies and procedures of combining and subdividing to find the perimeters and areas of irregular shapes.  6-5.6 Use proportions to determine unit rates.  6-5.7 Use a scale to determine distance</p> <p><b>Grade 7</b>  <b>Standard 7-5 (Measurement):</b>  The student will demonstrate through the mathematical processes an understanding of proportional reasoning, tessellations, the use of geometric properties to make deductive arguments, the results of the intersection of geometric shapes in a plane, and the relationship among angles formed when a transversal intersects two parallel lines.</p> <p><b>Indicators</b>  7-5.1 Use ratio and proportion to solve problems involving scale factors and rates.  7-5.2 Apply strategies and formulas to determine the surface area and volume of the three-dimensional shapes prism, pyramid, and cylinder.  7-5.3 Generate strategies to determine the perimeters and areas of trapezoids.</p> <p><b>Grade 8</b>  <b>Standard 8-5 (Measurement):</b>  The student will demonstrate through the mathematical processes an understanding of the proportionality of similar figures; the necessary levels of accuracy and precision in measurement; the use of formulas to determine circumference, perimeter, area, and volume; and the use of conversions within and between the U.S. Customary System and the metric system.</p> <p><b>Indicators</b>  8-5.1 Use proportional reasoning and the properties of similar shapes to determine the length of a missing side.  8-5.5 Apply formulas to determine the perimeters and areas of trapezoids.</p>	<p><b>Standard 5-1 (Reading):</b>  The student will read and comprehend a variety of literary texts in print and nonprint formats.</p> <p><b>Indicators</b>  5-1.1 Analyze literary texts to draw conclusions and make inferences.  5-1.8 Carry out independent reading for extended periods of time to derive pleasure.</p> <p><b>Standard 5-4 (Writing):</b>  The student will create written work that has a clear focus, sufficient detail, coherent organization, effective use of voice, and correct use of the conventions of written Standard American English.</p> <p><b>Indicators</b>  5-4.1 Use prewriting techniques to organize written works.  5-4.2 Use complete sentences in a variety of types (including simple, compound, and complex sentences) in writing.  5-4.5 Use proofreading skills to edit for the correct use of written Standard American English:  5-4.6 Use revision strategies to improve word choice and the organization and development of ideas in written works.</p> <p><b>Science</b>  <b>Standard 5-1 (Scientific Inquiry):</b>  The student will demonstrate an understanding of scientific inquiry, including the foundations of technological design and the processes, skills, and mathematical thinking necessary to conduct a controlled scientific investigation.</p> <p><b>Indicators</b>  5-1.1 Identify questions suitable for generating a hypothesis.  5-1.5 Evaluate results of an investigation to formulate a valid conclusion based on evidence and communicate the findings of the evaluation in oral or written form.</p>



**Big Idea: Geometry is a means to describe the physical world.**  
**Subconcept: Movements of shapes can be analyzed and described.**  
**Lessons 14, 15, 16**

**Focus Question: What connections can be described between angles and translations?**

Process Standards	Content Standards	Horizontal Connections
<p><b>Mathematics</b>  <b>Standard 5-1 (Process):</b>            The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation.</p> <p><b>Indicators</b></p> <p>5-1.1 Analyze information to solve increasingly more sophisticated problems.</p> <p>5-1.2 Construct arguments that lead to conclusions about general mathematical properties and relationships.</p> <p>5-1.3 Explain and justify answers based on mathematical properties, structures, and relationships.</p> <p>5-1.4 Generate descriptions and mathematical statements about relationships between and among classes of objects.</p> <p>5-1.5 Use correct, clear, and complete oral and written mathematical language to pose questions, communicate ideas, and extend problem situations.</p> <p>5-1.6 Generalize connections between new mathematical ideas and related concepts and subjects that have been previously considered.</p> <p>5-1.7 Use flexibility in mathematical representations.</p> <p>5-1.8 Recognize the limitations of various forms of mathematical representations.</p>	<p><b>Mathematics</b>  <b>Standard 5-4 (Geometry):</b>            The student will demonstrate through the mathematical processes an understanding of congruency, spatial relationships, and relationships among the properties of quadrilaterals.</p> <p><b>Indicators</b></p> <p>5-4.1 Apply the relationships of quadrilaterals to make logical arguments about their properties.</p> <p>5-4.2 Compare the angles, side lengths, and perimeters of congruent shapes.</p> <p>5-4.3 Classify shapes as congruent.</p> <p>5-4.4 Translate between two-dimensional representations and three-dimensional objects.</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>5-4.6 Analyze shapes to determine line symmetry and/or rotational symmetry.</p>	<p><b>Mathematics</b>  <b>Standard 5-6 (Data Analysis and Probability):</b>            The student will demonstrate through the mathematical processes an understanding of investigation design, the effect of data-collection methods on a data set, the interpretation and application of the measures of central tendency, and the application of basic concepts of probability.</p> <p><b>Indicators</b></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>

**Notes:**

Vertical Connections	Cross Curricular Connections
<p><b>Grade 6</b>  <b>Standard 6-4 (Geometry):</b>  The student will demonstrate through the mathematical processes an understanding of shape, location, and movement within a coordinate system; similarity, complementary, and supplementary angles; and the relationship between line and rotational symmetry.</p> <p><b>Indicators</b></p> <p>6-4.3 Generalize the relationship between line symmetry and rotational symmetry for two-dimensional shapes.</p> <p>6-4.4 Construct two-dimensional shapes with line or rotational symmetry.</p> <p>6-4.5 Identify the transformation(s) used to move a polygon from one location to another in the coordinate plane.</p> <p>6-4.6 Explain how transformations affect the location of the original polygon in the coordinate plane.</p> <p><b>Grade 7</b>  <b>Standard 7-4 (Geometry):</b>  The student will demonstrate through the mathematical processes an understanding of proportional reasoning, tessellations, the use of geometric properties to make deductive arguments, the results of the intersection of geometric shapes in a plane, and the relationship among angles formed when a transversal intersects two parallel lines.</p> <p><b>Indicators</b></p> <p>7-4.1 Analyze geometric properties and the relationships among the properties of triangles, congruence, similarity, and transformations to make deductive arguments.</p> <p>7-4.9 Create tessellations with transformations.</p> <p>7-4.10 Explain the relationship of the angle measurements among shapes that tessellate.</p> <p><b>Grade 8</b>  <b>Standard 8-4 (Geometry):</b>  The student will demonstrate through the mathematical processes an understanding of the Pythagorean theorem; the use of ordered pairs, equations, intercepts, and intersections to locate points and lines in a coordinate plane; and the effect of a dilation in a coordinate plane.</p> <p><b>Indicators</b></p> <p>8-4.3 Apply a dilation to a square, rectangle, or right triangle in a coordinate plane.</p> <p>8-4.4 Analyze the effect of a dilation on a square, rectangle, or right triangle in a coordinate plane.</p>	<p><b>Language Arts</b>  <b>Standard 5-4 (Writing)</b>  The student will create written work that has a clear focus, sufficient detail, coherent organization, effective use of voice, and correct use of the conventions of written Standard American English.</p> <p><b>Indicators</b></p> <p>5-4.6 Use revision strategies to improve word choice and the organization and development of ideas in written works.</p> <p><b>Standard 5-5 (Writing)</b>  The student will write for a variety of purposes and audiences.</p> <p><b>Indicators</b></p> <p>5-5.3 Create written descriptions using precise language and vivid details.</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 connections can be described between translations and coordinate grids?**

Process Standards	Content Standards	Horizontal Connections
<p><b>Mathematics</b>  <b>Standard 5-1 (Process):</b>            The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation.</p> <p><b>Indicators</b></p> <p>5-1.1 Analyze information to solve increasingly more sophisticated problems.</p> <p>5-1.2 Construct arguments that lead to conclusions about general mathematical properties and relationships.</p> <p>5-1.3 Explain and justify answers based on mathematical properties, structures, and relationships.</p> <p>5-1.4 Generate descriptions and mathematical statements about relationships between and among classes of objects.</p> <p>5-1.5 Use correct, clear, and complete oral and written mathematical language to pose questions, communicate ideas, and extend problem situations.</p> <p>5-1.6 Generalize connections between new mathematical ideas and related concepts and subjects that have been previously considered.</p> <p>5-1.7 Use flexibility in mathematical representations.</p> <p>5-1.8 Recognize the limitations of various forms of mathematical representations.</p>	<p><b>Mathematics</b>  <b>Standard 5-4 (Geometry):</b>            The student will demonstrate through the mathematical processes an understanding of congruency, spatial relationships, and relationships among the properties of quadrilaterals.</p> <p><b>Indicators</b></p> <p>5-4.1 Apply the relationships of quadrilaterals to make logical arguments about their properties.</p> <p>5-4.2 Compare the angles, side lengths, and perimeters of congruent shapes.</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>5-4.6 Analyze shapes to determine line symmetry and/or rotational symmetry.</p>	<p><b>Mathematics</b>  <b>Standard 5-3 (Algebra):</b>            The student will demonstrate through the mathematical processes an understanding of the use of patterns, relations, functions models, structures, and algebraic symbols to represent quantitative relationships and will analyze change in various contexts.</p> <p><b>Indicators</b></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>

**Notes:**

Vertical Connections	Cross Curricular Connections
<p><b>Grade 6</b>  <b>Grade 6</b>  <b>Standard 6-4 (Geometry):</b>  The student will demonstrate through the mathematical processes an understanding of shape, location, and movement within a coordinate system; similarity, complementary, and supplementary angles; and the relationship between line and rotational symmetry.</p> <p><b>Indicators</b>  6-4.7 Compare the angles, side lengths, and perimeters of similar shapes.  6-4.8 Classify shapes as similar.  6-4.9 Classify pairs of angles as either complementary or supplementary.</p> <p><b>Grade 7</b>  <b>Standard 7-4 (Geometry):</b>  The student will demonstrate through the mathematical processes an understanding of proportional reasoning, tessellations, the use of geometric properties to make deductive arguments, the results of the intersection of geometric shapes in a plane, and the relationship among angles formed when a transversal intersects two parallel lines.</p> <p><b>Indicators</b>  7-4.6 Compare the areas of similar shapes and the areas of congruent shapes.  7-4.7 Explain the proportional relationship among attributes of similar shapes.  7-4.8 Apply proportional reasoning to find missing attributes of similar shapes.</p> <p><b>Grade 8</b>  <b>Standard 8-4 (Geometry):</b>  The student will demonstrate through the mathematical processes an understanding of the Pythagorean theorem; the use of ordered pairs, equations, intercepts, and intersections to locate points and lines in a coordinate plane; and the effect of a dilation in a coordinate plane.</p> <p><b>Indicators</b>  8-4.3 Apply a dilation to a square, rectangle, or right triangle in a coordinate plane.  8-4.4 Analyze the effect of a dilation on a square, rectangle, or right triangle in a coordinate plane</p>	<p><b>Language Arts</b>  <b>Standard 5-1 (Reading)</b>  The student will read and comprehend a variety of literary texts in print and nonprint formats.</p> <p><b>Indicators</b>  5-1.1 Analyze literary texts to draw conclusions and make inferences.  5-1.8 Carry out independent reading for extended periods of time to derive pleasure.</p> <p><b>Standard 5-4 (Writing):</b>  The student will create written work that has a clear focus, sufficient detail, coherent organization, effective use of voice, and correct use of the conventions of written Standard American English.</p> <p><b>Indicators</b>  5-4.1 Use prewriting techniques to organize written works.  5-4.2 Use complete sentences in a variety of types (including simple, compound, and complex sentences) in writing.  5-4.5 Use proofreading skills to edit for the correct use of written Standard American English:  5-4.6 Use revision strategies to improve word choice and the organization and development of ideas in written works.</p> <p><b>Standard 5-6 (Researching):</b>  The student will access and use information from a variety of sources.</p> <p><b>Indicators</b>  5-6.1 Clarify and refine a research topic.  5-6.2 Use print sources such as books, magazines, charts, graphs, diagrams, dictionaries, encyclopedias, atlases, thesauri, newspapers, and almanacs and nonprint media to access information.  5-6.3 Select information appropriate for the research topic.  5-6.4 Paraphrase research information accurately and meaningfully.  5-6.6 Use vocabulary (including Standard American English) that is appropriate for the particular audience or purpose.  5-6.7 Use appropriate organizational strategies to prepare written works and oral and visual presentations.  5-6.8 Select appropriate graphics, in print or electronic form, to support written works and oral and visual presentations.</p>

