

Correlation of the Understanding Numeration 2008© With the Mathematics Georgia Performance Standards Kindergarten

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 Numeration 2008© Program

The Understanding Numeration 2008© program consists of the following five concepts:

Counting Operations Place Value Comparing and Ordering Problem Solving

Each concept in the program covers several skills. Every skill has up to four different levels of difficulty with corresponding lessons for each level. The lessons are sequenced to build an understanding of concepts. Each concept also has the following:

- 1) an interactive concept introduction, usually with a variety of graphic approaches;
- 2) a number of particular examples;
- 3) a skill test with random questions and tracking;
- 4) worksheets with visual demonstrations on how to complete each worksheet;
- 5) teaching strategies including Math Circles Overview, Flight Plan Overview, Flight Plan Roles, and Flight Plan
- 6) Navigation Sheets are found on our website (www.neufeldmath.com).

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

The location of each standard is listed below:

Number and Operations

- MKN1 Students will connect numerals to the quantities they represent. (pages 3 - 5)
- MKN2 Students will use representations to model addition and subtraction. (pages 5 - 7)

Measurement

- MKM1 Students will group objects according to common properties such as longer/shorter, more/less, taller/shorter, and heavier/lighter. (pages 7 - 7)
- MKM2 Students will understand the measurement of calendar time. (pages 8 - 8)
- MKM3 Students will understand time as it relates to a daily schedule. (pages 8 - 8)

Geometry

- MKG1 Students will correctly name simple two and three-dimensional figures, and recognize them in the environment. (pages 9 - 9)
- MKG2 Students will understand basic spatial relationships. (pages 9 - 9)
- MKG3 Students will identify, create, extend, and transfer patterns from one representation to another using actions, objects, and geometric shapes. (pages 10 - 10)

Data Analysis and Probability

- MKD1 Students will pose information questions, collect data, organize, and display results using objects, pictures, and picture graphs. (pages 10 - 10)

Process Standards

- MKP1 Students will solve problems (using appropriate technology). (pages 11 - 12)
- MKP2 Students will reason and evaluate mathematical arguments. (pages 12 - 13)
- MKP3 Students will communicate mathematically. (pages 13 - 14)
- MKP4 Students will make connections among mathematical ideas and to other disciplines. (pages 15 - 15)
- MKP5 Students will represent mathematics in multiple ways. (pages 16 - 16)

Standards that are ***not included*** in the current Understanding Numeration 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 Georgia Performance Standards
Correlated to Understanding Numeration 2008 ©
Kindergarten**

Kindergarten... Number and Operations

MKN1. Students will connect numerals to the quantities they represent.

a. Count a number of objects up to 30.

Understanding Numeration: Counting

Notes

Skill 1: Reading and Printing Numerals

Level A 1) Introduction - Counting 1 to 10

3) Things in a Square #1

Level B 1) Counting 1-20

3) Things in a Square #2

Skill 2: Associating Numbers in a Real World Context

Level A 1) The Street Scene

2) The Zoo

Do Skill Test - 5 questions (randomly generated)

Skill 3: 1 to 1 Correspondence of #s to Objects

Level A 1) Keep Track by Marking

Do Skill Test - 5 questions (randomly generated)

Skill 4: Counting Backwards

Level A 2) Counting Up & Down #1

Level B 1) Counting Up & Down #2

b. Produce models for number words through ten.

Understanding Numeration: Counting

Notes

Skill 1: Reading and Printing Numerals

Level A 1) Introduction - Counting 1 to 10



c. Write numerals through 20 to label sets.

Understanding Numeration: Counting

Notes

Skill 1: Reading and Printing Numerals

- Level B 1) Counting 1-20
- 3) Things in a Square #2

Skill 2: Associating Numbers in a Real World Context

- Level A 1)The Street Scene
- 2)The Zoo
- Do Skill Test - 5 questions (randomly generated)

Skill 4: Counting Backwards

- Level A 2) Counting Up & Down #1
- Level B 1) Counting Up & Down #2

d. Sequence and identify using ordinal numbers (1st-10th).

Understanding Numeration: Comparing & Ordering

Notes

Skill 6: Use Ordinal Numbers

- Level A 1) Ordering Ladybugs
- Do Skill Test - 5 questions (randomly generated)
- Level B 1) The Steps
- Do Skill Test - 5 questions (randomly generated)

e. Compare two or more sets of objects (1-10) and identify which set is equal to, more than, or less than the other.

Understanding Numeration: Comparing & Ordering

Notes

Skill 3: Introduce... "Greater Than"; "Less Than"

- Level A 1) Greater Than
- 2) Less Than
- 3) Greater Than, Less Than #1
- 4) Greater Than, Less Than, Equal To
- Do Skill Test - 10 questions (randomly generated)

f. Estimate quantities using five and ten as a benchmark. (e.g. 9 is one five and four more. It is closer to 10, which can be represented as one ten or two fives, than it is to five.)

Not yet correlated



<p>g. Use informal strategies to share objects equally (divide) between two to three people or sets.</p> <p>Understanding Numeration: Operations Skill 34: Introduction to Division Level C 1) Equal Groups of Eggs 2) Sharing Oranges Equally</p>	Notes
<p>h. Identify coins by name and value (penny, nickel, dime, and quarter).</p> <p>Understanding Numeration: Counting Skill 7: Counting Using Money Level B 1) Pennies, Nickels, Dimes (USA/Canadian) 2) Coins - Count by 10s, 5s and 1s (USA/Canadian) Do Skill Test - 5 questions (randomly generated) Level C 1) Quarters (USA/Canadian) Do Skill Test - 5 questions (randomly generated) USA</p>	Notes
<p>i. Count out pennies to buy items that together cost less than 30 cents.</p> <p>Not yet correlated</p>	
<p>j. Make fair trades using combinations involving pennies and nickels and pennies and dimes.</p> <p>Not yet correlated</p>	
<p>MKN2. Students will use representations to model addition and subtraction.</p>	
<p>a. Use counting strategies to find out how many items are in two sets when they are combined, separated, or compared.</p> <p>Understanding Numeration: Counting Skill 14: Count on from a Given Number Level A 1) Show, Cover Up, Count On 2) Cover Up, Count On Do Skill Test - 5 questions (randomly generated)</p>	Notes



b. Build number combinations up to 10 (e.g., 4 and 1, 2 and 3, 3 and 2, 4 and 1 for five) and for doubles to 10 (3 and 3 for six).

Understanding Numeration: Operations

Notes

Skill 5: Demonstrate Addition Facts... Making 5

- Level A 1) Ways to Make 5
- 2) Ways to Make 5 - Reverse Order
- 3) Ways to Make 5 - Vertical
- 4) Make 5: Horizontal and Vertical
- Do Skill Test - 10 questions (randomly generated)

Skill 6: Demonstrate Addition Facts... Making 6

- Level A 1) Ways to Make 6
- 2) Ways to Make 6 - Reverse Order
- 3) Make 6 - Horizontal and Vertical
- Do Skill Test - 10 questions (randomly generated)

Skill 7: Demonstrate Addition Facts... Making 7

- Level A 1) Ways to Make 7
- 2) Ways to Make 7 - Reverse Order
- 3) Make 7: Horizontal and Vertical
- Do Skill Test - 10 questions (randomly generated)

c. Use objects, pictures, numbers, or words to create, solve and explain story problems (combining, separating, or comparing) for two numbers that are each less than 10.

Understanding Numeration: Operations

Notes

Skill 1: Introduce Addition... Concretely... "in all" and "altogether"

- Level A 1) Addition Using Gumballs #1
- 2) Addition Using Beans #1
- 3) Add the Number of Sides of Shapes #1
- Do Skill Test - 10 questions (randomly generated)

Skill 2: Introduce Addition... concretely... "and"

- Level A 1) Addition Using Gumballs #2
- 2) Addition Using Beans #2
- Do Skill Test - 10 questions (randomly generated)

Skill 3: Introduce the Symbolism... # + # = #

- Level A 1) Addition Using Gumballs #3
- 2) Addition Using Beans #3

Skill 4: Introduce the Words... "plus" and "equals"

- Level A 1) Addition Using Gumballs #4
- 2) Addition Using Beans #4



Skill 18: Introduce Subtraction Concretely... "Take Away"

- Level A 1) Introduction to Subtraction #1
- 2) Introduction to Subtraction #2
- Do Skill Test - 5 questions (randomly generated)

Skill 19: Introduce Subtraction Concretely... # - # = #

- Level A 1) Introduction to Subtraction #3
- 2) Introduction to Subtraction #4
- 3) Introduce Vertical Subtraction
- Do Skill Test - 10 questions (randomly generated)
- Level C 1) Subtraction Sentences
- Do Skill Test - 5 questions (randomly generated)

Kindergarten... Measurement

MKM1. Students will group objects according to common properties such as longer/shorter, more/less, taller/shorter, and heavier/lighter.

a. Compare and order objects on the basis of length.

Not yet correlated

b. Compare and order objects on the basis of capacity.

Not yet correlated

c. Compare and order objects on the basis of height.

Not yet correlated

d. Compare and order objects on the basis of weight.

Not yet correlated



MKM2. Students will understand the measurement of calendar time.

a. Know the names of the days of the week, as well as understand yesterday, today and tomorrow.

Not yet correlated

b. Know the months of the year.

Not yet correlated

c. Know the four seasons.

Not yet correlated

MKM3. Students will understand time as it relates to a daily schedule.

a. Order daily events.

Not yet correlated

b. Tell the time when daily events occur, such as morning, afternoon, and evening.

Not yet correlated

c. Know the name of the day of the week when weekly events occur in class

Not yet correlated



Kindergarten... Geometry

MKG1. Students will correctly name simple two and three-dimensional figures, and recognize them in the environment.

a. Recognize and name the following basic two-dimensional figures: triangles, quadrilaterals (rectangles, squares) and circles.

Understanding Numeration: Counting

Skill 15: Recognize and Count two-Dimensional Figures

Level B 1) Counting 2-D Figures #1

Do Skill Test - 5 questions (randomly generated)

Notes

b. Recognize and name the following three-dimensional figures: spheres and cubes.

Not yet correlated

c. Observe concrete objects in the environment and represent the objects using basic shapes.

Not yet correlated

d. Combine basic figures to form other basic and complex figures into basic figures; decompose basic and complex figures into basic figures.

Not yet correlated

e. Compare geometric shapes and identify similarities and differences of the following two and three-dimensional shapes: triangles, rectangles, squares, circles, spheres, and cubes.

Not yet correlated

MKG2. Students will understand basic spatial relationships.

a. Identify when an object is beside another object, above another object, or below another object.

Not yet correlated

b. Identify when an object is in front of another object, behind another object, inside another object, or outside it.

Not yet correlated



MKG3. Students will identify, create, extend, and transfer patterns from one representation to another using actions, objects, and geometric shapes.

a. Identify missing elements within a given pattern.

Not yet correlated

b. Extend a given pattern and recognize similarities in different patterns.

Not yet correlated

c. Create a pattern in a different context with attributes similar to a given pattern.

Not yet correlated

Kindergarten... Data Analysis and Probability

MKD1. Students will pose information questions, collect data, organize, and display results using objects, pictures, and picture graphs.

Not yet correlated



Kindergarten... Process Standards

MKP1. Students will solve problems (using appropriate technology).

a. Build new mathematical knowledge through problem solving.

Building new mathematical knowledge through problem solving is embedded in Understanding Numeration 2008©. The programs emphasize understanding, learning from the concrete to the abstract, and thinking and doing rather than memorizing by rote. A mistake is an opportunity to learn.

The following are some examples:

Understanding Numeration: Counting

Skill 6: Recognize and Count Solids

Level B 1) Counting Solids #1

Notes

Understanding Numeration: Comparing & Ordering

Skill 3: Introduce... "Greater Than"; "Less Than"

Level A 4) Greater Than, Less Than, Equal To

Notes

Understanding Numeration: Problem Solving

Skill 1: Draw a Picture

Level A,B,C,D 1) Eating Apples

Skill 5: Make a Graph

Level A,B,C,D 1) Classroom Shoes

Notes

b. Solve problems that arise in mathematics and in other contexts.

Not yet correlated at this level

c. Apply and adapt a variety of appropriate strategies to solve problems.

Applying and adapting a variety of appropriate strategies to solve problems is embedded in Understanding Numeration 2008©. The programs emphasize understanding, learning from the concrete to the abstract, and thinking and doing rather than memorizing by rote. A mistake is an opportunity to learn.

The following are some examples:

Understanding Numeration: Counting

Skill 3: 1 to 1 Correspondence of #s to Objects

Level A 1) Keep Track by Marking

Notes

Understanding Numeration: Problem Solving

Skill 1: Draw a Picture

Notes



Level A,B,C,D 1) Eating Apples
Skill 5: Make a Graph
Level A,B,C,D 1) Classroom Shoes

d. Monitor and reflect on the process of mathematical problem solving.

Not yet correlated at this level

MKP2. Students will reason and evaluate mathematical arguments.

a. Recognize reasoning and proof as fundamental aspects of mathematics.

Recognizing reasoning and proof as fundamental aspects of mathematics is embedded in Understanding Numeration 2008©. The programs emphasize understanding, learning from the concrete to the abstract, and thinking and doing rather than memorizing by rote. A mistake is an opportunity to learn.

The following are some examples:

Understanding Numeration: Problem Solving

Notes

Skill 1: Draw a Picture
Level A,B,C,D 1) Eating Apples
Skill 5: Make a Graph
Level A,B,C,D 1) Classroom Shoes

Understanding Numeration: Comparing & Ordering

Notes

Skill 4: Working with Whole Numbers > , < , =
Level A 4) Ordering... Horizontal #1

b. Make and investigate mathematical conjectures.

Making and investigating mathematical conjectures is embedded in Understanding Numeration 2008©. The programs emphasize understanding, learning from the concrete to the abstract, and thinking and doing rather than memorizing by rote. A mistake is an opportunity to learn.

The following are some examples:

Understanding Numeration: Counting

Notes

Skill 1: Reading and Printing Numerals
Level A 1) Introduction - Counting 1 to 10
3) Things in a Square #1
Level B 1) Counting 1-20
3) Things in a Square #2

Understanding Numeration: Counting

Notes

Skill 14: Count on from a Given Number



Level A 1) Show, Cover Up, Count On
2) Cover Up, Count On
Do Skill Test - 5 questions (randomly generated)

c. Develop and evaluate mathematical arguments and proofs.

Not yet correlated at this level

d. Select and use various types of reasoning and methods of proof.

Selecting and using various types of reasoning and methods of proof is embedded in Understanding Numeration 2008©. The programs emphasize understanding, learning from the concrete to the abstract, and thinking and doing rather than memorizing by rote. A mistake is an opportunity to learn.

The following are some examples:

Understanding Numeration: Counting

Skill 5: Estimating the # of Objects and Reasonableness

Level A 1) Estimate the Handful

Notes

Understanding Numeration: Comparing & Ordering

Skill 4: Working with Whole Numbers $>$, $<$, $=$

Level A 4) Ordering... Horizontal #1

Notes

Understanding Numeration: Problem Solving

Skill 1: Draw a Picture

Level A,B,C,D 1) Eating Apples

Notes

MKP3. Students will communicate mathematically.

a. Organize and consolidate their mathematical thinking through communication.

Organizing and consolidating their mathematical thinking through communication is embedded in Understanding Numeration 2008© strategies such as the Flight Plan located on our website (<http://www.neufeldmath.com/strategies/index.html>)

b. Communicate their mathematical thinking coherently and clearly to peers, teachers, and others.

Communicating their mathematical thinking coherently and clearly to peers, teachers, and others is embedded in Understanding Numeration 2008© strategies such as the Math Circles located on our website (<http://www.neufeldmath.com/strategies/index.html>)



c. Analyze and evaluate the mathematical thinking and strategies of others.

Analyzing and evaluating the mathematical thinking and strategies of others is embedded in Understanding Numeration 2008© strategies such as the Math Circles located on our website (<http://www.neufeldmath.com/strategies/index.html>)

d. Use the language of mathematics to express mathematical ideas precisely.

Using the language of mathematics to express mathematical ideas precisely is embedded in Understanding Numeration 2008©. The programs emphasize understanding, learning from the concrete to the abstract, and thinking and doing rather than memorizing by rote. A mistake is an opportunity to learn. Our Word Bank located on our website supports this standard (<http://www.neufeldmath.com/wordbank/index.html>)

The following are some examples:

Understanding Numeration: Operations

Notes

Skill 1: Introduce Addition... Concretely... "in all" and "altogether"

- Level A 1) Addition Using Gumballs #1
- 2) Addition Using Beans #1
- 3) Add the Number of Sides of Shapes #1
- Do Skill Test - 10 questions (randomly generated)

Skill 2: Introduce Addition... concretely... "and"

- Level A 1) Addition Using Gumballs #2
- 2) Addition Using Beans #2
- Do Skill Test - 10 questions (randomly generated)

Skill 3: Introduce the Symbolism... # + # = #

- Level A 1) Addition Using Gumballs #3
- 2) Addition Using Beans #3

Skill 4: Introduce the Words... "plus" and "equals"

- Level A 1) Addition Using Gumballs #4
- 2) Addition Using Beans #4



MKP4. Students will make connections among mathematical ideas and to other disciplines.

a. Recognize and use connections among mathematical ideas.

[Not yet correlated at this level](#)

b. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole.

Understanding how mathematical ideas interconnect and build on one another to produce a coherent whole is embedded in Understanding Numeration 2008©. The programs emphasize understanding, learning from the concrete to the abstract, and thinking and doing rather than memorizing by rote. A mistake is an opportunity to learn.

The following are some examples:

Understanding Numeration: Operations

Notes

Skill 1: Introduce Addition... Concretely... "in all" and "altogether"

- Level A 1) Addition Using Gumballs #1
- 2) Addition Using Beans #1
- 3) Add the Number of Sides of Shapes #1
- Do Skill Test - 10 questions (randomly generated)

Skill 2: Introduce Addition... concretely... "and"

- Level A 1) Addition Using Gumballs #2
- 2) Addition Using Beans #2
- Do Skill Test - 10 questions (randomly generated)

Skill 3: Introduce the Symbolism... # + # = #

- Level A 1) Addition Using Gumballs #3
- 2) Addition Using Beans #3

Skill 4: Introduce the Words... "plus" and "equals"

- Level A 1) Addition Using Gumballs #4
- 2) Addition Using Beans #4

c. Recognize and apply mathematics in contexts outside of mathematics.

[Not yet correlated at this level](#)



MKP5. Students will represent mathematics in multiple ways.

a. Create and use representations to organize, record, and communicate mathematical ideas.

Creating and using representations to organize, record, and communicate mathematical ideas is embedded in Understanding Numeration 2008© strategies such as the Math Circles located on our website (<http://www.neufeldmath.com/strategies/index.html>)

b. Select, apply, and translate among mathematical representations to solve problems.

Selecting, applying, and translating among mathematical representations to solve problems is embedded in Understanding Numeration 2008©. The programs emphasize understanding, learning from the concrete to the abstract, and thinking and doing rather than memorizing by rote. A mistake is an opportunity to learn.

The following are some examples:

Understanding Numeration: Problem Solving

Notes

Skill 1: Draw a Picture

Level A,B,C,D 1) Eating Apples

Skill 5: Make a Graph

Level A,B,C,D 1) Classroom Shoes

c. Use representations to model and interpret physical, social, and mathematical phenomena.

Using representations to model and interpret physical, social, and mathematical phenomena is embedded in Understanding Numeration 2008©. The programs emphasize understanding, learning from the concrete to the abstract, and thinking and doing rather than memorizing by rote. A mistake is an opportunity to learn.

The following are some examples:

Understanding Numeration: Counting

Notes

Skill 3: 1 to 1 Correspondence of #s to Objects

Level A 1) Keep Track by Marking

Understanding Numeration: Operations

Notes

Skill 1: Introduce Addition... Concretely... "in all" and "altogether"

Level A 3) Add the Number of Sides of Shapes #1

Understanding Numeration: Problem Solving

Notes

Skill 1: Draw a Picture

Level A,B,C,D 1) Eating Apples

Skill 5: Make a Graph

Level A,B,C,D 1) Classroom Shoes

