

## Correlation of the Understanding Math 2008© Programs With the California Mathematics Content Standards for Geometry

The programs are designed for use in a variety of teaching and learning environments ranging from a teacher-centered approach with one computer to a student-centered lab approach. The lessons may also be used in remediation, tutorials, intervention, resource, and fast-tracking.

### Organization of the Understanding Math 2008© Programs

The Understanding Math 2008© series of programs consists of the following nine programs written for fourth to tenth grade:

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

Each program contains several sections with several topics. Every topic has the following:

- 1) an interactive concept introduction, usually with a variety of graphic approaches;
- 2) a number of particular examples;
- 3) practice questions with random questions, but specific feedback;
- 4) a topic test with random questions and tracking;
- 5) on-line worksheets selected from our website ([www.neufeldmath.com](http://www.neufeldmath.com)).

Teachers may also search for specific topics using our search engine at <http://www.corr.neufeldmath.com>.

Each of the twenty-two content standards have been correlated to the Understanding Math 2008© programs. The beginning of each standard is listed below:

1.0 (page 2)	6.0 (page 2)	11.0 (page 7)	16.0 (page 9)	21.0 (page 10)
2.0 (page 2)	7.0 (page 3)	12.0 (page 7)	17.0 (page 10)	22.0 (page 10)
3.0 (page 2)	8.0 (page 4)	13.0 (page 8)	18.0 (page 10)	
4.0 (page 2)	9.0 (page 6)	14.0 (page 8)	19.0 (page 10)	
5.0 (page 2)	10.0 (page 6)	15.0 (page 9)	20.0 (page 10)	

Ideas that are ***not included*** in the current Understanding Numeration 2008© and Understanding Math 2008© programs are noted as ***not yet correlated***.

For lesson planning purposes, there is space in the chart for notes, material lists, links, resources etc.

**California Mathematics Content Standards  
Correlated to Understanding Math 2008 ©  
Geometry**

**Grade Eight through Grade 12... Geometry**

The geometry skills and concepts developed in this discipline are useful to all students. Aside from learning these skills and concepts, students will develop their ability to construct formal, logical arguments and proofs in geometric settings and problems.

**1.0 Students demonstrate understanding by identifying and giving examples of undefined terms, axioms, theorems, and inductive and deductive reasoning.**

Not yet correlated

**2.0 Students write geometric proofs, including proofs by contradiction.**

Not yet correlated

**3.0 Students construct and judge the validity of a logical argument and give counterexamples to disprove a statement.**

Not yet correlated

**4.0 Students prove basic theorems involving congruence and similarity.**

Not yet correlated

**5.0 Students prove that triangles are congruent or similar, and they are able to use the concept of corresponding parts of congruent triangles.**

Not yet correlated

**6.0 Students know and are able to use the triangle inequality theorem.**

Not yet correlated



**7.0 Students prove and use theorems involving the properties of parallel lines cut by a transversal, the properties of quadrilaterals, and the properties of circles.**

<p><b>Understanding Measurement and Geometry 2008</b></p>	<p><b>Notes</b></p>
<p><b>Section 2: Perimeter and Area of Polygons</b></p>	
<p>Polygons... What are They?                      A Quadrilateral is</p>	
<p><b>Understanding Measurement and Geometry 2008</b></p>	<p><b>Notes</b></p>
<p><b>Section 3: Circles</b></p>	
<p>In This Topic Circles All Around Us! Radius, Circumference, Diameter PI... A Special Number</p>	<p>Introduction How do we Measure Circumference? Measuring Circles Summary</p>
<p>Circumference of a Circle</p>	<p>Circumference of a Circle Ex. 1 - Gog Ex. 2 - The Well Ex. 3 - The Rolling Coin Ex. 4 - The Semi-Circle</p>
<p>AREA of a Circle</p>	<p>Recall Area Area Exploration #1 Area Exploration #2 Ex. 1 - Wheel Ex. 2 - Pizza Ex. 3 - The Semi-Circle Ex. 4 - The Dog's Run Ex. 5 - The Hockey Rink Ex. 6 - Circle and Square</p>
<p>Practice Questions</p>	<p>5 questions (randomly generated)</p>
<p><b>Understanding Measurement and Geometry 2008</b></p>	<p><b>Notes</b></p>
<p><b>Section 6: Angles and Polygons</b></p>	
<p>In This Topic Parallel Lines Examples with Parallel Lines</p>	<p>Example 1 Example 2</p>
<p>Angles in Triangles</p>	<p>Exploration An Explanation Exterior Angles Example</p>
<p>Angles in Polygons</p>	<p>Method 1 Method 2</p>



	<p>Practice Questions</p> <p>Exterior Angles in a Polygon 5 questions (randomly generated)</p> <p><b>Note: Students are not required to <u>prove</u> theorems in the current programs.</b></p>												
<p><b>8.0 Students know, derive, and solve problems involving the perimeter, circumference, area, volume, lateral area, and surface area of common geometric figures.</b></p>													
	<table border="0"> <thead> <tr> <th style="text-align: left;"><b>Understanding Measurement and Geometry 2008</b></th> <th style="text-align: right;"><b>Notes</b></th> </tr> </thead> <tbody> <tr> <td style="text-align: left;"><b>Section 2: Perimeter and Area of Polygons</b></td> <td></td> </tr> <tr> <td style="text-align: left;">Walk Around a Polygon</td> <td>           Joan Walks            Perimeter of Various Shapes- Example - 1            Perimeter of Various Shapes- Example - 2            Perimeter of Various Shapes- Example - 3            Perimeter of The Ranch            Length of the Metal Strip            Find the Perimeter - 3 Examples         </td> </tr> <tr> <td style="text-align: left;">Areas of Polygons</td> <td>           Area of a Rectangle- Concept            Area of a Rectangle- Example 1            Area of a Rectangle- Example 2            Area of a Rectangle- Example 3            Area of a Rectangle- Example 4            Area of a Parallelogram- Concept            Area of a Parallelogram- Example 1            Area of a Parallelogram- Example 2            Area of a Triangle- Concept 1            Area of a Triangle- Concept 2            Area of a Triangle- Example 1            Area of a Triangle- Example 2            Area of a Trapezoid- Introduction            Area of a Trapezoid- Method 1            Area of a Trapezoid- Method 2            Area of a Trapezoid- Method 3            Area of a Trapezoid- Method 4            Polygons Broken into Simpler Shapes- Example 1            Polygons Broken into Simpler Shapes- Example 2            Polygons Broken into Simpler Shapes- Example 3         </td> </tr> <tr> <td style="text-align: left;">Problem Section</td> <td>           Length of Fence            Area of Wall            The Tablecloth         </td> </tr> <tr> <td style="text-align: left;">Practice Questions</td> <td>           17 questions (randomly generated)         </td> </tr> </tbody> </table>	<b>Understanding Measurement and Geometry 2008</b>	<b>Notes</b>	<b>Section 2: Perimeter and Area of Polygons</b>		Walk Around a Polygon	Joan Walks Perimeter of Various Shapes- Example - 1 Perimeter of Various Shapes- Example - 2 Perimeter of Various Shapes- Example - 3 Perimeter of The Ranch Length of the Metal Strip Find the Perimeter - 3 Examples	Areas of Polygons	Area of a Rectangle- Concept Area of a Rectangle- Example 1 Area of a Rectangle- Example 2 Area of a Rectangle- Example 3 Area of a Rectangle- Example 4 Area of a Parallelogram- Concept Area of a Parallelogram- Example 1 Area of a Parallelogram- Example 2 Area of a Triangle- Concept 1 Area of a Triangle- Concept 2 Area of a Triangle- Example 1 Area of a Triangle- Example 2 Area of a Trapezoid- Introduction Area of a Trapezoid- Method 1 Area of a Trapezoid- Method 2 Area of a Trapezoid- Method 3 Area of a Trapezoid- Method 4 Polygons Broken into Simpler Shapes- Example 1 Polygons Broken into Simpler Shapes- Example 2 Polygons Broken into Simpler Shapes- Example 3	Problem Section	Length of Fence Area of Wall The Tablecloth	Practice Questions	17 questions (randomly generated)
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Understanding Measurement and Geometry 2008	Notes
<p><b>Section 3: Circles</b></p> <p>Circumference of a Circle</p> <p>AREA of a Circle</p> <p>Practice Questions</p>	<p>Circumference of a Circle  Ex. 1 - Gog  Ex. 2 - The Well  Ex. 3 - The Rolling Coin  Ex. 4 - The Semi-Circle</p> <p>Recall Area  Area Exploration #1  Area Exploration #2  Ex. 1 - Wheel  Ex. 2 - Pizza  Ex. 3 - The Semi-Circle  Ex. 4 - The Dog's Run  Ex. 5 - The Hockey Rink  Ex. 6 - Circle and Square</p> <p>5 questions (randomly generated)</p>
<p><b>Understanding Measurement and Geometry 2008</b></p>	<p><b>Notes</b></p>
<p><b>Section 4: Solids.. Volume and Surface Area</b></p> <p>Surface Area of a Solid</p> <p>Volume of a Solid</p> <p>Summary</p>	<p>Concept  Surface Area of a Pyramid  Surface Area of a Cylinder  Surface Area of a Sphere</p> <p>Concept  Volume of a Prism: Example 1  Volume of a Prism: Example 2  Volume of a Cylinder  Volume of a Pyramid  Volume of a Cone  Volume of a Sphere</p>
<p><b>Note:</b> Finding the lateral surface areas of common geometric figures is not a concept covered in the current programs. Calculating the area of triangles is covered but no examples using scalene triangles or equilateral triangles are given.</p>	



**9.0 Students compute the volumes and surface areas of prisms, pyramids, cylinders, cones, and spheres; and students commit to memory the formulas for prisms, pyramids, and cylinders.**

	<b>Notes</b>
<p><b>Understanding Measurement and Geometry 2008</b>  <b>Section 4: Solids.. Volume and Surface Area</b></p> <p>Surface Area of a Solid</p> <p>Volume of a Solid</p> <p>Summary</p>	<p>Concept            Surface Area of a Pyramid            Surface Area of a Cylinder            Surface Area of a Sphere</p> <p>Concept            Volume of a Prism: Example 1            Volume of a Prism: Example 2            Volume of a Cylinder            Volume of a Pyramid            Volume of a Cone            Volume of a Sphere</p>

**10.0 Students compute areas of polygons, including rectangles, scalene triangles, equilateral triangles, rhombi, parallelograms, and trapezoids.**

	<b>Notes</b>
<p><b>Understanding Measurement and Geometry 2008</b>  <b>Section 2: Perimeter and Area of Polygons</b></p> <p>Areas of Polygons</p>	<p>Area of a Rectangle- Concept            Area of a Rectangle- Example 1            Area of a Rectangle- Example 2            Area of a Rectangle- Example 3            Area of a Rectangle- Example 4            Area of a Parallelogram- Concept            Area of a Parallelogram- Example 1            Area of a Parallelogram- Example 2            Area of a Triangle- Concept 1            Area of a Triangle- Concept 2            Area of a Triangle- Example 1            Area of a Triangle- Example 2            Area of a Trapezoid- Introduction            Area of a Trapezoid- Method 1            Area of a Trapezoid- Method 2            Area of a Trapezoid- Method 3            Area of a Trapezoid- Method 4            Polygons Broken into Simpler Shapes- Example 1            Polygons Broken into Simpler Shapes- Example 2            Polygons Broken into Simpler Shapes- Example 3</p>



**11.0 Students determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids.**

<b>Understanding Measurement and Geometry 2008</b>		<b>Notes</b>
<b>Section 2: Perimeter and Area of Polygons</b>		
Relationship - Area and Perimeter	The Information The Graph- Length and Perimeter The Graph- Length and Area	
Given Area and Perimeter - Create Shape	Example 1 Example 2 Example 3 Example 4	
<b>Understanding Measurement and Geometry 2008</b>		<b>Notes</b>
<b>Section 9: Ratios for Areas and Volumes</b>		
In This Topic		
Ratios	Introduction Area Volume	
Practice Questions	10 questions (randomly generated)	

**12.0 Students find and use measures of sides and of interior and exterior angles of triangles and polygons to classify figures and solve problems.**

<b>Understanding Measurement and Geometry 2008</b>		<b>Notes</b>
<b>Section 6: Angles and Polygons</b>		
Angles in Triangles	Exploration An Explanation Exterior Angles Example	
Angles in Polygons	Method 1 Method 2 Exterior Angles in a Polygon	
Practice Questions	5 questions (randomly generated)	
<b>Note: The following programs cover only the basic characteristics of various geometric shapes. Calculating the lengths of the sides of the figures is not covered.</b>		



**13.0 Students prove relationships between angles in polygons by using properties of complementary, supplementary, vertical, and exterior angles.**

<p><b>Understanding Measurement and Geometry 2008</b></p>		<p><b>Notes</b></p>
<p><b>Section 5: Angles and Their Measure</b></p>		
<p>Classify Angles</p>	<p>Classification</p>	
<p><b>Understanding Measurement and Geometry 2008</b></p>		<p><b>Notes</b></p>
<p><b>Section 6: Angles and Polygons</b></p>		
<p>In This Topic</p>		
<p>Parallel Lines</p>		
<p>Examples with Parallel Lines</p>	<p>Example 1</p>	
	<p>Example 2</p>	
<p>Angles in Triangles</p>	<p>Exploration</p>	
	<p>An Explanation</p>	
	<p>Exterior Angles</p>	
	<p>Example</p>	
<p>Angles in Polygons</p>	<p>Method 1</p>	
	<p>Method 2</p>	
	<p>Exterior Angles in a Polygon</p>	
<p>Practice Questions</p>	<p>5 questions (randomly generated)</p>	

**14.0 Students prove the Pythagorean theorem.**

<p><b>Understanding Exponents 2008</b></p>		<p><b>Notes</b></p>
<p><b>Section 6: Pythagorean Theorem</b></p>		
<p>Squares on the Sides of a Right Triangle</p>	<p>Triangle #1</p>	
	<p>Triangle #2</p>	
	<p>Triangle #3</p>	
<p>The Pythagorean Theorem</p>	<p>The Pattern</p>	
	<p>In General</p>	
	<p>Theorem</p>	



**15.0 Students use the Pythagorean theorem to determine distance and find missing lengths of sides of right triangles.**

	<b>Understanding Exponents 2008</b>	<b>Notes</b>
	<p><b>Section 6: Pythagorean Theorem</b>                      The Pythagorean Theorem                      Example Questions</p> <p>Practice Questions</p>	<p>Theorem                      Example 1... Pole Example                      Example 2... Tower Example                      Example 3... Walking Example                      Example 4... Lake Example                      Example 5... Geometric Example                      5 questions (randomly generated)</p>

**16.0 Students perform basic constructions with a straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through a point off the line.**

	<b>Understanding Measurement and Geometry 2008</b>	<b>Notes</b>
	<p><b>Section 7: Constructions</b>                      Before You Begin                      In This Topic                      Perpendicular Bisector                      Circumcircle of a Triangle                      Centroid of a Triangle                      Bisector of an Angle                      Incircle                      Perpendicular to a Point on the Line                      Perpendicular to a Point Off the Line                      Orthocenter                      Draw a Line Parallel to Another Line Lesson</p>	<p>Construction Steps                      Summary                      Construction Steps                      Summary                      Construction Steps                      Summary                      Construction Steps                      Summary                      Construction Steps                      Summary                      Construction Steps                      Summary                      Construction Steps                      Summary                      Construction Steps                      Summary                      Construction Steps                      Summary                      Construction Steps                      Summary</p>



<b>17.0 Students prove theorems by using coordinate geometry, including the midpoint of a line segment, the distance formula, and various forms of equations of lines and circles.</b>	
	Not yet correlated
<b>18.0 Students know the definitions of the basic trigonometric functions defined by the angles of a right triangle. They also know and are able to use elementary relationships between them. For example, <math>\tan(x) = \sin(x)/\cos(x)</math>, <math>(\sin(x))^2 + (\cos(x))^2 = 1</math>.</b>	
	Not yet correlated
<b>19.0 Students use trigonometric functions to solve for an unknown length of a side of a right triangle, given an angle and a length of a side.</b>	
	Not yet correlated
<b>20.0 Students know and are able to use angle and side relationships in problems with special right triangles, such as 30°, 60°, and 90° triangles and 45°, 45°, and 90° triangles.</b>	
	Not yet correlated
<b>21.0 Students prove and solve problems regarding relationships among chords, secants, tangents, inscribed angles, and inscribed and circumscribed polygons of circles.</b>	
	Not yet correlated
<b>22.0 Students know the effect of rigid motions on figures in the coordinate plane and space, including rotations, translations, and reflections.</b>	
<b>Understanding Graphing 2008</b> <b>Section 4: Transformations</b> In This Topic What is a Transformation? Introduction to Common Transformations Translations - An Introduction	<b>Notes</b>     Slide #1 Slide #2 Slide #3 Slide #4



	Reflections - An Introduction	Flip #1 Flip #2 Flip #3
	Rotation - An Introduction	Turn #1 Turn #2 Turn #3 Turn #4 Turn #5
	Transformation Machine	Example 1 Example 2 Example 3 Example 4 Example 5
	Lines of Symmetry	An Introduction Example 1 Example 2 Example 3 Example 4
	Symmetry Match	Puzzle -1 (randomly generated) Puzzle -2 (randomly generated)
	Tessellations	Introductions Examples- Example 1 Examples- Example 2 Examples- Example 3 Examples- Example 4 Examples- Example 5 Examples- Example 6
	Tangrams	Tangram Introduction Tangram Construction Example 1 Example 2 Example 3 Example 4 Example 5 Example 6
	Translations	Object to Image We Say, We Write Translation Mapping Rule Examples- Example 1 Examples- Example 2 Examples - Example 3
	Reflections	Object to Image We Say, We Write



	Rotations	Reflection Mapping Rule Examples- Example 1 Examples- Example 2 Object to Image We Say, We Write Rotation Mapping Rule Examples- Example 1 Examples- Example 2
	Dilations	Object to Image We Say, We Write Dilation Mapping Rule Examples- Example 1 Examples- Example 2
	Practice Questions	5 questions (randomly generated)
	Topic Test	10 questions (randomly generated)

