

CORRELATION
of
the 10 UNDERSTANDING MATH PLUS PROGRAMS & UNDERSTANDING NUMERATION PLUS PROGRAMS
with
South Carolina MATHEMATICS CURRICULUM STANDARDS

Grades 6 to 8 GEOMETRY

Note: a. The Understanding Math PLUS series of programs consist of 10 programs written for Kindergarten to 10th Grade.

The 10 programs are:

- Understanding Fractions Understanding Whole Numbers and Integers
- Understanding Probability Understanding Percent
- Understanding Exponents Understanding Equations
- Understanding Algebra Understanding Graphing
- Understanding Numeration
- Understanding Measurement and Geometry

Note: b. The Understanding Numeration software for K to 3 is set up so that the teacher selects items in the following order:

Concept .. from 5 concepts .. Counting, Comparing & Ordering, Place Value, Operations and Problem Solving.

Skill .. chosen from the list of specific learning expectations

Level .. indicates the levels of development for Kindergarten to 3rd grade.

Level	Upper Range of Number
A	10
B	20
C	100
D	1000

Lesson .. 250 lessons are sequenced to build understanding of concepts.

A detailed Lesson Synopsis on the website www.neufeldmath.com to assist the teacher by stating the lesson contents but also by giving lesson suggestions.

Worksheet .. off computer worksheets are selected from the CD by a code.

Note: c. The remaining 9 Understanding Math programs for 4th to 10th grade are set up so that they can be used in a variety of teaching and learning environments ranging from a teacher centered approach with 1 computer to a student centered lab approach. The lessons can also be used in remediation, tutorial, intervention, resource, fast-tracking.

Each topic has:

- ..an interactive concept introduction, usually with a variety of graphic approaches.
- ..a number of particular examples
- ..practice questions with random questions but particular feedback
- ..a topic test with random questions and tracking
- ..off computer worksheets selected from the website .. www.neufeldmath.com

Grades 6–8: Geometry

STANDARD I. Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.

EXPECTATION A. Precisely describe, classify, and understand relationships among types of two- and three-dimensional objects using their defining properties.

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
1. Compare and contrast prisms, cylinders, and pyramids with the polygons or circles that constitute their faces.	MAT+ <u>Understanding Measurement and Geometry</u> Topic 2: Perimeter and Area of Polygons Polygons... What are They?	1. Classify polygons as regular or nonregular and investigate relationships between the number of diagonals and the number of sides of a regular polygon.	MAT+ <u>Understanding Measurement and Geometry</u> Topic 2: Perimeter and Area of Polygons Polygons... What are They?	1. Identify the necessary and sufficient properties that characterize quadrilaterals.	MAT+ <u>Understanding Measurement and Geometry</u> Topic 2: Perimeter and Area of Polygons Polygons... What are They?

EXPECTATION B. Understand relationships among the angles, side lengths, perimeters, areas, and volumes of similar objects.

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
1. Describe relationships among angles, side lengths, perimeters, and areas of similar polygons.	<p>MAT+ <u>Understanding Measurement and Geometry</u> Topic 2. Perimeter and Area of Polygons Relationship – Area and Perimeter</p> <p>Topic 6. Angles and Polygons Angles in Triangles Angles in Polygons</p>	*1. Describe relationships between the edge lengths and the volume of similar prisms.	<p>MAT+ <u>Understanding Measurement and Geometry</u> Topic 4. Solids – Volume and Surface Area Surface Area of a Solid Volume of a Solid</p>	*1. Describe how a change in the edge length affects the angle measures, perimeters, and areas of similar regular polygons.	<p>MAT+ <u>Understanding Measurement and Geometry</u> Topic 6. Angles and Polygons Angles in Polygons</p>

EXPECTATION C. Create and critique inductive and deductive arguments concerning geometric ideas and relationships, such as congruence, similarity, and the Pythagorean relationship.

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
1. Identify and describe point and line symmetry in two-dimensional shapes.	MAT+ <u>Understanding Graphing</u> Topic 4. Transformations Line of Symmetry – An Introduction Examples 1 through 4	*1. Compare and contrast attributes of similar figures and the attributes of congruent figures.		1. Given the length of three segments, determine and explain whether or not they can form a triangle.	
2. Distinguish between similarity and congruence.				2. Apply the Pythagorean relationship to determine if a triangle is a right triangle.	MAT+ <u>Understanding Exponents</u> Topic 6. Pythagorean Theorem Math or Magic? Squares on a Grid Squares on the Side of a Right Triangle
				*3. Apply the Pythagorean theorem to find the missing length of a side of a right triangle.	MAT+ <u>Understanding Exponents</u> Topic 6. Pythagorean Theorem The Pythagorean Theorem The Pattern In General Theorem

STANDARD II. Specify locations and describe spatial relationships using coordinate geometry and other representational systems.

EXPECTATION A. Use coordinate geometry to represent and examine the properties of geometric shapes.

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
1. Given the coordinates of three vertices of a rectangle or square oriented horizontally or vertically, use the first quadrant of the rectangular coordinate system to locate the other vertex.	MAT+ Understanding Graphing Topic 3. Points on a Grid Shapes	1. Identify and graph ordered pairs in the four quadrants of a coordinate plane.	MAT+ Understanding Graphing Topic 3. Points on a Grid Ordered Pairs Axis Quadrants and Cartesian Plane Find a Point Order is Important	*1. Given the coordinates of a vertex and the length of adjacent sides of a polygon, use the rectangular coordinate system to locate other vertices of a square, rectangle, or right triangle.	MAT+ Understanding Graphing Topic 3. Points on a Grid Shapes Battleship

EXPECTATION B. Use coordinate geometry to examine special geometric shapes, such as regular polygons or those with pairs of parallel or perpendicular sides.

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8
1. Plot the vertices of squares and rectangles and determine the relationship among the coordinates.	MAT+ Understanding Graphing Topic 3. Points on a Grid Shapes Battleship	*1. State relationships among the coordinates of the vertices of rectangles, squares, parallelograms, trapezoids, and rhombuses oriented horizontally.	MAT+ Understanding Graphing Topic 3. Points on a Grid Shapes Battleship	

STANDARD III. Apply transformations and use symmetry to analyze mathematical situations.

EXPECTATION A. Describe sizes, positions, and orientations of shapes under informal transformations such as flips, turns, slides, and scaling.

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
1. Describe the transformation used to move a polygon from one location to another in the first quadrant.	MAT+ <u>Understanding Graphing</u> Topic 4. Transformations Introduction to Common Transformations Translations – An Introduction Slides #1,#2,#3,#4 Reflections – An Introduction Flip #1, #2, #3, #4 Rotation – An Introduction Turn #1, #2, #3, #4 The Transformation Machine Examples 1 through 5	1. Describe the transformation used to move a polygon in one quadrant to another quadrant in the coordinate plane.	MAT+ <u>Understanding Graphing</u> Topic 4. Transformations Translations Object to Image We Say We Write Reflection Mapping Rule Examples 1,2,3	1. Apply dilations and describe their results.	MAT+ <u>Understanding Graphing</u> Topic 4. Transformations Dilatations Object to Image We Say We Write

EXPECTATION B. Examine the congruence, similarity, and line or rotational symmetry of objects using transformations.

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
*1. Apply a transformation to a polygon and describe how it has changed.	MAT+ <u>Understanding Graphing</u> Topic 4. Transformations Translations Object to Image We Say We Write Reflection Mapping Rule Examples 1,2,3	1. Determine the type of symmetry (point or line) found in a reflection or a rotation.	MAT+ <u>Understanding Graphing</u> Topic 4. Transformations Symmetry Match	1. Determine the equivalence, if any, between multiple applications of one transformation and the application of a different transformation.	MAT+ <u>Understanding Graphing</u> Topic 4. Transformations Translations Object to Image We Say We Write Reflection Mapping Rule Examples 1,2,3

STANDARD IV. Use visualization, spatial reasoning, and geometry modeling to solve problems.

EXPECTATION A. Draw geometric objects with specified properties, such as side lengths or angle measures.

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
1. Use symbols for parallel lines and perpendicular lines to describe polygons and figures where appropriate.	MAT+ <u>Understanding Measurement and Geometry</u> Topic 6. Angles and Polygons Parallel Lines Examples with Parallel Lines Topic 7. Constructions Perpendicular from Points On & Off Line	*1. Draw two-dimensional objects from a geometric description and write a description of geometric properties for a given object.	MAT+ <u>Understanding Measurement and Geometry</u> Topic 7. Constructions <i>All Sections</i>	1. Identify the congruent and supplementary relationships of the angles formed by parallel lines and a transversal.	MAT+ <u>Understanding Measurement and Geometry</u> Topic 6. Angles and Polygons Angles in Polygons Methods 1,2 Exterior Angles in Polygons

EXPECTATION B. Use two-dimensional representations of three-dimensional objects to visualize and solve problems such as those involving surface area and volume.

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
*1. Given the top, side, and front views, construct a three-dimensional model using cubes.	MAT+ <u>Understanding Measurement and Geometry</u> Topic 8. Projective Geometry An Introduction Toothpicks on Isometric Dot Paper The Cube Tool	1. Construct nets for three-dimensional figures.		1. Use isometric drawings of three-dimensional figures to build the model with cubes.	MAT+ <u>Understanding Measurement and Geometry</u> Topic 8. Projective Geometry <i>All Sections</i>
		2. Compare and contrast the number of faces, vertices, and edges of three-dimensional figures.	MAT+ <u>Understanding Measurement and Geometry</u> Topic 4. Solids...Volume and Surface Area Classifying Solids	*2. Determine the changes in volume and surface area of three-dimensional figures that can be built with cubes when one or more measurements are changed.	MAT+ <u>Understanding Measurement and Geometry</u> Topic 9. Ratios and Areas for Volumes <i>All Sections</i>

EXPECTATION C. Use visual tools such as networks to represent and solve problems.

6	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
	1. Given a network with up to six vertices, determine the number of paths.		1. Construct a network to solve a problem situation.	

EXPECTATION D. Use geometric models to represent and explain numerical and algebraic relationships.

6	7	8	Understanding Math PLUS Program & Topic
		1. Use an area model to analyze probability.	MAT+ <u>Understanding Probability</u> Topic 2. What's the Chance? Probability What is it? Introduction 1,2 Probability Examples 1 through 9

EXPECTATION E. Recognize and apply geometric ideas and relationships in areas outside the mathematics classroom, such as art, science, and everyday life.

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
1. Identify and apply geometric concepts in a variety of practical contexts.		1. Identify transformations in tessellations, use transformations to draw tessellations, and describe relationships among figures that tessellate.	MAT+ <u>Understanding Graphing</u> Topic 4. Transformations Tessellations Introduction Examples 1 through 5	1. Identify applications of transformations such as tiling, fabric design, art, and scaling.	