

CORRELATION
of
the Understanding Numeration PLUS & Understanding Math PLUS programs
with
WNCP Curriculum
Kindergarten to Grade Nine
September 2006

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

WNCP CURRICULUM CORRELATION FORM Mathematics – Kindergarten

Series Title: _____

Format: _____ Copyright Date: _____

WNCP MATHEMATICS – KINDERGARTEN

The following are the general and specific outcomes for Kindergarten taken from *The Common Curriculum Framework for K–9 Mathematics, Western and Northern Canadian Protocol, 2006*.

Please use the space following each outcome to indicate where the outcome has been addressed in your resource (e.g., the relevant unit, chapter, lesson, page references/indexing for digital resources) and to provide any comments you may have. **Resources should address a minimum of 95% of the outcomes in the CCF for K–9 Mathematics, WNCP, 2006.**

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
Strand: Number	
General Outcome <i>Develop number sense.</i>	
Specific Outcomes	

<p>1. Say the number sequence by 1s starting anywhere from 1 to 10 and from 10 to 1. [C, CN, V]</p> <p>2. Recognize, at a glance, and name familiar arrangements of 1 to 5 objects or dots. [C, CN, ME, V]</p> <p>3. Relate a numeral, 1 to 10, to its respective quantity. [CN, R, V]</p>	<p>Understanding Numeration PLUS COUNTING Skill – Reading and Printing Numerals Level A Introduction : Counting 1 to 10: worksheet #1, #2 Things in a Square #1 Join up to 10 Dots Building a Number Line Building a Vertical Number Line</p> <p>Skill – Counting Backwards Level A Counting Backwards Counting Up and Down #1</p>
<p>4. Represent and describe numbers 2 to 10, concretely and pictorially. [C, CN, ME, R, V]</p>	<p>Understanding Numeration PLUS COUNTING Skill – Associating Numbers in a Real World Context Level A The Street Scene worksheet #1, #2 The Zoo</p>
<p>5. Compare quantities, 1 to 10, using one-to-one correspondence. [C, CN, V]</p>	<p>Understanding Numeration PLUS COUNTING Skill – 1 to 1 Correspondence of # to Objects Level A Keep Track by Marking worksheets #1, #2</p>
<p>Strand: Patterns and Relations (Patterns)</p>	
<p>General Outcome <i>Use patterns to describe the world and solve problems.</i></p>	
<p>Specific Outcomes</p>	

<p>1. Demonstrate an understanding of repeating patterns (two or three elements) by: identifying reproducing extending creating patterns using manipulatives, sounds and actions. [C, CN, PS, V]</p>	
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Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
Strand: Shape and Space (Measurement)	
General Outcome <i>Use direct or indirect measurement to solve problems.</i>	
Specific Outcomes	
1. Use direct comparison to compare two objects based on a single attribute, such as length (height), mass (weight) and volume (capacity). [C, CN, PS, R, V]	Understanding Numeration PLUS COUNTING Skill – Recognize and Count Solids Level B Counting Solids #1
Strand: Shape and Space (3-D Objects and 2-D Shapes)	
General Outcome <i>Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.</i>	
Specific Outcomes	
2. Sort 3-D objects using a single attribute. [C, CN, PS, R, V] 3. Build and describe 3-D objects. [CN, PS, V]	Understanding Numeration PLUS COUNTING Skill – Recognize and Count Solids Level B Counting Solids #1

WNCP CURRICULUM CORRELATION FORM

Mathematics – Grade One

Series Title: _____

Format: _____ Copyright Date: _____

WNCP MATHEMATICS – GRADE ONE

The following are the general and specific outcomes for Grade One taken from *The Common Curriculum Framework for K–9 Mathematics, Western and Northern Canadian Protocol, 2006*.

Please use the space following each outcome to indicate where the outcome has been addressed in your resource (e.g., the relevant unit, chapter, lesson, page references/indexing for digital resources) and to provide any comments you may have. **Resources should address a minimum of 95% of the outcomes in the CCF for K–9 Mathematics, WNCP, 2006.**

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
Strand: Number	
General Outcome <i>Develop number sense.</i>	
Specific Outcomes	
1. Say the number sequence, 0 to 100, by: 1s forward and backward between any two given numbers 2s to 20, forward starting at 0 5s and 10s to 100, forward starting at 0. [C, CN, ME, V]	Understanding Numeration PLUS COUNTING Skill – Skip Counting and Patterns Level C Skip Counting to 100 Skip Count by 2s to 100 worksheet #1, #2 Next by 5s

<p>2. Recognize, at a glance, and name familiar arrangements of 1 to 10 objects or dots. [C, CN, ME, V]</p>	<p>Understanding Numeration PLUS <u>COUNTING</u> Skill – Estimating the Number of Objects and Reasonableness Level A Estimate the Handful Dot Flash Cards</p>
<p>3. Demonstrate an understanding of counting by: indicating that the last number said identifies “how many” showing that any set has only one count using the counting on strategy using parts or equal groups to count sets. [C, CN, ME, R, V]</p>	<p>Understanding Numeration PLUS <u>COUNTING</u> Skill – Count on from a Given Number Level A Show/Cover Up/Count On Cover Up/Cover On</p> <p>Understanding Numeration PLUS <u>COMPARING AND ORDERING</u> Skill – Locate Whole Numbers on a Grid Level C Numbers on a 0 to 100 Grid worksheets #1, #2 Missing Numbers to 100 worksheets #1, #2</p>
<p>4. Represent and describe numbers to 20 concretely, pictorially and symbolically. [C, CN, V]</p>	<p>Understanding Numeration PLUS <u>COUNTING</u> Skill – Reading and Printing Numerals Level B Introduction: Counting 1-20 Things in a Square #2 worksheet #1, #2</p>
<p>5. Compare sets containing up to 20 elements to solve problems using: referents one-to-one correspondence. [C, CN, ME, PS, R, V]</p>	

<p>6. Estimate quantities to 20 by using referents. [C, ME, PS, R, V]</p>	<p>Understanding Numeration PLUS <u>COUNTING</u> Skill – Estimating the Number of Objects and Reasonableness Level B Estimating and Counting</p>
<p>7. Demonstrate, concretely and pictorially, how a given number can be represented by a variety of equal groups with and without singles. [C, R, V]</p>	<p>Understanding Numeration PLUS <u>PLACE VALUE</u> Skill – Break Numbers into Groups Level B Making Groups worksheet #1, #2</p>

WNCP Mathematics – Grade One (continued)

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
8. Identify the number, up to 20, that is one more, two more, one less and two less than a given number. [C, CN, ME, R, V]	Understanding Numeration PLUS <u>COMPARING AND ORDERING</u> Skill – Introduce “Greater Than”, “Less Than”, Level A Great Than Less Than “Greater Than, Less Than #1” “Greater Than, Less Than, Equal To”

9. Demonstrate an understanding of addition of numbers with answers to 20 and their corresponding subtraction facts, concretely, pictorially and symbolically by:
 using familiar and mathematical language to describe additive and subtractive actions from their experience
 creating and solving problems in context that involve addition and subtraction
 modeling addition and subtraction using a variety of concrete and visual representations, and recording the process symbolically.
 [C, CN, ME, PS, R, V]

Understanding Numeration PLUS

OPERATIONS

Skill – Introduce Addition...concretely... “in all” & “together”

Level A

Addition Using Gumballs #1: Worksheets #1, #2
 Addition Using Beans #1: Worksheets #1, #2
 Add Number of Sides of Shapes #1: Worksheets #1, #2

Skill – Introduce Addition Concretely... “and”

Level A

Addition Using Gumballs #2: Worksheets #1, #2
 Addition Using Beans #2: Worksheets #1, #2
 Add Number of Sides of Shapes #2: Worksheets #1, #2

Skill –Introduce the Symbolism...# + # =

Level A

Addition Using Gumballs #3: Worksheets #1, #2
 Addition Using Beans #3: Worksheets #1, #2
 Add Number of Sides of Shapes #3: Worksheets #1, #2

Skill – Introduce the words... “plus” and “equals”

Level A

Addition Using Gumballs #4: Worksheets #1, #2
 Addition Using Beans #4: Worksheets #1, #2
 Add Number of Sides of Shapes #4: Worksheets #1, #2

Skill – Demonstrate Addition Facts ... Making 5,6,7,8,9,10

Level A

Ways to Make 5,6,7,8,9,10: Worksheets #1, #2
 Ways to Make 5,6,7,8,9,10 : Reverse Order worksheets #1, #2
 Make 5,6,7,8,9,10: Horizontal & Vertical worksheets #1, #2

Skill – Demonstrate Addition Facts...Patterns

Level A/B

Bar Machine : Worksheets #1, #2
 Decomposition Tree #1, #2
 Adding Along the Number Line

OPERATIONS

Skill – Introduce Subtraction Concretely... “take away”

Level A

Introduction to Subtractions #1: Worksheets #1, #2
 Introduction to Subtractions #2: Worksheets #1, #2
 Introduction to Subtractions #3: Worksheets #1, #2
 Introduction to Subtractions #4: Worksheets #1, #2

Skill – Introduce Subtraction Symbolism

Level A

Introduce Vertical Subtraction : Worksheets #1, #2
 Subtraction Sentences

<p>10. Describe and use mental mathematics strategies (memorization not intended), such as: counting on and counting back making 10 doubles using addition to subtract for the basic addition and subtraction facts to 18. [C, CN, ME, PS, R, V]</p>	<p>Understanding Numeration PLUS <u>OPERATIONS</u> Skill – Fact Families...Add & Subtract Level A Doubles – Add and Subtract Relate Addition and Subtraction : Worksheets #1, #2 Fact Families</p> <p>Skill – Fact Families...Add & Subtract Level B Doubles – Add and Subtract Fact Families</p>
<p>Strand: Patterns and Relations (Patterns)</p>	
<p>General Outcome <i>Use patterns to describe the world and solve problems.</i></p>	
<p>Specific Outcomes</p>	
<p>1. Demonstrate an understanding of repeating patterns (two to four elements) by: describing reproducing extending creating patterns using manipulatives, diagrams, sounds and actions. [C, PS, R, V]</p>	
<p>2. Translate repeating patterns from one representation to another. [C, R, V]</p>	
<p>Strand: Patterns and Relations (Variables and Equations)</p>	
<p>General Outcome <i>Represent algebraic expressions in multiple ways.</i></p>	
<p>Specific Outcomes</p>	
<p>3. Describe equality as a balance and inequality as an imbalance, concretely and pictorially (0 to 20). [C, CN, R, V]</p> <p>4. Record equalities using the equal symbol. [C, CN, PS, V]</p>	<p>Understanding Numeration PLUS <u>COMPARING AND ORDERING</u> Skill – Introduce “Greater Than”, “Less Than”, Level A “Greater Than, Less Than, Equal To”</p>

WNCP Mathematics – Grade One (continued)

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
Strand: Shape and Space (Measurement)	
General Outcome <i>Use direct or indirect measurement to solve problems.</i>	
Specific Outcomes	
1. Demonstrate an understanding of measurement as a process of comparing by: <ul style="list-style-type: none"> identifying attributes that can be compared ordering objects making statements of comparison filling, covering or matching. [C, CN, PS, R, V]	
Strand: Shape and Space (3-D Objects and 2-D Shapes)	
General Outcome <i>Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.</i>	
Specific Outcomes	
2. Sort 3-D objects and 2-D shapes using one attribute, and explain the sorting rule. [C, CN, R, V] 3. Replicate composite 2-D shapes and 3-D objects. [CN, PS, V] 4. Compare 2-D shapes to parts of 3-D objects in the environment. [C, CN, V]	Understanding Numeration PLUS COUNTING Skill – Recognize and Count Solids Level B, C Counting Solids #1, #2 Skill- Recognize and Count Two-Dimensional Figures Level B, C Counting 2-D Figures #1, #2

WNCP CURRICULUM CORRELATION FORM Mathematics –Grade Two

Series Title: _____

Format: _____ Copyright Date: _____

WNCP MATHEMATICS – GRADE TWO

The following are the general and specific outcomes for Grade Two taken from *The Common Curriculum Framework for K–9 Mathematics, Western and Northern Canadian Protocol, 2006*.

Please use the space following each outcome to indicate where the outcome has been addressed in your resource (e.g., the relevant unit, chapter, lesson, page references/indexing for digital resources) and to provide any comments you may have. **Resources should address a minimum of 95% of the outcomes in the CCF for K–9 Mathematics, WNCP, 2006.**

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
Strand: Number	
General Outcome <i>Develop number sense.</i>	
Specific Outcomes	
1. Say the number sequence from 0 to 100 by: 2s, 5s and 10s, forward and backward, using starting points that are multiples of 2, 5 and 10 respectively 10s using starting points from 1 to 9 2s starting from 1. [C, CN, ME, R]	Understanding Numeration PLUS <u>COUNTING</u> Skill – Skip Counting and Patterns Level C Skip Counting to 100 Skip Count by 2s to 100 worksheet #1, #2 Next by 5s
2. Demonstrate if a number (up to 100) is even or odd. [C, CN, PS, R]	

<p>3. Describe order or relative position using ordinal numbers (up to tenth). [C, CN, R]</p>	<p>Understanding Numeration PLUS COMPARING AND ORDERING Skill – Use Ordinal Numbers Level A, B Ordering Ladybugs The Steps</p>
<p>4. Represent and describe numbers to 100, concretely, pictorially and symbolically. [C, CN, V]</p> <p>5. Compare and order numbers up to 100. [C, CN, R, V]</p>	<p>Understanding Numeration PLUS COMPARING AND ORDERING Skill – Locate Whole Numbers on a Grid Level C Numbers on a 0 to 100 Grid worksheets #1, #2 Missing Numbers to 100 worksheets #1, #2</p>
<p>6. Estimate quantities to 100 using referents. [C, ME, PS, R]</p>	
<p>7. Illustrate, concretely and pictorially, the meaning of place value for numerals to 100. [C, CN, R, V]</p>	<p>Understanding Numeration PLUS PLACE VALUE Skill – Break Numbers into Groups Level C Break 12 into Groups worksheet #1, #2 Break 15 into Groups Break 27 into Groups Breaking into Groups of 10 worksheet #1, #2</p> <p>Skill – Identify Place Value Patterns (to 20) Level C Pictures to Numbers #1: worksheet #1, #2 Tens and Ones to Pictures #1: worksheet #1, #2 Numbers to Pictures #1: worksheet #1, #2</p> <p>Skill – Identify Place Value Patterns (to 100) Level C Pictures to Numbers #2: worksheet #1, #2 Tens and Ones to Pictures #2: worksheet #1, #2 Numbers to Pictures #2: worksheet #1, #2 2 Digit Numbers – Different Ways worksheet #1</p>
<p>8. Demonstrate and explain the effect of adding zero to or subtracting zero from any number. [C, R]</p>	

WNCP Mathematics – Grade Two (continued)

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
<p>9. Demonstrate an understanding of addition (limited to 1 and 2-digit numerals) with answers to 100 and the corresponding subtraction by:</p> <ul style="list-style-type: none"> using personal strategies for adding and subtracting with and without the support of manipulatives creating and solving problems that involve addition and subtraction explaining that the order in which numbers are added does not affect the sum explaining that the order in which numbers are subtracted may affect the difference. <p>[C, CN, ME, PS, R, V]</p>	<p>Understanding Numeration PLUS <u>OPERATIONS</u> Skill – Add 3 or 4 Numbers Level A/B Add 3 Numbers Vertically #1, #2 Add 3 Numbers Horizontally #1, #2 Add 3 Numbers – Chain Addition #1: Worksheets #1, #2 Add 3 Numbers – Chain Addition #2: Worksheets #1, #2</p> <p>Skill – Add 2 Digit Numbers...Concretely Level C Addition without Regrouping Worksheets #1, #2 Addition with Regrouping Worksheets #1, #2</p> <p>Skill – Subtract 2 Digit Numbers...Concretely Level C Subtraction without Regrouping : worksheets #1, #2 Subtraction with Regrouping: worksheets #1, #2</p>
<p>10. Apply mental mathematics strategies, such as:</p> <ul style="list-style-type: none"> using doubles making 10 one more, one less two more, two less addition for subtraction <p>to determine basic addition facts to 18 and related subtraction facts. [C, CN, ME, R, V]</p>	<p>Understanding Numeration PLUS <u>OPERATIONS</u> Skill – Addition Strategies Level A/B Tens and Doubles #1, #2</p> <p>Skill – Fact Families: Add & Subtract Level B Doubles – Add and Subtract Fact Families</p> <p>Skill – Fact Families: Add & Subtract Level C Check Subtraction by Addition</p>

Strand: Patterns and Relations (Patterns)	
General Outcome <i>Use patterns to describe the world and solve problems.</i>	
Specific Outcomes	
<p>1. Demonstrate an understanding of repeating patterns (three to five elements) by:</p> <ul style="list-style-type: none"> describing extending comparing creating <p>patterns using manipulatives, diagrams, sounds and actions. [C, CN, PS, R, V]</p> <p>2. Demonstrate an understanding of increasing patterns by:</p> <ul style="list-style-type: none"> describing reproducing extending creating <p>patterns using manipulatives, diagrams, sounds and actions (numbers to 100).</p>	<p>Understanding Numeration PLUS <u>COUNTING</u> Skill – Skip Counting and Patterns Level C Patterns in Rows worksheet #1, #2</p>
Strand: Patterns and Relations (Variables and Equations)	
General Outcome <i>Represent algebraic expressions in multiple ways.</i>	
Specific Outcomes	

3. Demonstrate and explain the meaning of equality and inequality by using manipulatives and diagrams (0 to 100).
[C, CN, R, V]
4. Record equalities and inequalities symbolically using the equal symbol or the not equal symbol.
[C, CN, R, V]

**Understanding Numeration PLUS
COMPARING AND ORDERING**

Level A, B

Skill – Working with Whole Numbers $>$, $<$, $=$

Level A

$>$ and $<$ on a Numberline #1

Make it True

Level B/C

Make it True #2

“Great Than, Less Than #2”

Ordering...Horizontal #2

Ordering ... Vertical #2

Compare Numbers #1

Level B/C

“Just Before” Machine #1 & #2, worksheet #1 & #2

“Just After” Machine #1 & #2, worksheet #1 & #2

“In Between” #1, #2

WNCP Mathematics – Grade Two (continued)

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
Strand: Shape and Space (Measurement)	
General Outcome <i>Use direct or indirect measurement to solve problems.</i>	
Specific Outcomes	
1. Relate the number of days to a week and the number of months to a year in a problem-solving context. [C, CN, PS, R]	
2. Relate the size of a unit of measure to the number of units (limited to non-standard units) used to measure length and mass (weight). [C, CN, ME, R, V]	
3. Compare and order objects by length, height, distance around and mass (weight) using non-standard units, and make statements of comparison. [C, CN, ME, R, V]	
4. Measure length to the nearest non-standard unit by: using multiple copies of a unit using a single copy of a unit (iteration process). [C, ME, R, V]	
5. Demonstrate that changing the orientation of an object does not alter the measurements of its attributes. [C, R, V]	
Strand: Shape and Space (3-D Objects and 2-D Shapes)	
General Outcome <i>Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.</i>	
Specific Outcomes	

<p>6. Sort 2-D shapes and 3-D objects using two attributes, and explain the sorting rule. [C, CN, R, V]</p> <p>7. Describe, compare and construct 3-D objects, including: cubes spheres cones cylinders pyramids. [C, CN, R, V]</p> <p>8. Describe, compare and construct 2-D shapes, including: triangles squares rectangles circles. [C, CN, R, V]</p>	<p>Understanding Numeration PLUS COUNTING Skill – Recognize and Count Solids Level B, C Counting Solids #1, #2</p> <p>Skill- Recognize and Count Two-Dimensional Figures Level B, C Counting 2-D Figures #1, #2</p>
<p>9. Identify 2-D shapes as parts of 3-D objects in the environment. [C, CN, R, V]</p>	

WNCP Mathematics – Grade Two (continued)

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
Strand: Statistics and Probability (Data Analysis)	
General Outcome <i>Collect, display and analyze data to solve problems.</i>	
Specific Outcomes	
1. Gather and record data about self and others to answer questions. [C, CN, PS, V]	
2. Construct and interpret concrete graphs and pictographs to solve problems. [C, CN, PS, R, V]	Understanding Numeration PLUS <u>OPERATIONS</u> Skill – Given Graph...Perform Operations Skill D Operations with Pictographs worksheets #1, #2

WNCP CURRICULUM CORRELATION FORM Mathematics – Grade Three

Series Title: _____

Format: _____ Copyright Date: _____

WNCP MATHEMATICS – GRADE THREE

The following are the general and specific outcomes for Grade Three taken from *The Common Curriculum Framework for K–9 Mathematics, Western and Northern Canadian Protocol, 2006*.

Please use the space following each outcome to indicate where the outcome has been addressed in your resource (e.g., the relevant unit, chapter, lesson, page references/indexing for digital resources) and to provide any comments you may have. **Resources should address a minimum of 95% of the outcomes in the CCF for K–9 Mathematics, WNCP, 2006.**

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
Strand: Number	
General Outcome <i>Develop number sense.</i>	
Specific Outcomes	
1. Say the number sequence forward and backward from 0 to 1000 by: 5s, 10s, or 100s, using any starting point 3s using starting points that are multiples of 3 4s using starting points that are multiples of 4 25s, using starting points that are multiples of 25. [C, CN, ME]	Understanding Numeration PLUS COUNTING Skill – Skip Counting and Patterns Level C Skip Count by 2s to 100 worksheet #1, #2 Next by 5s Next by 2s worksheet #1, #2

<p>2. Represent and describe numbers to 1000, concretely, pictorially and symbolically. [C, CN, V]</p> <p>3. Compare and order numbers to 1000. [CN, R, V]</p>	<p>Understanding Numeration PLUS COUNTING Skill – Working with Whole Numbers >,<= Level D Compare Numbers #1, #2</p>
<p>4. Estimate quantities less than 1000 using referents. [ME, PS, R, V]</p>	
<p>5. Illustrate, concretely and pictorially, the meaning of place value for numerals to 1000. [C, CN, R, V]</p>	<p>Understanding Numeration PLUS PLACE VALUE Skill – Identifying Place Value Patterns (to 1000) Level C/D 3 Digit numbers – Different Ways worksheet #2 Expanded Notation Worksheets #1, #2</p>
<p>6. Describe and apply mental mathematics strategies for adding two 2-digit numerals, such as: adding from left to right taking one addend to the nearest multiple of ten and then compensating using doubles. [C, ME, PS, R, V]</p>	<p>Understanding Numeration PLUS OPERATIONS Skill – Add 2 Digit Numbers...Concretely Level C Addition without Regrouping Worksheets #1, #2 Addition with Regrouping Worksheets #1, #2</p> <p>Skill – Add 2 Digit Numbers ...Abstractly Level C Addition without Regrouping Worksheets #1, #2 Addition with Regrouping Worksheets #1, #2</p>

WNCP Mathematics – Grade Three (continued)

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
<p>7. Describe and apply mental mathematics strategies for subtracting two 2-digit numerals, such as:</p> <ul style="list-style-type: none"> taking the subtrahend to the nearest multiple of ten and then compensating thinking of addition using doubles. <p>[C, ME, PS, R, V]</p>	<p>Understanding Numeration PLUS <u>OPERATIONS</u> Skill – Subtract 2 Digit Numbers...Concretely Level C Subtraction without Regrouping : worksheets #1, #2 Subtraction with Regrouping: worksheets #1, #2</p> <p>Skill – Subtract 2 Digit Numbers...Abstractly Level C Subtraction without Regrouping : worksheets #1, #2 Subtraction with Regrouping: worksheets #1, #2</p>
<p>8. Apply estimation strategies to predict sums and differences of two 2-digit numerals in a problem- solving context.</p> <p>[C, ME, PS, R]</p>	<p>Understanding Numeration PLUS <u>PROBLEM SOLVING</u> Skill – Number Sentence Oranges Bill's Ball</p>
<p>9. Demonstrate an understanding of addition and subtraction of numbers with answers to 1000 (limited to 1, 2 and 3-digit numerals) by:</p> <ul style="list-style-type: none"> using personal strategies for adding and subtracting with and without the support of manipulatives creating and solving problems in contexts that involve addition and subtraction of numbers concretely, pictorially and symbolically. <p>[C, CN, ME, PS, R]</p>	<p>Understanding Numeration PLUS <u>OPERATIONS</u> Skill – Add 3 Digit Numbers...Concretely Level D Addition without Regrouping Worksheets #1, #2 Addition with Regrouping Worksheets #1, #2 Addition with Regrouping – Any Column Worksheets #1, #2</p> <p>Skill – Subtract 3 Digit Numbers...Concretely Level D Subtraction Without Regrouping: worksheet #1, #2 Subtraction With Regrouping #1: worksheet #1, #2 Subtraction With Regrouping #2: worksheet #1, #2 Subtraction With Regrouping #3: worksheet #1, #2</p>

<p>10. Apply mental mathematics strategies and number properties, such as:</p> <ul style="list-style-type: none"> using doubles making 10 using the commutative property using the property of zero thinking addition for subtraction <p>to determine answers for basic addition facts and related subtraction facts (to 18).</p> <p>[C, CN, ME, R, V]</p>	<p>Understanding Numeration PLUS OPERATIONS</p> <p>Skill – Addition Strategies Levels A, B, C Tens and Doubles #1, #2 Darts – Add 3 or 4 Numbers</p> <p>Skill – Fact Families...Add & Subtract Levels B, C Doubles – Add and Subtract Fact Families Check Subtraction by Addition</p>
<p>11. Demonstrate an understanding of multiplication to 5 5 by:</p> <ul style="list-style-type: none"> representing and explaining multiplication using equal grouping and arrays creating and solving problems in context that involve multiplication modelling multiplication using concrete and visual representations, and recording the process symbolically relating multiplication to repeated addition relating multiplication to division. <p>[C, CN, PS, R]</p>	<p>Understanding Numeration PLUS OPERATIONS</p> <p>Skill – Introduce Multiplication Concretely Level C Grouping Eggs into Bowls: Worksheets #1, #2 Grouping Chairs into Rows: Worksheets #1, #2 Eggs in Bowls – Introduce X: Worksheets #1, #2 Chairs and Rows – Introduce X: Worksheets #1, #2 Multiplication – Repeated Addition</p> <p>Skill – Introduce Multiplication Facts...2,3,4,5 Level C Multiplication : Groups of 2,3,4,5</p> <p>Skill – Patterns in Multiplication Level C X Table – Groups of 2,3,4,5</p>

12. Demonstrate an understanding of division by:
representing and explaining division using equal sharing and equal grouping
creating and solving problems in context that involve equal sharing and equal grouping
modelling equal sharing and equal grouping using concrete and visual representations, and recording the process symbolically
relating division to repeated subtraction
relating division to multiplication
(limited to division related to multiplication facts up to 5 5.)
[C, CN, PS, R]

Understanding Numeration PLUS

OPERATIONS

Skill – Introduction to Division

Level C

Equal Groups of Eggs: Worksheets #1, #2

Sharing Oranges Equally: Worksheets #1, #2

Division Introduction – Eggs Worksheets #1, #2

Division Introduction – Oranges Worksheets #1, #2

Division - How Many Groups? Worksheets #1, #2

Skill – Introduce Division Facts...2,3,4,5

Level C

Division Groups of 2,3,4,5

WNCP Mathematics – Grade Three (continued)

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
<p>13. Demonstrate an understanding of fractions by: explaining that a fraction represents a part of a whole describing situations in which fractions are used comparing fractions of the same whole with like denominators. [C, CN, ME, R, V]</p>	<p>Understanding Numeration PLUS COUNTING Skill – Introduce Fractions: Equal Parts Level B Two Equal Parts Four Equal Parts One Half One Quarter</p> <p>Skill – Introduce Common Fractions as Parts of a Whole Level B One Half of a Shape Three Quarters of a Shape Cut in Half: Worksheets #1, #2</p> <p>Level C Fifths to Tenths #1, #2 Write the Fraction #1, #2</p> <p>Skill – Introduce Fraction of a Set Level C Fraction of a Set: Worksheets #1, #2</p>
Strand: Patterns and Relations (Patterns)	
General Outcome <i>Use patterns to describe the world and solve problems.</i>	
Specific Outcomes	

<p>1. Demonstrate an understanding of increasing patterns by: describing extending comparing creating patterns using manipulatives, diagrams, sounds and actions (numbers to 1000). [C, CN, PS, R, V]</p> <p>2. Demonstrate an understanding of decreasing patterns by: describing extending comparing creating patterns using manipulatives, diagrams, sounds and actions (numbers to 1000). [C, CN, PS, R, V]</p>	<p>Understanding Math PLUS Understanding Algebra Topic 3. Patterns, Patterns, Patterns Introduction... Math is Patterns Geometric Patterns Examples 1, 2, 3, 4, 5, 6, 7, 8 Number Patterns Examples 1, 2, 3, 4, 5, 6</p>
<p>Strand: Patterns and Relations (Variables and Equations)</p>	
<p>General Outcome <i>Represent algebraic expressions in multiple ways.</i></p>	
<p>Specific Outcomes</p>	
<p>3. Solve one-step addition and subtraction equations involving symbols representing an unknown number. [C, CN, PS, R, V]</p>	<p>Understanding Math PLUS Understanding Equations Topic 1. Tiles, Balances, Equations Definitions Introduction Summary Parts 1, 2 The Meaning of “Solving an Equation” Solve by Systematic Trials Recall Tile Concepts Balances... An Introduction Tiles, Balances and Equations Practice Questions Topic Test</p>
<p>Strand: Shape and Space (Measurement)</p>	
<p>General Outcome <i>Use direct or indirect measurement to solve problems.</i></p>	
<p>Specific Outcomes</p>	

<p>1. Relate the passage of time to common activities using non-standard and standard units (minutes, hours, days, weeks, months, years). [CN, ME, R]</p>	<p>Understanding Numeration PLUS COMPARING AND ORDERING Skill – Understand Measurement of Time Level B The Clock: An Introduction #1, #2 Times to the Hour: worksheet #1, #2</p> <p>Level B/C Analog and Digital Time to the Half Hour: worksheet #1, #2 Times to the Five Minutes</p> <p>Level D Time to the Minute</p>
<p>2. Relate the number of seconds to a minute, the number of minutes to an hour and the number of days to a month in a problem-solving context. [C, CN, PS, R, V]</p>	
<p>3. Demonstrate an understanding of measuring length (cm, m) by: selecting and justifying referents for the units cm and m modelling and describing the relationship between the units cm and m estimating length using referents measuring and recording length, width and height. [C, CN, ME, PS, R, V]</p>	<p>Understanding Math PLUS Understanding Measurement and Geometry Topic 1. Introduction to Measurement Metric and U.S.A Standard Measurement Systems Searching for the Standard Unit Related Units from Metric Prefixes Metric Prefixes at Work Converting Between Metric Units The Ruler Benchmarks</p>

WNCP Mathematics – Grade Three (continued)

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
<p>4. Demonstrate an understanding of measuring mass (g, kg) by:</p> <ul style="list-style-type: none"> selecting and justifying referents for the units g and kg modelling and describing the relationship between the units g and kg estimating mass using referents measuring and recording mass. <p>[C, CN, ME, PS, R, V]</p>	
<p>5. Demonstrate an understanding of perimeter of regular and irregular shapes by:</p> <ul style="list-style-type: none"> estimating perimeter using referents for centimetre or metre measuring and recording perimeter (cm, m) constructing different shapes for a given perimeter (cm, m) to demonstrate that many shapes are possible for a perimeter. <p>[C, ME, PS, R, V]</p>	<p>Understanding Numeration PLUS <u>OPERATIONS</u> Skill – Finding the Perimeter of a Shape Level C/D Perimeter of a Rectangle: Worksheets #1, #2 Perimeter of a 2D Shape: Worksheets #1, #2</p>
Strand: Shape and Space (3-D Objects and 2-D Shapes)	
<p>General Outcome <i>Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.</i></p>	
Specific Outcomes	
<p>6. Describe 3-D objects according to the shape of the faces, and the number of edges and vertices. [C, CN, PS, R, V]</p> <p>7. Sort regular and irregular polygons, including:</p> <ul style="list-style-type: none"> triangles quadrilaterals pentagons hexagons octagons <p>according to the number of sides. [C, CN, R, V]</p>	<p>Understanding Math PLUS <u>UNDERSTANDING MEASUREMENT AND GEOMETRY</u> Topic 2. Perimeter and Area of Polygons Polygons... What Are They? Concept A Triangle is A Quadrilateral is A Pentagon is A Hexagon is An Octagon is Classify Polygons</p>

Strand: Statistics and Probability (Data Analysis)	
General Outcome <i>Collect, display and analyze data to solve problems.</i>	
Specific Outcomes	
<p>1. Collect first-hand data and organize it using: tally marks line plots charts lists to answer questions. [C, CN, V]</p> <p>2. Construct, label and interpret bar graphs to solve problems. [PS, R, V]</p>	<p>Understanding Numeration PLUS <u>OPERATIONS</u> Level D Skill – Given Graph...Perform Operations Operations with Tally Charts worksheets #1, #2 Operations with Bar Graphs worksheets #1, #2</p>

WNCP CURRICULUM CORRELATION FORM Mathematics – Grade Four

Series Title: _____

Format: _____ Copyright Date: _____

WNCP MATHEMATICS – GRADE FOUR

The following are the general and specific outcomes for Grade Four taken from *The Common Curriculum Framework for K–9 Mathematics, Western and Northern Canadian Protocol, 2006*.

Please use the space following each outcome to indicate where the outcome has been addressed in your resource (e.g., the relevant unit, chapter, lesson, page references/indexing for digital resources) and to provide any comments you may have. **Resources should address a minimum of 95% of the outcomes in the CCF for K–9 Mathematics, WNCP, 2006.**

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
Strand: Number	
General Outcome <i>Develop number sense.</i>	

<p>1. Represent and describe whole numbers to 10 000, pictorially and symbolically. [C, CN, V]</p> <p>2. Compare and order numbers to 10 000. [C, CN]</p>	<p>Understanding Math PLUS <u>Understanding Whole Numbers and Integers</u> Topic 1. An Introduction to Whole Numbers Seeing the Number To Tens Examples 1, 2 To Hundreds Examples 1, 2 To Thousands Examples 1, 2, 3 Expanded Notation To 999 Examples 1, 2 To 9999 Examples 1, 2 Write as Numerals Examples 1, 2 The Number Line Represent Numbers in Many Ways Examples 1, 2, 3, 4, 5</p>
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3. Demonstrate an understanding of addition of numbers with answers to 10 000 and their corresponding subtractions (limited to 3 and 4-digit numerals) by:
- using personal strategies for adding and subtracting
 - estimating sums and differences
 - solving problems involving addition and subtraction.
- [C, CN, ME, PS, R]

Understanding Math PLUS

Understanding Whole Numbers and Integers

Topic 2. Adding and Subtracting Whole Numbers

Add... Right to Left

Example 1 - With Blocks

Example 2 - With Blocks

Example 3 - Without Blocks

Example 4 - Without Blocks

Example 5 - Without Blocks

Example 6 - Without Blocks

Subtract... Right to Left

Example 1 - With Blocks

Example 2 - With Blocks

Example 3 - Without Blocks

Example 4 - Without Blocks

Example 5 - Without Blocks

Example 6 - Without Blocks

Subtract... Trade First

Example 1 - With Blocks

Example 2 - With Blocks

Example 3 - Without Blocks

Example 4 - Without Blocks

Example 5 - Without Blocks

Example 6 - Without Blocks

Subtract... Add Up

Example 1 - With Blocks

Example 2 - With Blocks

Example 3 - With Blocks

Example 4 - With Blocks

Example 5 - Without Blocks

Example 6 - Without Blocks

Subtract... Add Up to Zero

Examples 1, 2, 3, 4

<p>4. Explain the properties of 0 and 1 for multiplication and the property of 1 for division. [C, CN, R]</p>	<p>Understanding Numeration PLUS <u>OPERATIONS</u> Skill – Introduce Multiplication by 1 and by 0 Level C Multiplication : Groups of 1 Multiplication : Groups of 0</p> <p>Understanding Math PLUS <u>Understanding Whole Numbers and Integers</u> Topic 3. Multiplying and Dividing Whole Numbers Divide by a Single Digit Divisor Fair Sharing Fair Sharing - Example 1 - With Blocks Fair Sharing - Example 2 - Without Blocks</p>
<p>5. Describe and apply mental mathematics strategies, such as: skip counting from a known fact using doubling or halving using doubling or halving and adding or subtracting one more group using patterns in the 9s facts using repeated doubling to determine basic multiplication facts to 9 9 and related division facts. [C, CN, ME, PS, R]</p>	<p>Understanding Math PLUS <u>Understanding Whole Numbers and Integers</u> Topic 3. Multiplying and Dividing Whole Numbers Multiples of 10, 100, 1000 Patterns in Multiplication by 10 Patterns in Multiplication by 100 Patterns in Multiplication by 1000 Examples 1, 2, 3</p>

WNCP Mathematics – Grade Four (continued)

<p>Strands, Outcomes and Mathematical Processes</p>	<p>Unit, chapter, lesson, page references/indexing for digital resources and comments</p>
<p>6. Demonstrate an understanding of multiplication (2- or 3-digit by 1-digit) to solve problems by: using personal strategies for multiplication with and without concrete materials using arrays to represent multiplication connecting concrete representations to symbolic representations estimating products. [C, CN, ME, PS, R, V]</p> <p>7. Demonstrate an understanding of division (1-digit divisor and up to 2-digit dividend) to solve problems by: using personal strategies for dividing with and without concrete materials estimating quotients relating division to multiplication. [C, CN, ME, PS, R, V]</p>	<p>Understanding Math PLUS Understanding Whole Numbers and Integers Topic 3. Multiplying and Dividing Whole Numbers Whole Numbers Around Us Example 1 - Orange Example 2 - Bananas Example 3 - Cycling Example 4 - Baseball Cards Example 5 - Cookies Example 6 - Running Example 7 - Apples Example 8 - Saving Example 9 - Sit-ups Example 10 - Taxi Example 11 - Skipping</p>

<p>8. Demonstrate an understanding of fractions less than or equal to one by using concrete and pictorial representations to:</p> <ul style="list-style-type: none"> name and record fractions for the parts of a whole or a set compare and order fractions model and explain that for different wholes, two identical fractions may not represent the same quantity provide examples of where fractions are used. <p>[C, CN, PS, R, V]</p>	<p>Understanding Math PLUS Understanding Fractions</p> <p>Topic 1. The Meaning of Fractions</p> <p>Write the Fraction Questions 1, 2, 3, 4 Fraction of a Set Example 1 - Marbles Example 2 - Candies Example 3 - Birthday Cake Fraction of a Gas Tank Fraction Strips Concepts 1, 2, 3, 4 Comparison of Fractions The Symbol Greater Than - Ex. 1, Ex. 2 Less Than - Ex. 1, Ex. 2 Greater and Less Than - Ex. 1, Ex. 2 Concept 1 - Fraction Strips Concept 2 - Circles Examples 1, 2, 3, 4</p> <p>Topic 3. Equivalent Fractions</p> <p>One</p>
<p>9. Describe and represent decimals (tenths and hundredths) concretely, pictorially and symbolically. [C, CN, R, V]</p> <p>10. Relate decimals to fractions (to hundredths). [CN, R, V]</p>	<p>Understanding Math PLUS Understanding Fractions</p> <p>Topic 5. An Introduction to Decimals</p> <p>Introduction to Decimals Tenths and Decimals Examples 1, 2, 3, 4 Ones and Tenths Examples 1, 2, 3, 4 Decimals on a Number Line Examples 1, 2, 3, 4, 5 Decimals to Tenths Examples 1, 2, Decimals to Hundredths Examples 1, 2, 3, 4, 5</p>

<p>11. Demonstrate an understanding of addition and subtraction of decimals (limited to hundredths) by:</p> <ul style="list-style-type: none"> using compatible numbers estimating sums and differences using mental math strategies to solve problems. <p>[C, ME, PS, R, V]</p>	<p>Understanding Math PLUS Understanding Fractions Topic 14. Addition and Subtraction of Decimals Adding Decimals Tenths... The Pencil Examples 1, 2, 3, 4, 5 Tenths... The Line Examples 1, 2, 3, 4 Hundredths... The Town Examples 1, 2, 3, 4 Method 1... Partial Sums Example 1,2 - With Grids Example 3,4,5,6 – Without Grids Method 2... Columns Example 1,2 - With Grids Example 3,4,5,6 – Without Grids Method 3... Right to Left Example 1,2 - With Grids Example 3,4,5,6 – Without Grids Subtracting Decimals Tenths...The Pencil Examples 1, 2, 3, 4, 5 Hundredths... The Field Examples 1, 2, 3, 4 Method 1... Right to Left Example 1,2 - With Grids Example 3,4,5,6 – Without Grids Method 2... Trade First Example 1,2 - With Grids Example 3,4,5,6 – Without Grids</p>
<p>Strand: Patterns and Relations (Patterns)</p>	
<p>General Outcome <i>Use patterns to describe the world and solve problems.</i></p>	
<p>Specific Outcomes</p>	

<p>1. Identify and describe patterns found in tables and charts, including a multiplication chart. [C, CN, PS, V]</p> <p>2. Reproduce a pattern shown in a table or chart using concrete materials. [C, CN, V]</p>	<p>Understanding Math PLUS <u>Understanding Whole Numbers and Integers</u> Topic 3. Multiplying and Dividing Whole Numbers The 10 x 10 Multiplication Table User Picks Computer Picks The 12 x 12 Multiplication Table Associative Property Examples 1, 2</p>
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WNCP Mathematics – Grade Four (continued)

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
Strand: Patterns and Relations (Patterns)	
General Outcome <i>Use patterns to describe the world and solve problems.</i>	
Specific Outcomes	
3. Represent and describe patterns and relationships using charts and tables to solve problems. [C, CN, PS, R, V]	
4. Identify and explain mathematical relationships using charts and diagrams to solve problems. [CN, PS, R, V]	Understanding Math PLUS <u>Understanding Algebra</u> Topic 3. Patterns, Patterns, Patterns Introduction... Math is Patterns Geometric Patterns Examples 1, 2, 3, 4, 5, 6, 7, 8 Number Patterns Examples 1, 2, 3, 4, 5, 6
Strand: Patterns and Relations (Variables and Equations)	
General Outcome <i>Represent algebraic expressions in multiple ways.</i>	
Specific Outcomes	
5. Express a given problem as an equation in which a symbol is used to represent an unknown number. [CN, PS, R]	Understanding Math PLUS <u>Understanding Algebra</u> Topic 2. Tiles and Algebra Area Area... The Concept Area... Examples 1, 2, 3 Introduction to Tiles Tile Representation Like Terms Combinations Squared Terms

<p>6. Solve one-step equations involving a symbol to represent an unknown number. [C, CN, PS, R, V]</p>	<p>Understanding Math PLUS <u>Understanding Equations</u> Topic 1. Tiles, Balances, and Equations Definitions Introduction Summary Parts 1, 2 The Meaning of “Solving an Equation” Solve by Systematic Trials Recall Tile Concepts Balances... An Introduction Tiles, Balances and Equations Practice Questions Topic Test</p> <p>Topic 2. Solving One-Step Equations Our Problem Concepts – Examples with Tiles Examples 1, 2, 3, 4 Concepts – Examples without Tiles Practice Questions Topic Test</p>
<p>Strand: Shape and Space (Measurement)</p>	
<p>General Outcome <i>Use direct or indirect measurement to solve problems.</i></p>	
<p>Specific Outcomes</p>	
<p>1. Read and record time using digital and analog clocks, including 24-hour clocks. [C, CN, V]</p>	<p>Understanding Numeration PLUS <u>COMPARING AND ORDERING</u> Skill Describe Elapsed Time...Hours, 5 Minutes Level D Time Goes By – Analog, Digital</p>
<p>2. Read and record calendar dates in a variety of formats. [C, V]</p>	

<p>3. Demonstrate an understanding of area of regular and irregular 2-D shapes by:</p> <ul style="list-style-type: none"> recognizing that area is measured in square units selecting and justifying referents for the units cm^2 or m^2 estimating area by using referents for cm^2 or m^2 determining and recording area (cm^2 or m^2) constructing different rectangles for a given area (cm^2 or m^2) in order to demonstrate that many different rectangles may have the same area. <p>[C, CN, ME, PS, R, V]</p>	<p>Understanding Math PLUS <u>Understanding Measurement and Geometry</u> Topic 2. Area and Perimeter of Polygons Amount of Surface The Driveway... An Introduction to Area Area – Estimation Area of a Rectangle Concept Examples 1, 2</p>
<p>Strand: Shape and Space (3-D Objects and 2-D Shapes)</p>	
<p>General Outcome <i>Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationship among them.</i></p>	
<p>Specific Outcome</p>	
<p>4. Describe and construct rectangular and triangular prisms. [C, CN, R, V]</p>	<p>Understanding Math PLUS <u>Understanding Measurement and Geometry</u> Topic 4. Solids...Volume and Surface Area Classifying Solids A Solid is... Recall Polygons A Polyhedron is... A Prism is... Some Special Pyramids</p>

WNCP Mathematics – Grade Four (continued)

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
Strand: Shape and Space (Transformations)	
General Outcomes <i>Describe and analyze position and motion of objects and shapes.</i>	
Specific Outcomes	
5. Demonstrate an understanding of line symmetry by: identifying symmetrical 2-D shapes creating symmetrical 2-D shapes drawing one or more lines of symmetry in a 2-D shape. [C, CN, V]	Understanding Math PLUS Understanding Graphing Topic 4. Transformations Line of Symmetry - An Introduction Introduction Examples 1, 2, 3, 4 Symmetry Match Puzzle 1, 2
Strand: Statistics and Probability (Data Analysis)	
General Outcomes <i>Collect, display and analyze data to solve problems.</i>	
Specific Outcomes	
1. Demonstrate an understanding of many-to-one correspondence. [C, R, T, V]	
2. Construct and interpret pictographs and bar graphs involving many-to-one correspondence to draw conclusions. [C, PS, R, V]	Understanding Math PLUS Understanding Graphing Topic 2. Statistics An Introduction Tally Chart Pictograph #1 Pictograph #2 Bar Graph #1 Bar Graph #2

WNCP CURRICULUM CORRELATION FORM

Mathematics – Grade Five

Series Title: _____

Format: _____ Copyright Date: _____

WNCP MATHEMATICS – GRADE FIVE

The following are the general and specific outcomes for Grade Five taken from *The Common Curriculum Framework for K–9 Mathematics, Western and Northern Canadian Protocol, 2006*.

Please use the space following each outcome to indicate where the outcome has been addressed in your resource (e.g., the relevant unit, chapter, lesson, page references/indexing for digital resources) and to provide any comments you may have. **Resources should address a minimum of 95% of the outcomes in the CCF for K–9 Mathematics, WNCP, 2006.**

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
Strand: Number	
General Outcome <i>Develop number sense.</i>	
Specific Outcomes	
1. Represent and describe whole numbers to 1 000 000. [C, CN, V, T]	Understanding Math PLUS <u>Understanding Whole Numbers and Integers</u> Topic 1. An Introduction to Whole Numbers Millions Examples Examples 1, 2, 3, 4 The Number Line

<p>2. Use estimation strategies, including: front-end rounding compensation compatible numbers in problem-solving contexts. [C, CN, ME, PS, R, V]</p>	
<p>3. Apply mental mathematics strategies and number properties, such as: skip counting from a known fact using doubling or halving using patterns in the 9s facts using repeated doubling or halving to determine answers for basic multiplication facts to 18 and related division facts. [C, CN, ME, R, V]</p>	<p>Understanding Math PLUS <u>Understanding Whole Numbers and Integers</u> Topic 3. Multiplying and Dividing Whole Numbers Whole Numbers Around Us Example 1 - Orange Example 2 - Bananas Example 3 - Cycling Example 4 - Baseball Cards Example 5 - Cookies Example 6 - Running Example 7 - Apples Example 8 - Saving Example 9 - Sit-ups Example 10 - Taxi Example 11 - Skipping</p>
<p>4. Apply mental mathematics strategies for multiplication, such as: annexing then adding zero halving and doubling using the distributive property. [C, ME, R]</p>	<p>Understanding Math PLUS <u>Understanding Whole Numbers and Integers</u> Topic 3. Multiplying and Dividing Whole Numbers Distributive Method Distributive Method - Examples 1, 2, 3 Distributive Method - Questions 1, 2, 3</p>

5. Demonstrate an understanding of multiplication (2-digit by 2-digit) to solve problems.
[C, CN, PS, V]

Understanding Math PLUS

Understanding Whole Numbers and Integers

Topic 3. Multiplying and Dividing Whole Numbers

Multiply by a Two Digit Multiplier

Partial Products (Area)

Partial Products - Example 1,2,3 - With Blocks

Partial Products - Example 4,5,6 - Without Blocks

Partial Products - Questions 1, 2, 3

The Distributive Method

Distributive Method - Examples 1, 2, 3

Distributive Method - Questions 1, 2, 3

The Lattice Method

Lattice Method - Examples 1, 2, 3

Lattice Method - Questions 1, 2, 3

The Standard Method

The Standard Method - Examples 1, 2, 3 The Standard Method - Questions 1, 2, 3

WNCP Mathematics – Grade Five (continued)

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
<p>6. Demonstrate, with and without concrete materials, an understanding of division (3-digit by 1-digit) and interpret remainders to solve problems. [C, CN, PS]</p>	<p>Understanding Math PLUS Understanding Whole Numbers and Integers Topic 3. Multiplying and Dividing Whole Numbers Divide by a Single Digit Divisor Fair Sharing Fair Sharing - Example 1 - With Blocks Fair Sharing - Example 2 - Without Blocks Fair Sharing - Questions 1, 2, 3, 4, 5, 6</p>
<p>7. Demonstrate an understanding of fractions by using concrete and pictorial representations to: create sets of equivalent fractions compare fractions with like and unlike denominators. [C, CN, PS, R, V]</p>	<p>Understanding Math PLUS Understanding Fractions Topic 3. Equivalent Fractions Introduction Square Triangle Pattern Blocks Hexagon 1, 2 Fraction Strips Concepts 1, 2 The Clock Introduction 1, 2 Examples Equivalent Fractions on a Number Line Comparison of Fractions Equivalent Fractions in a Multiplication Table One Equivalent Fractions... The Pattern Example Questions Examples 1, 2, 3</p>

<p>8. Describe and represent decimals (tenths, hundredths, thousandths) concretely, pictorially and symbolically. [C, CN, R, V]</p>	<p>Understanding Math PLUS <u>Understanding Fractions</u> Topic 5. An Introduction to Decimals Decimals to Tenths Examples 1, 2, Decimals to Hundredths Examples 1, 2, 3, 4, 5 Decimals to Thousandths Examples 1, 2, 3, 4, 5 Understanding Place Value Examples 1, 2, 3, 4</p>
<p>9. Relate decimals to fractions (to thousandths). [CN, R, V]</p>	<p>Understanding Math PLUS <u>Understanding Fractions</u> Topic 15. Multiplication and Division of Decimals Compare Fractions... Method 1 Compare Fractions... Method 2 Fractions to Decimals Decimals to Fractions Place Value Examples 1, 2, 3, 4, 5</p>
<p>10. Compare and order decimals (to thousandths), by using: benchmarks place value equivalent decimals. [CN, R, V]</p>	<p>Understanding Math PLUS <u>Understanding Fractions</u> Topic 5. An Introduction to Decimals Understanding Place Value Examples 1, 2, 3, 4 Equivalent Decimals Examples 1, 2, 3, 4 Comparing Decimals Examples 1, 2, 3, 4 Ordering Decimals Introduction Examples 1, 2, 3, 4</p>

<p>11. Demonstrate an understanding of addition and subtraction of decimals (limited to thousandths). [C, CN, PS, R, V]</p>	<p>Understanding Math PLUS Understanding Fractions Topic 14. Addition and Subtraction of Decimals Method 1... Partial Sums Example 1,2 - With Grids Example 3,4,5,6 - Without Grids Method 2... Columns Example 1,2 - With Grids Example 3,4,5,6 - Without Grids Method 3... Right to Left Example 1,2 - With Grids Example 3,4,5,6 - Without Grids Subtracting Decimals Tenths...The Pencil Examples 1, 2, 3, 4, 5 Hundredths... The Field Examples 1, 2, 3, 4 Method 1... Right to Left Example 1,2 - With Grids Example 3,4,5,6 - Without Grids Method 2... Trade First Example 1,2 - With Grids Example 3,4,5,6 - Without Grids Method 3... Add Up Example 1,2,3,4 - With Grids Example 4 - With Grids Example 5,6,7,8 - Without Grids</p>
<p>Strand: Patterns and Relations (Patterns)</p>	
<p>General Outcome <i>Use patterns to describe the world and solve problems.</i></p>	
<p>Specific Outcomes</p>	

<p>1. Determine the pattern rule to make predictions about subsequent elements. [C, CN, PS, R, V]</p>	<p>Understanding Math PLUS Understanding Algebra Topic 3. Patterns, Patterns, Patterns Geometric Patterns Examples 1, 2, 3, 4, 5, 6, 7, 8 Number Patterns Examples 1, 2, 3, 4, 5, 6 Number and Geometric Patterns Examples 1, 2</p>
<p>2. Solve problems involving single-variable, one-step equations with whole number coefficients and whole number solutions. [C, CN, PS, R]</p>	<p>Understanding Math PLUS Understanding Equations Topic 2. Solving One-Step Equations Our Problem Concepts – Examples with Tiles Examples 1, 2, 3, 4 Concepts – Examples without Tiles Practice Questions Topic Test</p>
<p>Strand: Shape and Space (Measurement)</p>	
<p>General Outcome <i>Use direct or indirect measurement to solve problems.</i></p>	
<p>Specific Outcomes</p>	

<p>1. Design and construct different rectangles given either perimeter or area, or both (whole numbers) and draw conclusions. [C, CN, PS, R, V]</p>	<p>Understanding Math PLUS <u>Understanding Measurement and Geometry</u> Topic 2. Perimeter and Area of Polygons Walk Around a Polygon Joan Walks Length of the Metal Strip Find the Perimeter Amount of Surface The Driveway... An Introduction to Area Area – Estimation Area of a Rectangle Concept Relationship – Area and Perimeter The Information The Graph Given Area and Perimeter – Create Shape Example 1</p>
<p>2. Demonstrate an understanding of measuring length (mm) by: selecting and justifying referents for the unit mm modelling and describing the relationship between mm and cm units, and between mm and m units. [C, CN, ME, PS, R, V]</p>	<p>Understanding Math PLUS <u>Understanding Measurement and Geometry</u> Topic 1. An Introduction to Measurement Measurement in the News A Glimpse into the Past Metric and U.S.A Standard Measurement Systems Related Units from Metric Prefixes Metric Prefixes at Work Converting Between Metric Units</p>

WNCP Mathematics – Grade Five (continued)

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
3. Demonstrate an understanding of volume by: <ul style="list-style-type: none"> selecting and justifying referents for cm^3 or m^3 units estimating volume by using referents for cm^3 or m^3 measuring and recording volume (cm^3 or m^3) constructing rectangular prisms for a given volume. [C, CN, ME, PS, R, V]	Understanding Math PLUS Understanding Measurement and Geometry Topic 4. Solids...Volume and Surface Area Volume of a Solid The Concept Volume of a Prism: Examples 1, 2
4. Demonstrate an understanding of capacity by: <ul style="list-style-type: none"> describing the relationship between mL and L selecting and justifying referents for mL or L units estimating capacity by using referents for mL or L measuring and recording capacity (mL or L). [C, CN, ME, PS, R, V]	
Strand: Shape and Space (3-D Objects and 2-D Shapes)	
General Outcome <i>Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.</i>	
Specific Outcomes	

<p>5. Describe and provide examples of edges and faces of 3-D objects and sides of 2-D shapes that are:</p> <ul style="list-style-type: none"> parallel intersecting perpendicular vertical horizontal. <p>[C, CN, R, T, V]</p> <p>6. Identify and sort quadrilaterals, including:</p> <ul style="list-style-type: none"> rectangles squares trapezoids parallelograms rhombuses <p>according to their attributes.</p> <p>[C, R, V]</p>	<p>Understanding Math PLUS Understanding Measurement and Geometry Topic 2. Perimeter and Area of Polygons Polygons... What Are They? Concept A Triangle is A Quadrilateral is A Pentagon is A Hexagon is An Octagon is Classify Polygons</p> <p>Topic 4. Solids... Volume and Surface Area Classifying Solids A Solid is... Recall Polygons A Polyhedron is... A Prism is... Some Special Pyramids A Cylinder is... A Cone is... Platonic Solids</p>
<p>Strand: Shape and Space (Transformations)</p>	
<p>General Outcome Describe and analyze position and motion of objects and shapes.</p>	
<p>Specific Outcomes</p>	

<p>7. Perform a single transformation (translation, rotation or reflection) of a 2-D shape, (with and without technology) and draw and describe the image. [C, CN, T, V]</p> <p>8. Identify a single transformation including a translation, a rotation and a reflection of 2-D shapes. [C, T, V]</p>	<p>Understanding Math PLUS Understanding Graphing Topic 4. Transformations What is a Transformation? Introduction to Common Transformations Translations - An Introduction Slide #1, #2, #3, #4 Reflections - An Introduction Flip #1, #2, #3 Rotations - An Introduction Turn #1, #2, #3, #4, #5 The Transformation Machine Examples 1, 2, 3, 4, 5</p>
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WNCP Mathematics – Grade Five (continued)

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
Strand: Statistics and Probability (Data Analysis)	
General Outcome <i>Collect, display and analyze data to solve problems.</i>	
Specific Outcomes	
1. Differentiate between first-hand and second-hand data. [C, R, T, V]	Understanding Math PLUS Understanding Graphing Topic 2. Statistics Examples of Data Example 1... Fast Food Earnings Example 2... Infant's Walk Example 3... Canada and U.S.A. Forecast Example 4... King of the Strike Out Example 5... U.S.A. Stake in India Example 6... Allergy Troubles A Summary: Examples
2. Construct and interpret double bar graphs to draw conclusions. [C, PS, R, T, V]	Understanding Math PLUS Understanding Graphing Topic 2. Statistics In This Topic Bar Graph #1 Bar Graph #2
Strand: Statistics and Probability (Chance and Uncertainty)	
General Outcome <i>Use experimental or theoretical probabilities to represent and solve problems involving uncertainty.</i>	
Specific Outcomes	
3. Describe the likelihood of a single outcome occurring using words, such as: impossible possible certain. [C, CN, PS, R]	Understanding Math PLUS Understanding Probability Topic 1. Introduction to Probability The Language of Chance Activity 1, 2

4. Compare the likelihood of two possible outcomes occurring using words, such as:
less likely
equally likely
more likely.
[C, CN, PS, R]

Understanding Math PLUS

Understanding Probability

Topic 1. Introduction to Probability

Probability Lines

Line 1,2

Possible Outcomes...Examples

What are they?

1. Coin
2. Picking One Ball
3. Picking Two Balls
4. Eye Test
5. Coin and Die
6. Travel

WNCP CURRICULUM CORRELATION FORM Mathematics – Grade Six

Series Title: _____

Format: _____ Copyright Date: _____

WNCP MATHEMATICS – GRADE SIX

The following are the general and specific outcomes for Grade Six taken from *The Common Curriculum Framework for K–9 Mathematics, Western and Northern Canadian Protocol, 2006*.

Please use the space following each outcome to indicate where the outcome has been addressed in your resource (e.g., the relevant unit, chapter, lesson, page references/indexing for digital resources) and to provide any comments you may have. **Resources should address a minimum of 95% of the outcomes in the CCF for K–9 Mathematics, WNCP, 2006.**

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
Strand: Number	
General Outcome <i>Develop number sense.</i>	

<p>1. Demonstrate an understanding of place value for numbers: greater than one million less than one thousandth. [C, CN, R, T]</p>	<p>Understanding Math PLUS <u>Understanding Whole Numbers and Integers</u> Topic 1. An Introduction to Whole Numbers Place Value to 999 9999 Examples Examples 1, 2, 3, 4, 5 The Number Line Examples 1, 2</p> <p><u>Understanding Fractions</u> Topic 5. Introduction to Decimals Decimals to Thousandths Examples 1, 2, 3, 4, 5 Understanding Place Value Examples 1, 2, 3, 4</p>
<p>2. Solve problems involving large numbers, using technology. [ME, PS, T]</p>	<p>Understanding Math PLUS <u>Understanding Whole Numbers and Integers</u> Topic 1. An Introduction to Whole Numbers Comparing Large Numbers Examples 1, 2, 3, 4 Ordering Large Numbers Examples 1, 2, 3, 4 Rounding Large Numbers Examples 1, 2, 3, 4, 5 Practice Questions Topic Test</p>

<p>3. Demonstrate an understanding of factors and multiples by: determining multiples and factors of numbers less than 100 identifying prime and composite numbers solving problems involving multiples. [PS, R, V]</p>	<p>Understanding Math PLUS Understanding Whole Numbers and Integers Topic 3. Multiplying and Dividing Whole Numbers Multiples of 10, 100, 1000 Patterns in Multiplication by 10 Patterns in Multiplication by 100</p> <p>Understanding Fractions Topic 3. Equivalent Fractions Greatest Common Factor 12 and 18 30 and 40 70 and 42</p> <p>Understanding Algebra Topic 3. Patterns, Patterns, Patterns Prime and Composite Prime Numbers Composite Numbers Common Factors/GCF Examples 1, 2</p>
<p>4. Relate improper fractions to mixed numbers. [CN, ME, R, V]</p>	<p>Understanding Math PLUS Understanding Fractions Topic 13. Improper Fractions and Mixed Numbers The Concept Packages Clock Improper Fractions and Mixed Numbers... What are They? Introductory Problem Mixed to Improper Method 1 – Examples 1, 2 Method 2 – Examples 1, 2 Improper to Mixed Examples 1, 2 Practice Questions</p>

<p>5. Demonstrate an understanding of ratio, concretely, pictorially and symbolically. [C, CN, PS, R, V]</p>	<p>Understanding Math PLUS <u>Understanding Percent</u> Topic 4. Ratios and Proportions Ratios in the News What is a Ratio? Examples 1. Fraction Strip 2. Balls 3. Students 4. Gears Writing Ratios Concept Examples 1, 2, 3, 4</p>
<p>6. Demonstrate an understanding of percent, (limited to whole numbers) concretely, pictorially and symbolically. [C, CN, PS, R, V]</p>	<p>Understanding Math PLUS <u>Understanding Percent</u> Topic 1. The Meaning of Percent In This Topic Percent in the News Percent Means... Introduction Ex. 1 School Example Ex. 2 Money Example Examples 1. Barrel Example 2. Red Squares 3. Blue Squares 4. Green Blocks 5. Ruler Making Sense of Percent 1. Weather 2. Squares 3. Election 4. Photocopier 5. Car Trip Estimating Percent Practice Questions</p>

<p>7. Demonstrate an understanding of integers, concretely, pictorially and symbolically. [C, CN, R, V]</p>	<p>Understanding Math PLUS <u>Understanding Whole Numbers and Integers</u> Topic 4. The Meaning of Integers Integers Around Us Temperature Helicopter Submarine Elevator The Integer Line Opposite Integers Examples 1, 2</p>
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WNCP Mathematics – Grade Six (continued)

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
8. Demonstrate an understanding of multiplication and division of decimals (1-digit whole number multipliers and 1-digit natural number divisors). [C, CN, ME, PS, R, V]	Understanding Math PLUS Understanding Fractions Topic 15. Multiplication and Division of Decimals Recall the Basics Multiply by Repeated Addition Examples 1,2 Special Case: Multiply a Decimal by a Whole Number Examples 1,2 ... with blocks Preliminaries to Division Graphic Examples Multiplication Table Summary of Decimals Partial Quotients Examples 1,2,3,4
9. Explain and apply the order of operations, excluding exponents, with and without technology (limited to whole numbers). [CN, ME, PS, T]	Understanding Math PLUS Understanding Whole numbers and Integers Topic 9. Order of Operations Order in Addition Trials 1, 2 Conclusion Examples 1, 2 Order in Multiplication Trials 1, 2 Conclusion Examples 1, 2 Why use Order of Operations?
Strand: Patterns and Relations (Patterns)	
General Outcome <i>Use patterns to describe the world and solve problems.</i>	
Specific Outcomes	
1. Demonstrate an understanding of the relationship within tables of values to solve problems. [C, CN, PS, R]	

<p>2. Represent and describe patterns and relationships using graphs and tables. [C, CN, ME, PS, R, V]</p>	<p>Understanding Math PLUS <u>Understanding Graphing</u> Topic 2. Statistics An Introduction Tally Chart Pictograph #1 Pictograph #2 Bar Graph #1 Bar Graph #2 Line Graph #1 Line Graph #2</p>
<p>Strand: Patterns and Relations (Variables and Equations)</p>	
<p>General Outcome <i>Represent algebraic expressions in multiple ways.</i></p>	
<p>Specific Outcomes</p>	
<p>3. Represent generalizations arising from number relationships using equations with letter variables. [C, CN, PS, R, V]</p>	<p>Understanding Math PLUS <u>Understanding Algebra</u> Topic 4. Patterns, Formulas, Substitution Expressions, Terms, Variables Definitions Summary Patterns to Formulas Example... Hockey Standings Example... Counting Money Example... Angles in a Polygon</p>
<p>4. Demonstrate and explain the meaning of preservation of equality concretely, pictorially and symbolically. [C, CN, PS, R, V]</p>	<p>Understanding Math PLUS <u>Understanding Equations</u> Topic 1. Tiles, Balances, and Equations Definitions Introduction Summary Parts 1, 2 The Meaning of “Solving an Equation” Solve by Systematic Trials Recall Tile Concepts Balances... An Introduction Tiles, Balances and Equations Practice Questions Topic Test</p>

Strand: Shape and Space (Measurement)	
General Outcome <i>Use direct or indirect measurement to solve problems.</i>	
Specific Outcomes	
<p>1. Demonstrate an understanding of angles by:</p> <ul style="list-style-type: none"> identifying examples of angles in the environment classifying angles according to their measure estimating the measure of angles using 45°, 90° and 180° as reference angles determining angle measures in degrees drawing and labelling angles when the measure is specified. <p>[C, CN, ME, V]</p>	<p>Understanding Math PLUS <u>Understanding Measurement and Geometry</u> Topic 5. Angles and their Measure In This Topic Lines and Rays Angles... An Introduction The Degree Classifying Angles Classifications Memory Game Measuring Angles</p>
<p>2. Demonstrate that the sum of interior angles is:</p> <ul style="list-style-type: none"> 180° in a triangle 360° in a quadrilateral. <p>[C, R]</p>	<p>Understanding Math PLUS <u>Understanding Measurement and Geometry</u> Topic 6. Angles in Polygons In This Topic Parallel Lines Example with Parallel Lines Examples 1, 2 Angles in Triangles Exploration An Explanation Angles in Polygons Methods 1, 2 Exterior Angles in a Polygon</p>

3. Develop and apply a formula for determining the:
perimeter of polygons
area of rectangles
volume of right rectangular prisms.
[C, CN, PS, R, V]

Understanding Math PLUS

Understanding Measurement and Geometry

Topic 2. Area and Perimeter of Polygons

Walk Around a Polygon

Joan Walks

Length of the Metal Strip

Find the Perimeter

Amount of Surface

The Driveway... An Introduction to Area

Area – Estimation

Area of a Rectangle

Concept

Examples 1, 2

Topic 4. Solids... Volume and Surface Area

Volume of a Solid

The Concept

Volume of a Prism: Examples 1, 2

WNCP Mathematics – Grade Six (continued)

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
Strand: Shape and Space (3-D Objects and 2-D Shapes)	
General Outcome <i>Describe the characteristics of 3-D objects and 2D shapes, and analyze the relationships among them.</i>	
Specific Outcomes	
4. Construct and compare triangles, including: scalene isosceles equilateral right obtuse acute in different orientations. [C, PS, R, V]	Understanding Math PLUS <u>Understanding Measurement and Geometry</u> Topic 2. Perimeter and area of Polygons A Triangle is Topic 6. Angles and Polygons Angles in Triangles Exploration An Explanation
5. Describe and compare the sides and angles of regular and irregular polygons. [C, PS, R, V]	Understanding Math PLUS <u>Understanding Measurement and Geometry</u> Topic 6. Angles and Polygons Angles in Polygons Methods 1, 2 Exterior Angles in a Polygon Practice Questions
Strand: Shape and Space (Transformations)	
General Outcome <i>Describe and analyze position and motion of objects and shapes.</i>	
Specific Outcomes	

<p>6. Perform a combination of translation(s), rotation(s) and/or reflection(s) on a single 2-D shape, with and without technology, and draw and describe the image. [C, CN, PS, T, V]</p> <p>7. Perform a combination of successive transformations of 2-D shapes to create a design, and identify and describe the transformations. [C, CN, T, V]</p> <p>9. Perform and describe single transformations of a 2-D shape in the first quadrant of a Cartesian plane (limited to whole number vertices). [C, CN, PS, T, V]</p>	<p>Understanding Math PLUS Understanding Graphing Topic 4. Transformations Translations Object to Image We Say We Write Reflection Mapping Rule Examples Examples 1, 2, 3 Rotations Object to Image We Say We Write Rotation Mapping Rule Examples Examples 1, 2</p>
<p>8. Identify and plot points in the first quadrant of a Cartesian plane using whole number ordered pairs. [C, CN, V]</p>	<p>Understanding Math PLUS Understanding Graphing Topic 3. Points on a Grid Josh's Neighborhood Concept Number Houses Grids on Maps Ordered Pairs Axis Quadrants and Cartesian Plane Find a Point</p>
<p>Strand: Statistics and Probability (Data Analysis)</p>	
<p>General Outcome <i>Collect, display and analyze data to solve problems.</i></p>	
<p>Specific Outcomes</p>	

<p>1. Create, label and interpret line graphs to draw conclusions. [C, CN, PS, R, V]</p>	<p>Understanding Math PLUS <u>Understanding Graphing</u> Topic 2. Statistics Presenting Data Line Graph Example 1... Life Expectancy Example 2... Software Profits</p>
<p>2. Select, justify and use appropriate methods of collecting data, including: questionnaires experiments databases electronic media. [C, PS, T]</p>	<p>Understanding Math PLUS <u>Understanding Graphing</u> Topic 2. Statistics Collecting Data Throw a Die Throw 2 Dice Voting Primary Data - Gathering Methods Secondary Data - Gathering Methods</p>

WNCP Mathematics – Grade Six (continued)

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
3. Graph collected data and analyze the graph to solve problems. [C, CN, PS]	Understanding Math PLUS Understanding Graphing Topic 2. Statistics Bar Graph Example 1... Energy Example 2... Lengths of Rivers Line Graph Example 1... Life Expectancy Example 2... Software Profits
Strand: Statistics and Probability (Chance and Uncertainty)	
General Outcome <i>Use experimental or theoretical probabilities to represent and solve problems involving uncertainty.</i>	
Specific Outcomes	

4. Demonstrate an understanding of probability by:
- identifying all possible outcomes of a probability experiment
 - differentiating between experimental and theoretical probability
 - determining the theoretical probability of outcomes in a probability experiment
 - determining the experimental probability of outcomes in a probability experiment
 - comparing experimental results with the theoretical probability for an experiment.
- [C, ME, PS, T]

Understanding Math PLUS
Understanding Probability

Topic 2. What's the Chance?

Probability
What is it?
Introduction 1
Introduction 2
Probability Examples
1. Coin Toss
2. Picking One Ball
3. Picking Two Balls
4. Travel Example
5. Number Example
6. Rabbit Example
7. Mailing Letters
8. Forest
9. Ahmed's Maze
The Probability Scale
Examples
Summary
Follow Up
Soccer Example
Experimental Probability
Introduction
Examples 1, 2

WNCP CURRICULUM CORRELATION FORM Mathematics – Grade Seven

Series Title: _____

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WNCP MATHEMATICS – GRADE SEVEN

The following are the general and specific outcomes for Grade Seven taken from *The Common Curriculum Framework for K–9 Mathematics, Western and Northern Canadian Protocol, 2006*.

Please use the space following each outcome to indicate where the outcome has been addressed in your resource (e.g., the relevant unit, chapter, lesson, page references/indexing for digital resources) and to provide any comments you may have. **Resources should address a minimum of 95% of the outcomes in the CCF for K–9 Mathematics, WNCP, 2006.**

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
Strand: Number	
General Outcome <i>Develop number sense.</i>	
1. Determine and explain why a number is divisible by 2, 3, 4, 5, 6, 8, 9 or 10, and why a number cannot be divided by 0. [C, R]	Understanding Math PLUS <u>Understanding Whole Numbers and Integers</u> Topic 3. Multiplying and Dividing Whole Numbers Divide by a Single Digit Divisor Fair Sharing Fair Sharing - Example 1 - With Blocks Fair Sharing - Example 2 - Without Blocks Fair Sharing - Questions 1, 2, 3, 4, 5, 6

2. Demonstrate an understanding of the addition, subtraction, multiplication and division of decimals (for more than 1-digit divisors or 2-digit multipliers, the use of technology is expected) to solve problems.
[ME, PS, T]

Understanding Math PLUS

Understanding Fractions

Topic 14. Addition and Subtraction of Decimals

Decimals Around Us
Length in Metric Units
The Tools
Examples 1, 2, 3, 4, 5
Pencils
Examples 1, 2, 3, 4, 5
Money
Examples 1, 2, 3, 4, 5
Track Meet
Examples 1, 2, 3, 4, 5
School Supplies
Practice Questions

Topic 15. Multiplication and Division of Decimals

Multiply by Partial Products – Area
Examples 1,2, 3 with Blocks
Examples 4,5,6 without Blocks
Questions 1,2,3
Distributive Method
Examples 1,2,3
Questions 1,2,3
Standard Method
Examples 1,2,3
Questions 1,2,3
Preliminaries to Division
Graphic Examples
Multiplication Table
Summary of Decimals
Partial Quotients
Examples 1,2,3,4
Fair Sharing – Long Division
Examples 1,2
Questions 1,2,3,4
Decimals Around Us – Word Problems
Problems 1 through 9

3. Solve problems involving percents from 1% to 100%.
[C, CN, PS, R, T]

Understanding Math PLUS

Understanding Percent

Topic 5. Percent of a Number

In This Topic

The Concept

Examples

1. Money Example

2. Service Charge

3. Bird Example

4. Marathon Race

5. Freezing

6. Pie Chart

The Bouncing Ball

Grades

What if?

Calculate

Pass or Fail?

Practice Questions

Topic 6. Problems Involving Percent

Finding the Percent

Theatre Problem

Car Problem

Percent of a Number

Earnings Problem

Nickel Ore

<p>4. Demonstrate an understanding of the relationship between positive repeating decimals and positive fractions, and positive terminating decimals and positive fractions. [C, CN, R, T]</p>	<p>Understanding Math PLUS <u>Understanding Fractions</u> Topic 15. Multiplication and Division of Decimals Repeating Decimals An Example How to Write them Fraction to Decimals Division Table Examples 1 through 8 Decimals to Fractions Place Value Examples 1,2,3,4,5</p>
<p>5. Demonstrate an understanding of adding and subtracting positive fractions and mixed numbers, with like and unlike denominators, concretely, pictorially and symbolically (limited to positive sums and differences). [C, CN, ME, PS, R, V]</p>	<p>Understanding Math PLUS <u>Understanding Fractions</u> Topic 13. Improper Fractions and Mixed Numbers Adding Mixed Numbers</p>

6. Demonstrate an understanding of addition and subtraction of integers, concretely, pictorially and symbolically.
[C, CN, PS, R, V]

Understanding Math PLUS
Understanding Whole Numbers and Integers

Topic 5. Adding Integers

In This Topic

Elevators... An Introduction to Addition

Examples 1, 2, 3, 4

Summary... Using Elevators

Markers... An Introduction to Addition

Opposites

Examples 1, 2, 3, 4

Going for a Walk... An Introduction to Addition

Examples 1, 2, 3

Number Line... An Introduction to Addition

Examples 1, 2, 3

Summary... Using a Number Line

Writing Positive Integers

Examples 1, 2, 3

Word Problems

Temperature

Money

Car

Topic 6. Subtracting Integers

In This Topic

Markers... An Introduction to Subtraction

Markers Help Us Understand

Review Opposites

Examples 1, 2, 3, 4, 5, 6, 7, 8

The Pattern

Elevators... An Introduction to Subtraction

Examples 1, 2, 3, 4

Summary... Using Elevators

Summary... Add the Opposite

Example Questions

Example 1 – With Brackets

Example 2 – With Brackets

Example 3 – Meaning of... $2 - 5$

Example 4 – Meaning of... $-7 - 3$

Example 5 – Meaning of... $-7 + 9 - 18$

Example 6 – Meaning of... $-4 - 9 + 2 - 8$

Summary from Examples 3 to 6

Going for a Walk

Preliminary

The Walk

David's Trip Part 1, Part 2

Summary

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
<p>7. Compare and order positive fractions, positive decimals (to thousandths) and whole numbers by using: benchmarks place value equivalent fractions and/or decimals. [CN, R, V]</p>	<p>Understanding Math PLUS Understanding Fractions Topic 1. The Meaning of Fractions Comparison of Fractions The Symbol Greater Than - Ex. 1, Ex. 2 Less Than - Ex. 1, Ex. 2 Greater and Less Than - Ex. 1, Ex. 2 Concept 1 - Fraction Strips Concept 2 - Circles Examples 1, 2, 3, 4</p> <p>Topic 5. Introduction to Decimals Comparing Decimals Examples 1, 2, 3, 4 Ordering Decimals Introduction Examples 1, 2, 3, 4</p>
Strand: Patterns and Relations (Patterns)	
General Outcome <i>Use patterns to describe the world and solve problems.</i>	
Specific Outcomes	
<p>1. Demonstrate an understanding of oral and written patterns and their equivalent linear relations. [C, CN, R]</p> <p>2. Create a table of values from a linear relation, graph the table of values, and analyze the graph to draw conclusions and solve problems. [C, CN, R, V]</p>	<p>Understanding Math PLUS Understanding Graphing Topic 6. Linear Relations What is a Linear Relation? Graphs of Linear Relations Concept Examples 1, 2, 3, 4, 5, 6 The Taxi Example – Setup Equation – Graph Equation The Elastic Example – Setup Equation – Graph Equation Lightning Example – Setup Equation – Graph Equation</p>
Strand: Patterns and Relations (Variables and Equations)	
General Outcome <i>Represent algebraic expressions in multiple ways.</i>	

Specific Outcomes	
3. Demonstrate an understanding of preservation of equality by: modelling preservation of equality, concretely, pictorially and symbolically applying preservation of equality to solve equations. [C, CN, PS, R, V]	Understanding Math PLUS <u>Understanding Equations</u> Topic 1. Tiles, Balances, Equations Tiles, Balances and Equations
4. Explain the difference between an expression and an equation. [C, CN]	Understanding Math PLUS <u>Understanding Algebra</u> Topic 4. Patterns, Formulas, and Substitution Expressions, Terms, Variables Definitions Summary Patterns to Formulas Example... Hockey Standings Example... Counting Money Example... Angles in a Polygon Substitution is... Math Scrabble Scrabble 1, 2, 3 Challenge <u>Understanding Equations</u> Topic 2. Solving One-Step Equations Concepts – Examples with Tiles Examples 1, 2, 3, 4 Concepts – Examples without Tiles Practice Questions Topic Test
5. Evaluate an expression given the value of the variable(s). [CN, R]	Understanding Math PLUS <u>Understanding Algebra</u> Topic 4. Patterns, Formulas, and Substitution Substitution is... Math Scrabble Scrabble 1, 2, 3 Challenge Substitution Examples Examples 1, 2, 3, 4

6. Model and solve problems that can be represented by one-step linear equations of the form $x + a = b$, concretely, pictorially and symbolically, where a and b are integers.

[CN, PS, R, V]

7. Model and solve problems that can be represented by linear equations of the form:

$$ax + b = c$$

$$ax = b$$

$$\frac{x}{a} = b, a \neq 0$$

concretely, pictorially and symbolically, where a , b and c are whole numbers.

[CN, PS, R, V]

Understanding Math PLUS

Understanding Graphing

Topic 6. Linear Relations

In This Topic

What is a Linear Relation?

Graphs of Linear Relations

Concept

Examples 1, 2, 3, 4, 5, 6

The Taxi Example – Setup Equation – Graph Equation

The Elastic Example – Setup Equation – Graph Equation

Lightning Example – Setup Equation – Graph Equation

WNCP Mathematics – Grade Seven (continued)

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
Strand: Shape and Space (Measurement)	
General Outcome <i>Use direct or indirect measurement to solve problems.</i>	
Specific Outcomes	
<p>1. Demonstrate an understanding of circles by:</p> <ul style="list-style-type: none"> describing the relationships among radius, diameter and circumference of circles relating circumference to pi determining the sum of the central angles constructing circles with a given radius or diameter solving problems involving the radii, diameters and circumferences of circles. <p>[C, CN, R, V]</p>	<p>Understanding Math PLUS <u>Understanding Measurement and Geometry</u> Topic 3. The Circle n This Topic Circles All Around Us! Radius, Circumference, Diameter PI... A Special Number Introduction How do we Measure Circumference? Measuring Circles Summary Circumference of a Circle Circumference Example 1 – Egg Example 2 – The Well Example 3 – The Rolling Coin Example 4 – The Semi-Circle</p>

<p>2. Develop and apply a formula for determining the area of: triangles parallelograms circles. [CN, PS, R, V]</p>	<p>Understanding Math PLUS <u>Understanding Measurement and Geometry</u> Topic 2. Perimeter and Area of Polygons Amount of Surface The Driveway... An Introduction to Area Area – Estimation Area of a Rectangle Concept Examples 1, 2 Area of a Parallelogram Concept Examples 1, 2 Area of a Triangle Concept Examples 1, 2</p>
<p>Strand: Shape and Space (3-D Objects and 2-D Shapes)</p>	
<p>General Outcome <i>Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.</i></p>	
<p>Specific Outcomes</p>	
<p>3. Perform geometric constructions, including: perpendicular line segments parallel line segments perpendicular bisectors angle bisectors. [CN, R, V]</p>	<p>Understanding Math PLUS <u>Understanding Measurement and Geometry</u> Topic 7. Constructions Before You Begin In This Topic Perpendicular Bisector Circumcircle Centroid Angle Bisector</p>
<p>Strand: Shape and Space (Transformations)</p>	
<p>General Outcome <i>Describe and analyze position and motion of objects and shapes.</i></p>	
<p>Specific Outcomes</p>	

<p>4. Identify and plot points in the four quadrants of a Cartesian plane using integral ordered pairs. [C, CN, V]</p>	<p>Understanding Math PLUS <u>Understanding Graphing</u> Topic 3. Points on a Grid Ordered Pairs Axis Quadrants and Cartesian Plane Find a Point Order is Important Examples Shapes Battleship</p>
<p>5. Perform and describe transformations (translations, rotations or reflections) of a 2-D shape in all four quadrants of a Cartesian plane (limited to integral number vertices). [C, CN, PS, T, V]</p>	<p>Understanding Math PLUS <u>Understanding Graphing</u> Topic 4. Transformations Translations Object to Image We Say We Write Reflection Mapping Rule Examples Examples 1, 2, 3 Rotations Object to Image We Say We Write Rotation Mapping Rule Examples Examples 1, 2</p>

WNCP Mathematics – Grade Seven (continued)

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
Strand: Statistics and Probability (Data Analysis)	
General Outcome <i>Collect, display and analyze data to solve problems.</i>	
Specific Outcomes	
1. Demonstrate an understanding of central tendency and range by: determining the measures of central tendency (mean, median, mode) and range determining the most appropriate measures of central tendency to report findings. [C, PS, R, T] 2. Determine the effect on the mean, median and mode when an outlier is included in a data set. [C, CN, PS, R]	Understanding Math PLUS Understanding Graphing Topic 2. Statistics Measures of Central Tendency Introduction The Mean Average The Median average The Mode Summary Another Example Adding Data Points
3. Construct, label and interpret circle graphs to solve problems. [C, CN, PS, R, T, V]	Understanding Math PLUS Understanding Graphing Topic 2. Statistics Presenting Data Circle or Pie Graphs Example 1... Radio Station Example 2... Health Survey
Strand: Statistics and Probability (Chance and Uncertainty)	
General Outcome <i>Use experimental or theoretical probabilities to represent and solve problems involving uncertainty.</i>	
Specific Outcomes	

<p>4. Express probabilities as ratios, fractions and percents. [C, CN, R, T, V]</p>	<p>Understanding Math PLUS <u>Understanding Percents</u> Topic 4. Ratios and Proportions Writing Ratios Concept Examples 1, 2, 3, 4</p>
<p>5. Identify the sample space (where the combined sample space has 36 or fewer elements) for a probability experiment involving two independent events. [C, ME, PS]</p> <p>6. Conduct a probability experiment to compare the theoretical probability (determined using a tree diagram, table or another graphic organizer) and experimental probability of two independent events. [C, PS, R, T]</p>	<p>Understanding Math PLUS <u>Understanding Probability</u> Topic 7. Independent Events In This Topic What Are They? Examples 1. Toss Two Coins 2. Replacing Marbles Probability 1. Coin and Die 2. Balls 3. Letter Tiles Patterns and Summary 1. Summary 2. Spinner 3. Cards Practice Questions Topic Test</p>

WNCP CURRICULUM CORRELATION FORM Mathematics – Grade Eight

Series Title: _____

Format: _____ Copyright Date: _____

WNCP MATHEMATICS – GRADE EIGHT

The following are the general and specific outcomes for Grade Eight taken from *The Common Curriculum Framework for K–9 Mathematics, Western and Northern Canadian Protocol, 2006*.

Please use the space following each outcome to indicate where the outcome has been addressed in your resource (e.g., the relevant unit, chapter, lesson, page references/indexing for digital resources) and to provide any comments you may have. **Resources should address a minimum of 95% of the outcomes in the CCF for K–9 Mathematics, WNCP, 2006.**

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
Strand: Number	
General Outcome <i>Develop number sense.</i>	
Specific Outcomes	

<p>1. Demonstrate an understanding of perfect squares and square roots, concretely, pictorially and symbolically (limited to whole numbers). [C, CN, R, V]</p> <p>2. Determine the approximate square root of numbers that are not perfect squares (limited to whole numbers). [C, CN, ME, R, T]</p>	<p>Understanding Math PLUS <u>Understanding Exponents</u> Topic 5. Square Roots Squaring Numbers Square Roots Radical Signs Square Roots of Negative Numbers Example Questions 1. Radicals First 2. The Four Equations 3. Lawn Question 4. Make a Square</p>
<p>3. Demonstrate an understanding of percents greater than or equal to 0%. [CN, PS, R, V]</p>	<p>Understanding Math PLUS <u>Understanding Percent</u> Topic 6. Problems Involving Percent Percent of a Number Earnings Problem Nickel Ore Percents Greater than 100% Number Problem Order Problem Pencil Problem</p>
<p>4. Demonstrate an understanding of ratio and rate. [C, CN, V]</p>	<p>Understanding Math PLUS <u>Understanding Percent</u> Topic 4. Ratios and Proportions What is a Ratio? Examples 1. Fraction Strip 2. Balls 3. Students 4. Gears Writing Ratios Concept Examples 1, 2, 3, 4</p>

5. Solve problems that involve rates, ratios and proportional reasoning.
[C, CN, PS, R]

Understanding Math PLUS

Understanding Percent

Topic 4. Ratios and Proportions

What is a Proportion?

Proportions

Example 1

Example 2 – Lemonade

Example 3 – Marbles

Example 4 – Trout

Example 5 – Tree Height

Example 6 – Map

Example 7 – Scale Drawing

Ratios and Your Body

Golden Ratios

Measuring Your Body

Practice Questions

6. Demonstrate an understanding of multiplying and dividing positive fractions and mixed numbers, concretely, pictorially and symbolically.
[C, CN, ME, PS]

Understanding Math PLUS

Understanding Fractions

Topic 10. Multiplying Fractions

Pattern Blocks

Hexagons 1, 2, 3

Fraction Strips

Concepts 1, 2

Word Problems

Boris' Money

Maria's Trip

A Summary

The Meaning of "OF"

Topic 11. Dividing Fractions

Understanding Division

Examples with Diagrams

Soda Pop

Ice Cream

Shape 1

Shape 2

Patterns from Examples

Another Explanation

Examples 1, 2

Topic 13. Improper Fractions and Mixed Numbers

Dividing Mixed Numbers

Fraction Card Game

Practice Questions

7. Demonstrate an understanding of multiplication and division of integers, concretely, pictorially and symbolically.
[C, CN, PS, R, V]

Understanding Math PLUS
Understanding Whole Numbers and Integers

Topic 7. Multiplying Integers

Multiplication Is...
Examples 1, 2
The Multiplication Table
Instructions
Patterns
Practice 1, 2
Order in Multiplication
The Multiplication Table
Examples 1, 2, 3
Summary #1... Signs
Negative X Negative... Note Patterns
Patterns 1, 2
Summary #2... Signs
Example Questions
Examples 1, 2, 3, 4, 5

Topic 8. Dividing Integers

Division to Multiplication
The Division Table
Instructions
Patterns
Practice
The Inverse of Multiplication
Examples 1, 2
Summary #1... Signs
Summary #2... Signs
Example Questions
Examples 1, 2, 3, 4

WNCP Mathematics – Grade Eight (continued)

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
Strand: Patterns and Relations (Patterns)	
General Outcome <i>Use patterns to describe the world and solve problems.</i>	
Specific Outcome	
1. Graph and analyze two-variable linear relations. [C, ME, PS, R, T, V]	Understanding Math PLUS Understanding Graphing Topic 6. Linear Relations The Taxi Example – Setup Equation – Graph Equation The Elastic Example – Setup Equation – Graph Equation Lightning Example – Setup Equation – Graph Equation
Strand: Patterns and Relations (Variables and Equations)	
General Outcome <i>Represent algebraic expressions in multiple ways.</i>	
Specific Outcome	
2. Model and solve problems using linear equations of the form: $ax = b$ $\frac{x}{a} = b, a \neq 0$ $ax + b = c$ $\frac{x}{a} = b - c, a \neq 0$ $a(x + b) = c$ concretely, pictorially and symbolically, where a, b and c are integers. [C, CN, PS, V]	Understanding Math PLUS Understanding Graphing Topic 8. Equation of a Straight Line Graph $y = mx + b$ Examples 1, 2, 3, 4 Patterns to Summary Examples 5, 6, 7
Strand: Shape and Space (Measurement)	
General Outcome <i>Use direct or indirect measurement to solve problems.</i>	
Specific Outcomes	

<p>1. Develop and apply the Pythagorean theorem to solve problems. [CN, PS, R, V, T]</p>	<p>Understanding Math PLUS <u>Understanding Exponents</u> Topic 6. Pythagorean Theorem In This Topic The Right Triangle Math or Magic? Introduction Omar's Rope Trick #1, #2 Our Rope Trick Squares on a Grid Examples 1, 2, 3, 4 Squares on the Sides of a Right Triangle Triangles 1, 2, 3 The Pythagorean Theorem The Pattern In General Theorem Example Questions Example 1... Pole Example Example 2... Tower Example Example 3... Walking Example Example 4... Lake Example Example 5... Geometric Example</p>
<p>2. Draw and construct nets for 3-D objects. [C, CN, PS, V]</p>	<p>Understanding Math PLUS <u>Understanding Measurement and Geometry</u> Topic 8. Projective Geometry An Introduction Toothpicks on Isometric Dot Paper Toothpick to Cube The Views Using Isometric Grid Paper</p>
<p>3. Determine the surface area of: right rectangular prisms right triangular prisms right cylinders to solve problems. [C, CN, PS, R, V]</p>	<p>Understanding Math PLUS <u>Understanding Measurement and Geometry</u> Topic 4. Solids...Surface Area and Volume Surface Area of a Solid The Concept Surface Area of a Pyramid Surface Area of a Cylinder</p>

<p>4. Develop and apply formulas for determining the volume of right prisms and right cylinders. [C, CN, PS, R, V]</p>	<p>Understanding Math PLUS <u>Understanding Measurement and Geometry</u> Topic 4. Solids...Surface Area and Volume Volume of a Solid The Concept Volume of a Prism: Examples 1, 2 Volume of a Cylinder</p>
<p>Strand: Shape and Space (3-D Objects and 2-D Shapes)</p>	
<p>General Outcome <i>Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.</i></p>	
<p>Specific Outcomes</p>	
<p>5. Draw and interpret top, front and side views of 3-D objects composed of right rectangular prisms. [C, CN, R, T, V]</p>	<p>Understanding Math PLUS <u>Understanding Measurement and Geometry</u> Topic 8. Projective Geometry An Introduction Toothpicks on Isometric Dot Paper Toothpick to Cube The Views Using Isometric Grid Paper Orthographic Projections: Introduction The Cube Tool Introduction Tutorial Play with Tool</p>

WNCP Mathematics – Grade Eight (continued)

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
Strand: Shape and Space (Transformations)	
General Outcome <i>Describe and analyze position and motion of objects and shapes.</i>	
Specific Outcomes	
6. Demonstrate an understanding of tessellation by: <ul style="list-style-type: none"> explaining the properties of shapes that make tessellating possible creating tessellations identifying tessellations in the environment. [C, CN, PS, T, V]	Understanding Math PLUS Understanding Graphing Topic 4. Transformations Tessellations Introduction Examples Examples 1, 2, 3, 4, 5
Strand: Statistics and Probability (Data Analysis)	
General Outcome <i>Collect, display and analyze data to solve problems.</i>	
Specific Outcomes	
1. Critique ways in which data is presented. [C, R, T, V]	Understanding Math PLUS Understanding Graphing Topic 2. Statistics Collecting Data Throw a Die Throw 2 Dice Voting Primary Data - Gathering Methods Secondary Data - Gathering Methods

Strand: Statistics and Probability (Chance and Uncertainty)	
General Outcome <i>Use experimental or theoretical probabilities to represent and solve problems involving uncertainty.</i>	
Specific Outcomes	
2. Solve problems involving the probability of independent events. [C, CN, PS, T]	Understanding Math PLUS Understanding Probability Topic 7. Independent Events What Are They? Examples <ol style="list-style-type: none"> 1. Toss Two Coins 2. Replacing Marbles Probability <ol style="list-style-type: none"> 1. Coin and Die 2. Balls 3. Letter Tiles Patterns and Summary <ol style="list-style-type: none"> 1. Summary 2. Spinner 3. Cards Practice Questions

WNCP CURRICULUM CORRELATION FORM Mathematics – Grade Nine

Series Title: _____

Format: _____ Copyright Date: _____

WNCP MATHEMATICS – GRADE NINE

The following are the general and specific outcomes for Grade Nine taken from *The Common Curriculum Framework for K–9 Mathematics, Western and Northern Canadian Protocol, 2006*.

Please use the space following each outcome to indicate where the outcome has been addressed in your resource (e.g., the relevant unit, chapter, lesson, page references/indexing for digital resources) and to provide any comments you may have. **Resources should address a minimum of 95% of the outcomes in the CCF for K–9 Mathematics, WNCP, 2006.**

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
Strand: Number	
General Outcome <i>Develop number sense.</i>	
Specific Outcomes	

<p>1. Demonstrate an understanding of powers with integral bases (excluding base 0) and whole number exponents by:</p> <ul style="list-style-type: none"> representing repeated multiplication using powers using patterns to show that a power with an exponent of zero is equal to one solving problems involving powers. <p>[C, CN, PS, R]</p>	<p>Understanding Math PLUS Understanding Exponents Topic 1. The Meaning of Exponents Introduction... The Money Game Money Grab Game Show Graphs – Game Show Results Graphs – Comparing the Two Results Introduction... Bacteria Doubling Introduction... Paper Folding Experiment Pattern Exponents, Powers, Bases Powerful Explosions Introductory Examples Examples 1, 2, 3, 4, 5 Examples – Substitution Examples 1, 2, 3, 4 Examples – Order of Operation Examples 1, 2, 3</p>
<p>2. Demonstrate an understanding of operations on powers with integral bases (excluding base 0) and whole number exponents.</p> <p>[C, CN, PS, R, T]</p>	<p>Understanding Math PLUS Understanding Exponents Topic 3. The Exponent Rules In This Topic Multiplication of Powers with the Same Base Expanding the Exponents The Pattern In General Division of Powers with the Same Base Expanding the Exponents The Pattern In General Raising a Power to an Exponent Expanding the Exponents The Pattern In General Raising a Product to an Exponent Expanding the Exponents In General</p>

<p>3. Demonstrate an understanding of rational numbers by: comparing and ordering rational numbers solving problems that involve arithmetic operations on rational numbers. [C, CN, PS, R, T, V]</p>	<p>Understanding Math PLUS <u>Understanding Fractions</u> Topic 8. Adding Fractions Word Problems Alexander's Friends Eating Candy Goal Scoring Taking a Walk</p> <p>Topic 9. Subtracting Fractions Word Problems Pedro and Alex Race Washing the Cars Planting a Garden</p> <p>Topic 10. Multiplying Fractions Practice Questions</p> <p>Topic 11. Dividing Fractions Another Explanation Examples 1, 2 Examples without Diagrams Numerical Examples 1, 2 Central High School Practice Questions</p>
<p>4. Explain and apply the order of operations, including exponents, with and without technology. [PS, T]</p>	<p>Understanding Math PLUS <u>Understanding Whole Numbers and Integers</u> Topic 9. Order of Operations BEDMAS Example Questions Examples 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 Word Problems Shipping Babysitting Garbage</p>

5. Determine the square root of positive rational numbers that are perfect squares.
[C, CN, PS, R, T]
6. Determine an approximate square root of positive rational numbers that are non-perfect squares.
[C, CN, PS, R, T]

Understanding Math PLUS

Understanding Exponents

Topic 5. Square Roots

Example Questions

1. Radicals First
2. The Four Equations
3. Lawn Question
4. Make a Square

WNCP Mathematics – Grade Nine (continued)

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
Strand: Patterns and Relations (Patterns)	
General Outcome <i>Use patterns to describe the world and solve problems.</i>	
Specific Outcomes	
<p>1. Generalize a pattern arising from a problem-solving context using linear equations and verify by substitution. [C, CN, PS, R, V]</p>	<p>Understanding Math PLUS Understanding Algebra Topic 4. Patterns, Formulas, Substitution Substitution is... Math Scrabble Scrabble 1, 2, 3 Challenge Substitution Examples Examples 1, 2, 3, 4 Practice Questions</p> <p>Understanding Equations Topic 3. Solving Two-Step Equations Our Problem Concepts – Examples with Tiles Examples 1, 2, 3, 4 Concepts – Examples without Tiles Examples 1, 2, 3, 4, 5, 6 Practice Questions</p> <p>Understanding Graphing Topic 8. Equation of a Straight Line Graph $y = mx + b$ Examples 1, 2, 3, 4 Patterns to Summary Examples 5, 6, 7</p>

<p>2. Graph linear relations, analyze the graph and interpolate or extrapolate to solve problems. [C, CN, PS, R, T, V]</p>	<p>Understanding Math PLUS Understanding Graphing Topic 6. Linear Equations The Taxi Example – Setup Equation – Graph Equation The Elastic Example – Setup Equation – Graph Equation Lightning Example – Setup Equation – Graph Equation</p>
<p>Strand: Patterns and Relations (Variables and Equations)</p>	
<p>General Outcome <i>Represent algebraic expressions in multiple ways.</i></p>	
<p>Specific Outcomes</p>	
<p>3. Model and solve problems using linear equations of the form: $ax = b$ $\frac{x}{a} = b, a \neq 0$ $ax + b = c$ $\frac{x}{a} = b - c, a \neq 0$ $ax = b + cx$ $a(x + b) = c$ $ax + b = cx + d$ $a(bx + c) = d(ex + f)$ $\frac{a}{x} = b, x \neq 0$ where a, b, c, d, e and f are rational numbers. [C, CN, PS, V]</p>	<p>Understanding Math PLUS Understanding Equations Topic 4. Solving Multi-Step Equations Our Problem Concepts – Examples with Tiles Concepts – Examples without Tiles Examples 1, 2, 3, 4, 5 Summary Literal Equations What Are They? How do you solve them? Why Solve the Literal Equations? A Perimeter Example A Temperature Example Practice Questions</p> <p>Understanding Graphing Topic 8. Equation of a Straight Line The Taxi Example – Setup Equation – Graph Equation The Elastic Example – Setup Equation – Graph Equation Lightning Example – Setup Equation – Graph Equation</p>

4. Explain and illustrate strategies to solve single variable linear inequalities with rational coefficients within a problem-solving context.
[C, CN, PS, R, V]

Understanding Math PLUS

Understanding Equations

Topic 7. Solving Inequalities

Inequalities

What Are They?

Inequality vs. Equation

Summary of Relationships

Inequality on the Number Line

Examples 1, 2, 3, 4

Solving Inequalities

Examples 1, 2, 3, 4, 5, 6

Solving Compound Inequalities

Examples 1, 2

Graphing Linear Inequalities in Two Variables

Concepts 1, 2

Examples 1, 2, 3

Solving Systems of Linear Inequalities by Graphing

Examples 1, 2

<p>5. Demonstrate an understanding of polynomials (limited to polynomials of degree less than or equal to 2). [C, CN, R, V]</p> <p>6. Model, record and explain the operations of addition and subtraction of polynomial expressions, concretely, pictorially and symbolically (limited to polynomials of degree less than or equal to 2). [C, CN, PS, R, V]</p>	<p>Understanding Math PLUS Understanding Algebra</p> <p>Topic 5. Adding Expressions Our Problem Adding Expressions with X and Y Tiles Examples 1, 2, 3 Adding Expressions with X-Squared Tiles Examples 1, 2, 3 Adding Expressions without Tiles Examples 1, 2 Practice Questions with Tiles Practice Questions without Tiles</p> <p>Topic 6. Subtracting Expressions Our Problem Subtracting Expressions with X and Y Tiles Concept Examples 1, 2 Subtracting Expressions with X-Squared Tiles Examples 1, 2 Subtracting Expressions without Tile Practice Questions with Tiles Practice Questions without Tiles</p>
<p>7. Model, record and explain the operations of multiplication and division of polynomial expressions (limited to polynomials of degree less than or equal to 2) by monomials, concretely, pictorially and symbolically. [C, CN, R, V]</p>	<p>Understanding Math PLUS Understanding Algebra</p> <p>Topic 7. Multiplying Expressions Our Problem Recall Tile Concepts Multiplying Monomials Like Terms With Tiles Without Tiles Multiplying Monomials and Polynomials With Tiles... Examples 1, 2, 3, 4 Without Tiles</p>

WNCP Mathematics – Grade Nine (continued)

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
Strand: Shape and Space (Measurement)	
General Outcome <i>Use direct or indirect measurement to solve problems.</i>	
Specific Outcomes	
1. Solve problems and justify the solution strategy using circle properties, including: <ul style="list-style-type: none"> the perpendicular from the centre of a circle to a chord bisects the chord the measure of the central angle is equal to twice the measure of the inscribed angle subtended by the same arc the inscribed angles subtended by the same arc are congruent a tangent to a circle is perpendicular to the radius at the point of tangency. [C, CN, PS, R, T, V]	Understanding Math PLUS Understanding Measurement and Geometry Topic 7. Constructions In This Topic Perpendicular Bisector Circumcircle Centroid Angle Bisector Incircle Perpendicular from Point on Line Perpendicular from Point off the Line Orthocenter
Strand: Shape and Space (3-D Objects and 2-D Shapes)	
General Outcome <i>Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.</i>	
Specific Outcomes	
2. Determine the surface area of composite 3-D objects to solve problems. [C, CN, PS, R, V]	Understanding Math PLUS Understanding Measurement and Geometry Topic 4. Solids...Surface Area and Volume Surface Area of a Solid The Concept Surface Area of a Pyramid Surface Area of a Cylinder Surface Area of a Sphere

<p>3. Demonstrate an understanding of similarity of polygons. [C, CN, PS, R, V]</p>	<p>Understanding Math PLUS <u>Understanding Measurement and Geometry</u> Topic 2. Perimeter and Area of Polygons Polygons... What Are They? Concept A Triangle is A Quadrilateral is A Pentagon is A Hexagon is An Octagon is Classify Polygons</p>
<p>Strand: Shape and Space (Transformations)</p>	
<p>General Outcome <i>Describe and analyze position and motion of objects and shapes.</i></p>	
<p>Specific Outcomes</p>	
<p>4. Draw and interpret scale diagrams of 2-D shapes. [CN, R, T, V]</p>	
<p>5. Demonstrate an understanding of line and rotation symmetry. [C, CN, PS, V]</p>	<p>Understanding Math PLUS <u>Understanding Graphing</u> Topic 4. Transformations Line of Symmetry - An Introduction Introduction Examples 1, 2, 3, 4 Symmetry Match Puzzle 1, 2</p>

Strand: Statistics and Probability (Data Analysis)	
General Outcome <i>Collect, display and analyze data to solve problems.</i>	
Specific Outcomes	
1. Describe the effect of: <ul style="list-style-type: none"> bias use of language ethics cost time and timing privacy cultural sensitivity on the collection of data. [C, CN, R, T]	

WNCP Mathematics – Grade Nine (continued)

Strands, Outcomes and Mathematical Processes	Unit, chapter, lesson, page references/indexing for digital resources and comments
2. Select and defend the choice of using either a population or a sample of a population to answer a question. [C, CN, PS, R]	
3. Develop and implement a project plan for the collection, display and analysis of data by: formulating a question for investigation choosing a data collection method that includes social considerations selecting a population or a sample collecting the data displaying the collected data in an appropriate manner drawing conclusions to answer the question. [C, PS, R, T, V]	Understanding Math PLUS Understanding Graphing Topic 2. Statistics Collecting Data Throw a Die Throw 2 Dice Voting Primary Data - Gathering Methods Secondary Data - Gathering Methods
Strand: Statistics and Probability (Chance and Uncertainty)	
General Outcome <i>Use experimental or theoretical probabilities to represent and solve problems involving uncertainty.</i>	
Specific Outcomes	

4. Demonstrate an understanding of the role of probability in society.
[C, CN, R, T]

Understanding Math PLUS
Understanding Probability

Topic 2. What's the Chance?

The Probability Scale

Examples

Summary

Follow Up

Soccer Example

Experimental Probability

Introduction

Examples 1, 2

Practice Questions

Topic 3. Dice Probabilities

Roll One Die

Your Experiment

Computer's Experiment

Theoretical Experiment

Patterns

Summary

Roll Two Dice

Your Experiment

Computer's Experiment

Theoretical Experiment

Patterns

Summary

Practice Questions