

Correlation of the Understanding Numeration 2008© and Understanding Math 2008© Programs With the Ohio's Academic Content Standards for Mathematics Grade Four

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 written for kindergarten through third grade:

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 Navigation Sheet are found on our website (www.neufeldmath.com).

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 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 Academic Content Standards have been correlated to the Understanding Numeration 2008©. The location of each standard is listed below:

Number, Number Sense and Operations Standard	
Number and Number Systems	(pages 3 - 7)
Meaning of Operations	(pages 8 - 9)
Computation and Estimation	(pages 10 - 14)
Measurement Standard	
Measurement Units	(pages 15 - 16)
Use Measurement Techniques and Tools	(pages 16 - 17)
Geometry and Spatial Sense Standard	
Characteristics and Properties	(pages 18 - 19)
Spatial Relationships	(pages 19 - 20)
Transformations and Symmetry	(pages 20 - 21)
Visualization and Geometric Models	(pages 21 - 22)
Patterns, Functions and Algebra Standard	
Use Patterns, Relations and Functions	(pages 22 - 24)
Use Algebraic Representations	(pages 24 - 27)
Analyze Change	(pages 27 - 27)
Data Analysis and Probability Standard	
Data Collection	(pages 27 - 29)
Statistical Methods	(pages 29 - 30)
Probability	(pages 30 - 32)

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.



**Ohio's Academic Content Standards for Mathematics
Correlated to Understanding Numeration 2008 © and Understanding Math 2008 ©
Grade Four**

Grade Four... Number, Number Sense and Operations Standard

Number and Number Systems

1. Identify and generate equivalent forms of fractions and decimals. For example: a. Connect physical, verbal and symbolic representations of fractions, decimals and whole numbers; e.g., $1/2$, $5/10$, "five tenths," 0.5, shaded rectangles with half, and five tenths.

Understanding Fractions 2008

Notes

Section 5: Introduction to Decimals

Introduction to Decimals

Tenths and Decimals- Example 1
Tenths and Decimals- Example 2
Tenths and Decimals- Example 3
Tenths and Decimals- Example 4
Place Value- Ones and Tenths 2
Place Value- Tens, Ones and Tenths

Ones, Tenths, Hundredths, Thousandths

Decimals to Tenths- Example 1
Decimals to Tenths- Example 2
Decimals to Hundredths- Example 1
Decimals to Hundredths- Example 2
Decimals to Hundredths- Example 3
Decimals to Hundredths- Example 4
Decimals to Hundredths- Example 5

Understanding Place Value

Example 1
Example 2

Equivalent Decimals

Example 1
Example 2
Example 3

Understanding Fractions 2008

Notes

Section 15: Multiplication and Division of Decimals

Preliminaries to Division

Summary for Decimals

Fractions to Decimals

Method 1 - Long Division- Example 2
Method 1 - Long Division- Example 3
Method 2 - A Special Equivalent Fraction- Example 1
Method 2 - A Special Equivalent Fraction- Example 2



Method 2 - A Special Equivalent Fraction- Example 3
 Method 2 - A Special Equivalent Fraction- Example 4
 Method 2 - A Special Equivalent Fraction- Example 5

1. Identify and generate equivalent forms of fractions and decimals. For example: b. Understand and explain that ten tenths is the same as one whole in both fraction and decimal form.

Understanding Fractions 2008

Notes

Section 1: The Meaning of Fractions

Fraction Strips	Concept 1
Fractions on a Number Line	Place Them- Example 1

Understanding Fractions 2008

Notes

Section 3: Equivalent Fractions

One

2. Use place value structure of the base-ten number system to read, write, represent and compare whole numbers through millions and decimals through thousandths.

Understanding Whole Numbers and Integers 2008

Notes

Section 1: The Meaning of Whole Numbers

Seeing the Number	To Tens- Example 1 To Tens- Example 2 To Hundreds- Example 1 To Hundreds- Example 2 To Thousands- Example 1 To Thousands- Example 2 To Thousands- Example 3
Expanded Notation	To 999- Example 1 To 999- Example 2 To 9999- Example 1 To 9999- Example 2 Write as Numerals- Example 1 Write as Numerals- Example 2
Represent Numbers in Many Ways	The number line Example 1 Example 2 Example 3 Example 4 Example 5
Place Value to 999 999	Examples- Example 1 Examples- Example 2 Examples- Example 3



Millions
Comparing Large Numbers

Examples- Example 4
Examples- Example 5
The number line- Example 1
The number line- Example 2
The number line- Example 3
Examples- Example 1
Example 1
Example 2
Example 3
Example 4
Example 1
Example 2

Ordering Large Numbers

Understanding Fractions 2008
Section 5: Introduction to Decimals

Notes

Introduction to Decimals

Place Value- Ones and Tenths 1
Place Value- Ones and Tenths 2
Place Value- Tens, Ones and Tenths
Place Value- Decimals on a number line
Place Value- Hundreds and Tenths
Greater and Less Than

Ones, Tenths, Hundredths, Thousandths

Decimals to Tenths- Example 1
Decimals to Tenths- Example 2
Decimals to Hundredths- Example 1
Decimals to Hundredths- Example 2
Decimals to Hundredths- Example 3
Decimals to Hundredths- Example 4
Decimals to Hundredths- Example 5
Decimals to Thousandths- Example 1
Decimals to Thousandths- Example 2
Decimals to Thousandths- Example 3
Decimals to Thousandths- Example 4
Decimals to Thousandths- Example 5

Understanding Place Value

Example 1
Example 2
Example 3
Example 4

Equivalent Decimals

Example 1
Example 2
Example 3
Example 4

Ordering Decimals

Introduction
Example 1



Example 2
Example 3
Example 4

3. Round whole numbers to a given place value.

Understanding Whole Numbers and Integers 2008

Notes

Section 1: The Meaning of Whole Numbers

Rounding Large Numbers

Example 1
Example 2
Example 3
Example 4

4. Identify and represent factors and multiples of whole numbers through 100, and classify numbers as prime or composite.

Understanding Fractions 2008

Notes

Section 2: Products, Multiples, Factors

Multiples

The Concept
Example 1
Example 2
Example 3

Factors

Introduction- Factors of 8
Introduction- Factors of 12
Introduction- Factors of 16
Introduction- Factors of 20
Introduction- Factors of 5
Introduction- Factors of 15
Introduction- Factors of 18
Prime Numbers- 2
Prime Numbers- 3
Prime Numbers- 5
Prime Numbers- 7
Prime Numbers- 11
Prime Numbers- 13
Prime Numbers- 17
Prime Numbers- 19
Composite Numbers



5. Use models and points of reference to compare commonly used fractions.

Understanding Fractions 2008

Notes

Section 3: Equivalent Fractions

Introduction	Square Triangle
Pattern Blocks	Hexagon 1 Hexagon 2
Fraction Strips	Concept 1 Concept 2
The Clock	Introduction 1 Introduction 2 Examples (randomly generated)
On a Square Grid	Example 1 Example 2 Example 3 Example 4 Example 5
On a Dot Grid	Example 1 Example 2 Example 3 Example 4
Slicing	Example 1 Example 2 Example 3 Example 4 Example 5 Example 6
An Explanation With Sets	Case 1 Case 2 Summary
Equivalent Fractions on a Number Line	
Comparison of Fractions	
Equivalent Fractions in a Multiplication Table	
One	
Equivalent Fractions... The Pattern	



Meaning of Operations

6. Use associative and distributive properties to simplify and perform computations; e.g., use left to right multiplication and the distributive property to find an exact answer without paper and pencil, such as $5 \times 47 = 5 \times 40 + 5 \times 7 = 200 + 35 = 235$.

Understanding Whole Numbers and Integers 2008

Notes

Section 3: Multiplying and Dividing Whole Numbers

Associative Property

Example 1

Example 2

Multiply by a Single Digit Multiplier

Partial Products - Area- Example 1 - With Blocks

Partial Products - Area- Example 2 - With Blocks

Partial Products - Area- Example 3 - With Blocks

Partial Products - Area- Example 4 - Without Blocks

Partial Products - Area- Example 5 - Without Blocks

Partial Products - Area- Example 6 - Without Blocks

Partial Products - Area- Question 1

Partial Products - Area- Question 2

Partial Products - Area- Question 3

The Distributive Method- Example 1

The Distributive Method- Example 2

The Distributive Method- Example 3

The Distributive Method- Question 1

The Distributive Method- Question 2

The Distributive Method- Question 3

The Standard Method- Example 1

The Standard Method- Example 2

The Standard Method- Example 3

The Standard Method- Question 1

The Standard Method- Question 2

The Standard Method- Question 3

Multiply by a Two Digit Multiplier

Partial Product - Area- Example 1 - With Blocks

Partial Product - Area- Example 2 - With Blocks

Partial Product - Area- Example 3 - With Blocks

Partial Product - Area- Example 4 - Without Blocks

Partial Product - Area- Example 5 - Without Blocks

Partial Product - Area- Example 6 - Without Blocks

Partial Product - Area- Question 1

Partial Product - Area- Question 2

Partial Product - Area- Question 3

The Distributive Method- Example 1

The Distributive Method- Example 2

The Distributive Method- Example 3

The Distributive Method- Question 1



The Distributive Method- Question 2
 The Distributive Method- Question 3
 The Standard Method- Example 1
 The Standard Method- Example 2
 The Standard Method- Example 3
 The Standard Method- Question 1
 The Standard Method- Question 2
 The Standard Method- Question 3

7. Recognize that division may be used to solve different types of problem situations and interpret the meaning of remainders; e.g., situations involving measurement, money.

Understanding Whole Numbers and Integers 2008

Notes

Section 3: Multiplying and Dividing Whole Numbers

Division by a Single Digit Divisor	Fair Sharing- Example 1 - With Blocks Fair Sharing- Question 2 Fair Sharing- Question 3 Fair Sharing- Question 4 Fair Sharing- Question 6
Divide by a Partial Quotient	Partial Quotient - Example 1 Partial Quotient - Example 2
Whole Numbers Around Us	Example 5 - Cookies Example 6 - Running Example 8 - Savings Example 10 - Taxi Example 11 - Skipping

Understanding Fractions 2008

Notes

Section 15: Multiplication and Division of Decimals

Partial Quotients	Example 1
Fair Sharing - Long Division	Example 1 Example 2 Question 1
Decimals Around Us - Word Problems	Example 9 - Skipping



Computation and Estimation

8. Solve problems involving counting money and making change, using both coins and paper bills.

Understanding Numeration: Counting

Notes

Skill 7: Counting Using Money

- Level C 1) Quarters (USA/Canadian)
Do Skill Test - 5 questions (randomly generated) USA
- Level D 1) Dollars (USA/Canadian)
Do Skill Test - 5 questions (randomly generated)

Understanding Numeration: Problem Solving

Notes

Skill 4: Make a Table

- Level A,B,C,D 2) Muffins

Understanding Fractions 2008

Notes

Section 14: Addition and Subtraction of Decimals

- Decimals Around Us
- Money- Example 1

9. Estimate the results of computations involving whole numbers, fractions and decimals, using a variety of strategies.

Not yet correlated

10. Use physical models, visual representations, and paper and pencil to add and subtract decimals and commonly used fractions with like denominators.

Understanding Fractions 2008

Notes

Section 8: Adding Fractions

- Pattern Blocks Hexagon 1
- Fraction Strips Concept 1
- Decimal Strips Example 1
- Example 2
- Adding Fractions on a Number Line Example 1
- Example 2
- Example 3

Understanding Fractions 2008

Notes

Section 9: Subtracting Fractions

- Pattern Blocks Hexagon 1
- Fraction Strips Concept 1
- Decimal Strips Example 1
- Example 2
- Subtracting Fractions on a Number Line Example 1
- Example 2



Section 14: Addition and Subtraction of Decimals

Adding Decimals

- Tenths -The Pencil- Example 1
- Tenths -The Pencil- Example 2
- Tenths -The Pencil- Example 3
- Tenths -The Pencil- Example 4
- Tenths -The Pencil- Example 5
- Tenths -The Line- Example 1
- Tenths -The Line- Example 2
- Tenths -The Line- Example 3
- Tenths -The Line- Example 4
- Hundredths -The Town- Example 1 (randomly generated maps)
- Hundredths -The Town- Example 2 (randomly generated maps)
- Hundredths -The Town- Example 3 (randomly generated maps)
- Hundredths -The Town- Example 4 (randomly generated maps)
- Method 2 -Columns- Example 1 -With Grids
- Method 2 -Columns- Example 2 -With Grids
- Method 2 -Columns- Example 3 -Without Grids
- Method 2 -Columns- Example 4 -Without Grids
- Method 2 -Columns- Example 5 -Without Grids
- Method 2 -Columns- Example 6 -Without Grids
- Method 3 -Right to Left- Example 1 -With Grids
- Method 3 -Right to Left- Example 3 -Without Grids
- Method 3 -Right to Left- Example 4 -Without Grids
- Method 3 -Right to Left- Example 5 -Without Grids
- Method 3 -Right to Left- Example 6 -Without Grids
- Click and Drag- 5 questions (randomly generated)

Subtracting Decimals

- Tenths - The Pencil- Example 1
- Tenths - The Pencil- Example 2
- Tenths - The Pencil- Example 3
- Tenths - The Pencil- Example 4
- Tenths - The Pencil- Example 5
- Hundredths - The Field- Example 1
- Hundredths - The Field- Example 2
- Hundredths - The Field- Example 3
- Hundredths - The Field- Example 4
- Method 1 - Right to Left- Example 1 -With Grids
- Method 1 - Right to Left- Example 2 -With Grids
- Method 1 - Right to Left- Example 3 -Without Grids
- Method 1 - Right to Left- Example 4 -Without Grids
- Method 1 - Right to Left- Example 5 -Without Grids
- Method 1 - Right to Left- Example 6 -Without Grids



11. Develop and explain strategies for performing computations mentally.

Not yet correlated

12. Analyze and solve multi-step problems involving addition, subtraction, multiplication and division using an organized approach, and verify and interpret results with respect to the original problem.

Understanding Whole Numbers and Integers 2008

Notes

Section 9: Order of Operations

Order in Addition - Whole Numbers

Trial 1
Trial 2
Conclusion
Example 1
Example 2

Order in Multiplication - Whole Numbers

Trial 1
Trial 2
Conclusion
Example 1
Example 2

Why Use Order of Operations? - Whole Numbers
BEDMAS

Example Questions - Whole Numbers

BEDMAS- Example 1
BEDMAS- Example 2
BEDMAS- Example 3
BEDMAS- Example 4
BEDMAS- Example 5
BEDMAS- Example 6
Please Excuse My Dear Aunt Sally- Example 1
Please Excuse My Dear Aunt Sally- Example 2
Please Excuse My Dear Aunt Sally- Example 3
Please Excuse My Dear Aunt Sally- Example 4
Please Excuse My Dear Aunt Sally- Example 5
Please Excuse My Dear Aunt Sally- Example 6

Word Problems

Shipping
Babysitting
Garbage



13. Use a variety of methods and appropriate tools for computing with whole numbers; e.g., mental math, paper and pencil, and calculator.

Not yet correlated

14. Demonstrate fluency in adding and subtracting whole numbers and in multiplying and dividing whole numbers by 1- and 2-digit numbers and multiples of ten.

Understanding Whole Numbers and Integers 2008		Notes
Section 2 : Adding and Subtracting Whole Numbers		
Add... Partial Sums	Example 3 - Without Blocks Example 4 - Without Blocks Example 5 - Without Blocks Example 6 - Without Blocks	
Add... Trade First	Example 3 - Without Blocks Example 4 - Without Blocks Example 5 - Without Blocks Example 6 - Without Blocks	
Add... Right to Left	Example 3 - Without Blocks Example 4 - Without Blocks Example 5 - Without Blocks Example 6 - Without Blocks	
Subtract... Right to Left	Example 3 - Without Blocks Example 4 - Without Blocks Example 5 - Without Blocks Example 6 - Without Blocks	
Subtract... Trade First	Example 3 - Without Blocks Example 4 - Without Blocks Example 5 - Without Blocks Example 6 - Without Blocks	
Subtract... Add Up	Example 5 - Without Blocks Example 6 - Without Blocks	
Subtract... Add Up to Zero	Example 1 Example 2 Example 3 Example 4	
Understanding Whole Numbers and Integers 2008		Notes
Section 3: Multiplying and Dividing Whole Numbers		
Patterns in Multiplication	Patterns in Multiplication by 10 Patterns in Multiplication by 100 Patterns in Multiplication by 1000 Example 1 Example 2	
Multiply by a Single Digit Multiplier	Repeated Addition- Example 3 - Without Blocks Repeated Addition- Example 4 - Without Blocks	



Multiply by a Two Digit Multiplier

Partial Products - Area- Example 4 - Without Blocks
Partial Products - Area- Example 5 - Without Blocks
Partial Products - Area- Example 6 - Without Blocks
Partial Products - Area- Question 1
Partial Products - Area- Question 2
Partial Products - Area- Question 3
The Distributive Method- Question 1
The Distributive Method- Question 2
The Distributive Method- Question 3
The Lattice Method- Question 1
The Lattice Method- Question 2
The Lattice Method- Question 3
The Standard Method- Question 1
The Standard Method- Question 2
The Standard Method- Question 3

Division by a Single Digit Divisor

Partial Product - Area- Example 4 - Without Blocks
Partial Product - Area- Example 5 - Without Blocks
Partial Product - Area- Example 6 - Without Blocks
Partial Product - Area- Question 1
Partial Product - Area- Question 2
Partial Product - Area- Question 3
The Distributive Method- Question 1
The Distributive Method- Question 2
The Distributive Method- Question 3
The Lattice Method- Question 1
The Lattice Method- Question 2
The Lattice Method- Question 3
The Standard Method- Question 1
The Standard Method- Question 2
The Standard Method- Question 3

Divide by a Partial Quotient

Fair Sharing- Example 2 - Without Blocks
Fair Sharing- Question 1
Fair Sharing- Question 2
Fair Sharing- Question 3
Fair Sharing- Question 4
Fair Sharing- Question 5
Fair Sharing- Question 6
Partial Quotient - Example 2
Partial Quotient - Example 3
Partial Quotient - Example 4



Grade Four... Measurement Standard

Measurement Units

1. Relate the number of units to the size of the units used to measure an object; e.g., compare the number of cups to fill a pitcher to the number of quarts to fill the same pitcher.

Not yet correlated

2. Demonstrate and describe perimeter as surrounding and area as covering a two-dimensional shape, and volume as filling a three-dimensional object.

Understanding Measurement and Geometry 2008

Notes

Section 2: Perimeter and Area of Polygons

Walk Around a Polygon

Joan Walks

Introduction to Area

Units

Estimate- Example 1

Estimate- Example 2

Estimate- Example 3

Understanding Measurement and Geometry 2008

Notes

Section 4: Solids.. Volume and Surface Area

Volume of a Solid

Concept

3. Identify and select appropriate units to measure: a. perimeter – string or links (inches or centimeters).

Understanding Measurement and Geometry 2008

Notes

Section 3: Circles

PI... A Special Number

How do we Measure Circumference?

Understanding Measurement and Geometry 2008

Notes

Section 4: Solids.. Volume and Surface Area

Summary



3. Identify and select appropriate units to measure: b. area – tiles (square inches or square centimeters).

Understanding Measurement and Geometry 2008

Notes

Section 2: Perimeter and Area of Polygons

Introduction to Area

Units

Estimate- Example 1

Estimate- Example 2

Estimate- Example 3

Understanding Measurement and Geometry 2008

Notes

Section 4: Solids.. Volume and Surface Area

Summary

3. Identify and select appropriate units to measure: c. volume – cubes (cubic inches or cubic centimeters).

Understanding Measurement and Geometry 2008

Notes

Section 4: Solids.. Volume and Surface Area

Summary

Use Measurement Techniques and Tools

4. Develop and use strategies to find perimeter using string or links, area using tiles or a grid, and volume using cubes; e.g., count squares to find area of regular or irregular shapes on a grid, layer cubes in a box to find its volume.

Understanding Measurement and Geometry 2008

Notes

Section 2: Perimeter and Area of Polygons

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

Introduction to Area

Units

Estimate- Example 1

Estimate- Example 2

Estimate- Example 3

Areas of Polygons

Area of a Rectangle- Concept

Area of a Rectangle- Example 1



	<p>Area of a Rectangle- Example 2 Area of a Rectangle- Example 3 Area of a Rectangle- Example 4</p>	
<p>Understanding Measurement and Geometry 2008 Section 4: Solids.. Volume and Surface Area Volume of a Solid</p>	<p>Concept Volume of a Prism: Example 1 Volume of a Prism: Example 2</p>	<p>Notes</p>
<p>Understanding Measurement and Geometry 2008 Section 8: Projective Geometry The Cube Tool</p>	<p>Introduction Tutorial- Deleting Tutorial- Views Play with the Tool</p>	<p>Notes</p>
<p>Understanding Algebra 2008 Section 2: Tiles & Algebra Area</p>	<p>Area... The Concept Area... Example 1 Area... Example 2 Area... Example 3</p>	<p>Notes</p>
<p>5. Make simple unit conversions within a measurement system; e.g., inches to feet, kilograms to grams, quarts to gallons.</p>		
<p>Understanding Measurement and Geometry 2008 Section 1: An Introduction to Measurement Metric Conversions - Length</p>	<p>Understanding Metric Prefixes Metric Prefixes at Work Metric Match - Introduction Metric Match - Examples- 3 questions (randomly generated) Converting</p>	<p>Notes</p>
<p>US Standard Conversions - Length</p>	<p>Introduction - Off Computer Converting</p>	
<p>6. Write, solve and verify solutions to multi-step problems involving measurement.</p>		
<p>Not yet correlated</p>		



Grade Four... Geometry and Spatial Sense Standard

Characteristics and Properties

1. Identify, describe and model intersecting, parallel and perpendicular lines and line segments; e.g., use straws or other material to model lines.

Understanding Measurement and Geometry 2008 **Notes**

Section 5: Angles and Their Measure

Classify Angles Classification

Understanding Measurement and Geometry 2008 **Notes**

Section 6: Angles and Polygons

Parallel Lines
 Examples with Parallel Lines Example 1
 Example 2

Understanding Graphing 2008 **Notes**

Section 7: Slope of a Line

Parallel Lines Introduction
 Example 1
 Example 2
 Example 3
 Perpendicular Lines Introduction
 Example 1
 Example 2

2. Describe, classify, compare and model two- and three-dimensional objects using their attributes.

Understanding Measurement and Geometry 2008 **Notes**

Section 2: Perimeter and Area of Polygons

In This Topic
 Polygons... What are They? Concept
 A Triangle is
 A Quadrilateral is
 A Pentagon is
 A Hexagon is
 An Octagon is
 Classify Polygons
 Classify Polygons with Venn Diagrams



<p>Understanding Measurement and Geometry 2008 Section 4: Solids.. Volume and Surface Area In This Topic Classifying Solids</p> <p>A Solid is... Recall Polygons A Polyhedron is... A Prism is... Some Special Prisms A Pyramid is... Some Special Pyramids A Cylinder is... A Cone is... Platonic Solids</p>	<p>Notes</p>
<p>3. Identify similarities and differences of quadrilaterals; e.g., squares, rectangles, parallelograms and trapezoids.</p>	
<p>Understanding Measurement and Geometry 2008 Section 2: Perimeter and Area of Polygons Polygons... What are They?</p> <p>A Quadrilateral is</p>	<p>Notes</p>
<p>4. Identify and define triangles based on angle measures (equiangular, right, acute and obtuse triangles) and side lengths (isosceles, equilateral and scalene triangles).</p>	
<p>Understanding Measurement and Geometry 2008 Section 2: Perimeter and Area of Polygons Polygons... What are They?</p> <p>A Triangle is</p>	<p>Notes</p>
<p>Spatial Relationships</p>	
<p>5. Describe points, lines and planes, and identify models in the environment.</p>	
<p>Understanding Measurement and Geometry 2008 Section 2: Perimeter and Area of Polygons Polygons... What are They?</p> <p>Concept</p>	<p>Notes</p>
<p>Understanding Measurement and Geometry 2008 Section 5: Angles and Their Measure Lines and Rays Angles... An Introduction</p>	<p>Notes</p>



Understanding Measurement and Geometry 2008	Notes
Section 6: Angles and Polygons	
Parallel Lines Examples with Parallel Lines	Example 1 Example 2

6. Specify locations and plot ordered pairs on a coordinate plane, using first quadrant points.

Understanding Graphing 2008	Notes
Section 3: Points on a Grid	
Josh's Neighbourhood	Concept
	Number Houses
Grids on Maps	Given Coordinates... Find Location
	Examples
	Given Location... Find Coordinates
	Goin' Fishin - Practice

Transformations and Symmetry

7. Identify, describe and use reflections (flips), rotations (turns), and translations (slides) in solving geometric problems; e.g., use transformations to determine if 2 shapes are congruent.

Understanding Graphing 2008	Notes
Section 4: Transformations	
What is a Transformation?	
Introduction to Common Transformations	
Translations - An Introduction	Slide #1
	Slide #2
	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



Tangrams

Example 3
Example 4
Example 5
Tangram Construction
Example 1
Example 2
Example 3
Example 4
Example 5
Example 6

Visualization and Geometric Models

8. Use geometric models to solve problems in other areas of mathematics, such as number (multiplication/division) and measurement (area, perimeter, border).

Understanding Whole Numbers and Integers 2008

Notes

Section 3: Multiplying and Dividing Whole Numbers

Multiply by a Single Digit Multiplier

Partial Products - Area- Example 1 - With Blocks
Partial Products - Area- Example 2 - With Blocks
Partial Products - Area- Example 3 - With Blocks
Partial Products - Area- Example 4 - Without Blocks
Partial Products - Area- Example 5 - Without Blocks
Partial Products - Area- Example 6 - Without Blocks
Partial Products - Area- Question 1
Partial Products - Area- Question 2
Partial Products - Area- Question 3

Multiply by a Two Digit Multiplier

Partial Product - Area- Example 1 - With Blocks
Partial Product - Area- Example 2 - With Blocks
Partial Product - Area- Example 3 - With Blocks
Partial Product - Area- Example 4 - Without Blocks
Partial Product - Area- Example 5 - Without Blocks
Partial Product - Area- Example 6 - Without Blocks
Partial Product - Area- Question 1
Partial Product - Area- Question 2
Partial Product - Area- Question 3

Understanding Measurement and Geometry 2008

Notes

Section 2: Perimeter and Area of Polygons

Fractions of a Square

Part 1- One Quarter
Part 1- One Eighth
Part 2- Example 1
Part 2- Example 2



Tangrams and Area	Tangram Introduction Tangram Construction Square Inches Square Centimeters	
Understanding Fractions 2008 Section 1: The Meaning of Fractions Parts of a Tangram	Tangram Introduction Tangram Construction Example # 1 Example # 2 Example # 3	Notes
Understanding Graphing 2008 Section 4: Transformations Tangrams	Tangram Introduction Tangram Construction Example 1 Example 2 Example 3 Example 4 Example 5 Example 6	Notes

Grade Four... Patterns, Functions and Algebra Standard

Use Patterns, Relations and Functions

1. Use models and words to describe, extend and make generalizations of patterns and relationships occurring in computation, numerical patterns, geometry, graphs and other applications.

Understanding Algebra 2008 Section 1: Introduction to Algebraic Thinking Tricks #1 - Whole Numbers Tricks #2 - Whole Numbers Tricks #3 - Whole Numbers	Instructions Trick Machine Instructions Instructions	Notes
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<p>Understanding Algebra 2008 Section 3: Patterns, Patterns, Patterns Introduction... Math is Patterns Geometric Patterns</p> <p>Example 1 Example 2 Example 3 Example 4 Example 5 Example 6 Example 7 Example 8 Example 9</p> <p>Number Patterns</p> <p>Example 1 Example 2 Example 3 Example 4 Example 5 Example 6</p> <p>Number and Geometric Patterns</p> <p>Example 1 Example 2</p>	<p>Notes</p>
<p>Understanding Algebra 2008 Section 4: Patterns, Formulas, Substitution Introduction... Math is Patterns Patterns... Toothpicks</p> <p>Introduction Exploration</p>	<p>Notes</p>
<p>2. Represent and analyze patterns and functions using words, tables and graphs.</p>	
<p>Understanding Algebra 2008 Section 1: Introduction to Algebraic Thinking Tricks #1 - Whole Numbers</p> <p>Instructions Trick Machine Explanation</p> <p>Tricks #2 - Whole Numbers</p> <p>Instructions Explanation</p> <p>Tricks #3 - Whole Numbers</p> <p>Instructions Explanation</p> <p>Tricks #1 - Integers</p> <p>Instructions</p> <p>Pictures to Words - Whole Numbers</p> <p>Pictures to Words More Pictures to Words</p> <p>Function Machine</p> <p>Introduction Find Output</p>	<p>Notes</p>



	Find Input Find the Rule- Rule 1 Find the Rule- Rule 2 Find the Rule- Rule 3 Find the Rule- Rule 4	
Summary		
Understanding Algebra 2008		Notes
Section 3: Patterns, Patterns, Patterns		
Number and Geometric Patterns	Example 1 Example 2	
Patterns to Formulas	Example 1 Example 2 Example 3 Example 4 Example 5	
Understanding Algebra 2008		Notes
Section 4: Patterns, Formulas, Substitution		
Patterns... Toothpicks	Introduction Exploration To Formula- Pattern 1 To Formula- Pattern 2 To Formula- Pattern 3 To Formula- Pattern 4 Summary	
Patterns... Counting Money	The Pattern... Method 1 The Pattern... Method 2 The Pattern... In General Summary	

Use Algebraic Representation

3. Construct a table of values to solve problems associated with a mathematical relationship.

Understanding Graphing 2008		Notes
Section 5 : Relations, Equations and Functions		
Relations	What is a Relation? Example 1: Triangle- Display the Relation Example 1: Triangle- Describe the Relation Example 1: Triangle- Predict New Information	



<p>Understanding Algebra 2008 Section 1: Introduction to Algebraic Thinking Function Machine</p> <p>Summary</p>	<p>Example 4 Running- Display the Relation Example 4 Running- Describe the Relation Example 4 Running- Predict New Information</p> <p>Introduction Find Output Find Input Find the Rule- Rule 1 Find the Rule- Rule 2 Find the Rule- Rule 3 Find the Rule- Rule 4</p>	<p>Notes</p>
<p>Understanding Algebra 2008 Section 4: Patterns, Formulas, Substitution Patterns... Toothpicks</p> <p>Patterns... Counting Money</p>	<p>Introduction Exploration To Formula- Pattern 1 To Formula- Pattern 2 To Formula- Pattern 3 To Formula- Pattern 4 Summary The Pattern... Method 1 The Pattern... Method 2 The Pattern... In General Summary</p>	<p>Notes</p>
<p>4. Use rules and variables to describe patterns and other relationships.</p>		
<p>Understanding Graphing 2008 Section 5 : Relations, Equations and Functions Relations</p>	<p>What is a Relation? Example 1: Triangle- Display the Relation Example 1: Triangle- Describe the Relation Example 1: Triangle- Predict New Information Example 4 Running- Display the Relation Example 4 Running- Describe the Relation Example 4 Running- Predict New Information</p>	<p>Notes</p>



Understanding Algebra 2008	Notes
Section 1: Introduction to Algebraic Thinking	
Function Machine	Find the Rule- Rule 1 Find the Rule- Rule 2 Find the Rule- Rule 3 Find the Rule- Rule 4
Summary	
Understanding Algebra 2008	Notes
Section 3: Patterns, Patterns, Patterns	
Number Patterns	Example 3 Example 4 Example 5 Example 6
Patterns to Formulas	Example 1 Example 2 Example 3 Example 4 Example 5
Understanding Algebra 2008	Notes
Section 4: Patterns, Formulas, Substitution	
Expressions, Terms, Variables	Definitions Summary
Patterns... Hockey Standings	
Patterns... Squares - Perimeter and Area	
Patterns... Toothpicks	Introduction Exploration To Formula- Pattern 1 To Formula- Pattern 2 To Formula- Pattern 3 To Formula- Pattern 4 Summary
Patterns... Counting Money	The Pattern... Method 1 The Pattern... Method 2 The Pattern... In General Summary
5. Represent mathematical relationships with equations or inequalities.	
Understanding Equations 2008	Notes
Section 5: Problem Solving	
The Translation Machine	Example 1 Example 2



Expressions - The Language of Algebra	Example 3 Example 4 Example 1 Example 2 Example 3	
Understanding Algebra 2008 Section 2: Tiles & Algebra Pictures to Words to Algebraic Expressions	Example 1 Example 2	Notes

Analyze Change

6. Describe how a change in one variable affects the value of a related variable; e.g., as one increases the other increases or as one increases the other decreases.

Not yet correlated

Grade Four... Data Analysis and Probability Standard

Data Collection

1. Create a plan for collecting data for a specific purpose.

Understanding Graphing 2008

Section 2: Statistics

Data... What is it?

Examples of Data

Collecting Data

Example 1... Fast Food Earnings
 Example 2... Infants Walk
 Example 3... Canada and U.S.A. Forecast
 Example 4... King of the Strike Out
 Example 5... U.S. Stake in India
 Example 6... Allergy Troubles
 A Summary: Examples
 Throw A Die
 Throw 2 Dice

Notes



	Voting Primary Data-Gathering Methods Secondary Data-Gathering Methods	
2. Represent and interpret data using tables, bar graphs, line plots and line graphs.		
Understanding Graphing 2008 Section 1: Reading And Sketching Graphs		Notes
Graphs Without a Scale	Concept... Age and Weight Example 1... Height and Weight Example 2... Errors and Years Example 3... Pushups and Situps	
Graphs With a Scale	Concept... Distance and Time Example 1... Wins in Soccer Example 2... Books and Days Example 3... The Travel Log Example 4... Winning in Baseball Example 5... Cost and Distance Example 6... Ivan's Ride to the Party	
Understanding Graphing 2008 Section 2: Statistics		Notes
In This Topic		
An Introduction	Tally Chart Pictograph #1 Pictograph #2 Bar Graph #1 Bar Graph #2 Line Graph #1 Line Graph #2	
Presenting Data	Bar Graph- Example 1... Energy Bar Graph- Example 2... Lengths of Rivers Line Graph- Example 1... Life Expectancy Line Graph- Example 2... Software Profits	
3. Interpret and construct Venn diagrams to sort and describe data.		
Understanding Measurement and Geometry 2008 Section 2: Perimeter and Area of Polygons		Notes
Classify Polygons with Venn Diagrams		



4. Compare different representations of the same data to evaluate how well each representation shows important aspects of the data, and identify appropriate ways to display the data.

<p>Understanding Graphing 2008 Section 2: Statistics Misleading Statistics</p>	<p>Example 1 Example 2</p>	<p>Notes</p>
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5. Propose and explain interpretations and predictions based on data displayed in tables, charts and graphs.

<p>Understanding Graphing 2008 Section 1: Reading And Sketching Graphs Extrapolation</p>		<p>Notes</p>
<p>Understanding Graphing 2008 Section 2: Statistics An Introduction</p> <p>Presenting Data</p>	<p>Bar Graph #1 Bar Graph #2 Line Graph #1 Line Graph #2 Bar Graph- Example 1... Energy Bar Graph- Example 2... Lengths of Rivers Line Graph- Example 1... Life Expectancy Line Graph- Example 2... Software Profits</p>	<p>Notes</p>
<p>Understanding Graphing 2008 Section 5 : Relations, Equations and Functions Relations</p>	<p>What is a Relation? Example 1: Triangle- Display the Relation Example 1: Triangle- Describe the Relation Example 1: Triangle- Predict New Information Example 4 Running- Display the Relation Example 4 Running- Describe the Relation Example 4 Running- Predict New Information</p>	<p>Notes</p>

Statistical Methods

6. Describe the characteristics of a set of data based on a graphical representation, such as range of the data, clumps of data, and holes in the data.

<p>Not yet correlated</p>



7. Identify the median of a set of data and describe what it indicates about the data.		Notes
Understanding Graphing 2008 Section 2: Statistics Measures of Central Tendency The Median Average Adding Data Points		
8. Use range, median and mode to make comparisons among related sets of data.		Notes
Understanding Graphing 2008 Section 2: Statistics Measures of Central Tendency Introduction The Mean Average The Median Average The Mode Summary Another Example Adding Data Points		
Probability		
9. Conduct simple probability experiments and draw conclusions from the results; e.g., rolling number cubes or drawing marbles from a bag.		Notes
Understanding Probability 2008 Section 1: Introduction to Probability The Language of Chance Activity 1 Impossible to Certain Activity 2 Probability Lines Line 1 Line 2 Possible Outcomes What Are They? 1. Coins 2. Pick 1 Ball 3. Pick 2 Balls 4. Eye Test 5. Travel Experiment with Spinners Experiment 1 Experiment 2 Experiment 3 Experiment 4 Experiment 5 Experiment 6 IT's in the Bag Board 2		



10. Represent the likelihood of possible outcomes for chance situations; e.g., probability of selecting a red marble from a bag containing 3 red and 5 white marbles.

Understanding Probability 2008

Notes

Section 2: What's the Chance

Probability

What is it

Introduction 1

Introduction 2

Probability Examples

1. Coin Toss

2. Picking 1 Ball

3. Picking 2 Balls

4. Spinner #1

5. Spinner #2

6. The Bag

7. Travel Example

11. Relate the concepts of impossible and certain-to-happen events to the numerical values of 0 (impossible) and 1 (certain).

Understanding Probability 2008

Notes

Section 1: Introduction to Probability

Impossible to Certain

Activity 1

Activity 2

Probability Lines

Line 1

Line 2

Understanding Probability 2008

Notes

Section 2: What's the Chance

Probability Scale

Examples

Summary

Follow up

Soccer Example

12. Place events in order of likelihood and use a diagram or appropriate language to compare the chance of each event occurring; e.g., impossible, unlikely, equal, likely, certain.

Understanding Probability 2008

Notes

Section 1: Introduction to Probability

The Language of Chance

Impossible to Certain

Activity 1

Activity 2

Probability Lines

Line 1

Line 2



13. List and count all possible combinations using one member from each of several sets, each containing 2 or 3 members; e.g., the number of possible outfits from 3 shirts, 2 shorts and 2 pairs of shoes.

Understanding Probability 2008

Notes

Section 1: Introduction to Probability

Tree Diagrams

Coin and Die
Meals
Socks
Rabbits
Forest

Problem Solving - Logic and Probability

Introduction
Demonstration
Level 1
Level 2

