



Correlation of the Understanding Math 2008© Programs With Mathematics Standards of Learning for Virginia Public Schools 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:

Understanding Whole Numbers and Integers
Understanding Measurement and Geometry
Understanding Fractions
Understanding Graphing
Understanding Percent

Understanding Equations
Understanding Probability
Understanding Algebra
Understanding Exponents

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).

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

The curriculum expectations for each Unit per term have been correlated to the Understanding Math 2008© programs. The location of each week is listed below:



Geometry

Reasoning, Lines, and Transformations	(Page 3 – 6)
Triangles	(Page 7 – 7)
Polygons and Circles	(Page 8 – 9)
Three-Dimensional Figures	(Page 10 – 10)

Curriculum expectations that are ***not included*** in the current 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.



**Mathematics Standards of Learning for Virginia Public Schools
Correlated to Understanding Math 2008©
Geometry**

Reasoning, Lines, and Transformations

G.1 The student will construct and judge the validity of a logical argument consisting of a set of premises and a conclusion. This will include

a) identifying the converse, inverse, and contrapositive of a conditional statement;

Not yet correlated

b) translating a short verbal argument into symbolic form;

Not yet correlated

c) using Venn diagrams to represent set relationships; and

Understanding Measurement and Geometry 2008

Notes

Section 2: Perimeter and Area of Polygons

Classify Polygons with Venn Diagrams

Understanding Fractions 2008

Notes

Section 2: Products, Multiples, Factors

Venn Diagrams - Factors

Example 1

Example 2

Example 3

d) using deductive reasoning.

Not yet correlated

G.2 The student will use the relationships between angles formed by two lines cut by a transversal to

a) determine whether two lines are parallel;

Understanding Measurement and Geometry 2008

Notes

Section 6: Angles and Polygons

Parallel Lines

Examples with Parallel Lines

Example 1

Example 2

b) verify the parallelism, using algebraic and coordinate methods as well as deductive proofs; and

Understanding Graphing 2008

Notes

Section 7: Slope of a Line

Parallel Lines

Introduction

Example 1

Example 2



Slope of Parallel Lines	Example 3 Example 2 Example 3
c) solve real-world problems involving angles formed when parallel lines are cut by a transversal.	
Not yet correlated	
G.3 The student will use pictorial representations, including computer software, constructions, and coordinate methods, to solve problems involving symmetry and transformation. This will include	
a) investigating and using formulas for finding distance, midpoint, and slope;	
Understanding Graphing 2008 Section 7: Slope of a Line Introductory Examples Formula	Notes Example 1 Example 2 Example 3 Example 4
b) applying slope to verify and determine whether lines are parallel or perpendicular;	
Understanding Graphing 2008 Section 7: Slope of a Line Parallel Lines Perpendicular Lines Slope of Parallel Lines Slope of Perpendicular Lines	Notes Introduction Example 1 Example 2 Example 3 Introduction Example 1 Example 2 Example 2 Example 3 Example 1 Example 2 Example 3 Pattern



c) investigating symmetry and determining whether a figure is symmetric with respect to a line or a point; and

Understanding Graphing 2008

Notes

Section 4: Transformations

Lines of Symmetry	An Introduction Example 1 Example 2 Example 3 Example 4
Symmetry Match	Puzzle -1 (randomly generated) Puzzle -2 (randomly generated)

d) determining whether a figure has been translated, reflected, rotated, or dilated, using coordinate methods.

Understanding Graphing 2008

Notes

Section 4: Transformations

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 Reflection Mapping Rule Examples- Example 1 Examples- Example 2
Rotations	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

G.4 The student will construct and justify the constructions of

a) a line segment congruent to a given line segment;

Not yet correlated



Triangles

G.5 The student, given information concerning the lengths of sides and/or measures of angles in triangles, will

a) order the sides by length, given the angle measures;

Not yet correlated

b) order the angles by degree measure, given the side lengths;

Not yet correlated

c) determine whether a triangle exists; and

Not yet correlated

d) determine the range in which the length of the third side must lie. These concepts will be considered in the context of real-world situations.

Not yet correlated

G.6 The student,

given information in the form of a figure or statement, will prove two triangles are congruent, using algebraic and coordinate methods as well as deductive proofs.

Not yet correlated

G.7 The student,

given information in the form of a figure or statement, will prove two triangles are similar, using algebraic and coordinate methods as well as deductive proofs.

Not yet correlated

G.8 The student will

solve real-world problems involving right triangles by using the Pythagorean Theorem and its converse, properties of special right triangles, and right triangle trigonometry.

Understanding Exponents 2008

Notes

Section 6: Pythagorean Theorem

Example Questions

Example 1... Pole Example

Example 2... Tower Example

Example 3... Walking Example

Example 4... Lake Example

Example 5... Geometric Example

Practice Questions

5 questions (randomly generated)



Polygons and Circles

G.9 The student will

verify characteristics of quadrilaterals and use properties of quadrilaterals to solve real-world problems.

Understanding Measurement and Geometry 2008

Section 2: Perimeter and Area of Polygons

Notes

Polygons... What are They?
Areas of Polygons

A Quadrilateral is
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 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
Area of Wall
The Tablecloth

Problem Section

G.10 The student will

solve real-world problems involving angles of polygons.

Understanding Measurement and Geometry 2008

Section 6: Angles and Polygons

Notes

Angles in Triangles

Exploration
An Explanation
Exterior Angles
Example
Method 1
Method 2
Exterior Angles in a Polygon

Angles in Polygons



G.11 The student will use angles, arcs, chords, tangents, and secants to

a) investigate, verify, and apply properties of circles;

Understanding Measurement and Geometry 2008

Notes

Section 3: Circles

In This Topic

Circles All Around Us!

Radius, Circumference, Diameter

PI... A Special Number

Circumference of a Circle

AREA of a Circle

Practice Questions

Introduction

How do we Measure Circumference?

Measuring Circles

Summary

Circumference of a Circle

Ex. 1 - Ogg

Ex. 2 - The Well

Ex. 3 - The Rolling Coin

Ex. 4 - The Semi-Circle

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

5 questions (randomly generated)

b) solve real-world problems involving properties of circles; and

Understanding Measurement and Geometry 2008

Notes

Section 3: Circles

AREA of a Circle

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

c) find arc lengths and areas of sectors in circles.

Not yet correlated

G.12 The student,

given the coordinates of the center of a circle and a point on the circle, will write the equation of the circle.

Not yet correlated



Three-Dimensional Figures

G.13 The student will

use formulas for surface area and volume of three-dimensional objects to solve real-world problems.

Understanding Measurement and Geometry 2008

Section 4: Solids.. Volume and Surface Area

Surface Area of a Solid

Concept

Surface Area of a Pyramid

Surface Area of a Cylinder

Surface Area of a Sphere

Volume of a Solid

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

Notes

G.14 The student will use similar geometric objects in two- or three-dimensions to

a) compare ratios between side lengths, perimeters, areas, and volumes;

Understanding Measurement and Geometry 2008

Section 4: Solids.. Volume and Surface Area

Summary

Notes

b) determine how changes in one or more dimensions of an object affect area and/or volume of the object;

Not yet correlated

c) determine how changes in area and/or volume of an object affect one or more dimensions of the object; and

Not yet correlated

d) solve real-world problems about similar geometric objects.

Understanding Fractions 2008

Section 7: Ratios and Proportions

Proportions

Example 5 - Tree Height

Example 7 - Scale Drawing

Notes

