



PGCPS UMath X Grade 5 Initiative: Suggestions for Lessons– January+ 2016

For UMath X access, go to: www.neufeldlearning.com/pgcps

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If you have questions, contact: Brenda Mathies at bmathies@neufeldmath.com OR 1.866.429.6284

For additional help, visit: **1) <http://www.neufeldlearning.com/UMathXWalkThrough> for new video for PGCPS**

2) regular emails sent to all attendees of Sept 10, 2015 meeting

A Summary of Quarter 3: Operations and Algebraic Thinking, Number and Operations in Base Ten, Fractions

CCSS MENU

UMath X MENU

Unit 7: Write and Interpret Numerical Expressions, Analyze Patterns, Graph Points on the Coordinate Plane

- 5.OA.01.01** Whole Numbers & Integers/Addition & Subtraction of Whole Numbers/Order of Operations In Addition/
Trial 1, Trial 2, Example 1, Example 2
Order of Operations in Addition/Trials 1, 2 & Examples 1, 2
Frameworks: **Order of Operations in Addition**
Whole Numbers & Integers/Multiplication and Division of Whole Numbers/Order of Operations in Mult/
Trial 1, Trial 2, Example 1, Example 2
Whole Numbers & Integers/Order of Operations/Why Use Order of Operations Whole Numbers
Whole Numbers & Integers/Multiplication and Division of Whole Numbers/Order of Operations/Ex 5, 7, 8-10
Whole Numbers & Integers/Order of Operations/Please Excuse My Dear Aunt Sally
Whole Numbers & Integers/Order of Operations/Example Questions - Whole Numbers/Ex 5 -10
Whole Numbers & Integers/Order of Operations/Word Problems/Garbage
Whole Numbers & Integers/Order of Operations/Word Problems/Babysitting
Whole Numbers & Integers/Order of Operations/Word Problems/Shipping
Frameworks: **Order of Operations – Whole Numbers - 2**
 Order of Operations – Whole Numbers – Word Problems
- 5.OA.01.02** Equations/Problem Solving/The Translation Machine/Numerical Expressions/Example 1 and Example 2
and Equations/Problem Solving/Writing Numerical Expressions/Operation Word Sort
5.OA.02.03 Equations/Problem Solving/Writing Numerical Expressions/Example 1 and Example 2
Equations/Problem Solving/Writing Numerical Expressions/Story Problems/Example 1 and Example 2
Frameworks: **Numerical Expressions**
 Numerical Expressions – Introduction
 Writing Numerical Expressions
- 5.G.01.01** Graphing/Points on a Grid/Ordered Pairs/Finding a Point
and Graphing/Points on a Grid/Ordered Pairs/Axis
5.G.01.02 Graphing/Points on a Grid/Ordered Pairs/Quadrants and Cartesian Plane
Graphing/Points on a Grid/Ordered Pairs/Examples/Example 2 and Example 3
Frameworks: **Graphing – Ordered Pairs**
 Graphing Points in the First Quadrant

Unit 8: Place Value, Operations with Multi-Digit Whole Numbers and Decimals

- 5.NBT. 01.01** Whole Numbers & Integers/The Meaning of Whole Numbers/Expanded Notation/To 9999/Example 1
Whole Numbers & Integers/The Meaning of Whole Numbers/Expanded Notation/Write as Numerals/Ex 1
Whole Numbers & Integers/The Meaning of Whole Numbers/Place Value to 999,999/Examples/Ex 1-5
Whole Numbers & Integers/The Meaning of Whole Numbers/Place Value to 999,999/Neighbors
Exponents/Powers of Ten/Example 1/Examples 1-3
Frameworks: **Place Value – Expanded Notation**
 Place Value to Almost a Million



- 5.NBT.01.02** Whole Numbers & Integers/Multiplication and Division of Whole Numbers/Patterns in Multiplication/Patterns in Multiplication by 10
Whole Numbers & Integers/Multiplication and Division of Whole Numbers/Patterns in Multiplication/Patterns in Multiplication by 100
Whole Numbers & Integers/Multiplication and Division of Whole Numbers/Patterns in Multiplication/Patterns in Multiplication by 1000
Whole Numbers & Integers/Multiplication and Division of Whole Numbers/Patterns in Multiplication/Ex 1 -3
Exponents/Powers of Ten/Example 1/Example 1
Exponents/Powers of Ten/Example 2/Example 2
Exponents/Powers of Ten/Example 3/Example 3
Framework: Multiply Single Digit by a Multiple of 10
- 5.NBT.01.03a** Fractions/Introduction to Decimals/Ones, Tenths, Hundredths, Thousandths/Decimals to Thousandths/Example 4 and Example 5
Fractions/Introduction to Decimals/Understanding Place Value/Examples 1-4
Fractions/Introduction to Decimals/Expanded Notation/To Thousandths/Example 1 and Example 2
Exponents/Powers of Ten/Example 1/Examples 1-3
Framework: Decimals – Expanded Notation – To Thousandths
- 5.NBT.01.03b** Fractions/Introduction to Decimals/Comparing Decimals/Examples 1-4
Exponents/Powers of Ten/Example 1/Examples 1-3
Frameworks: Compare and Order Decimals
Comparing Decimals
- 5.NBT.01.04** Fractions/Introduction to Decimals/Rounding Decimals/Examples 1-5
Fractions/Introduction to Decimals/Rounding Decimals/Special Case 1
Fractions/Introduction to Decimals/Rounding Decimals/Special Case 2
Fractions/Introduction to Decimals/Rounding Decimals/Summary
Fractions/Multiplication and Division of Decimals/Rounding Decimals/Examples 1-7
Fractions/Multiplication and Division of Decimals/Rounding Decimals/Special Case 1
Fractions/Multiplication and Division of Decimals/Rounding Decimals/Special Case 2
Fractions/Multiplication and Division of Decimals/Rounding Decimals/Summary
Frameworks: Rounding Decimals – To the Nearest Tenth
Rounding Decimals – To the Nearest Hundredth
- 5.NBT.02.05** Whole Numbers & Integers/Multiplication and Division of Whole Numbers/Multiply by a Single Digit Multiplier/Standard Method/Examples 1-3
Whole Numbers & Integers/Multiplication and Division of Whole Numbers/Multiply by a Single Digit Multiplier/Standard Method/Questions 1-3
Whole Numbers & Integers/Multiplication and Division of Whole Numbers/Multiply by a Two Digit Multiplier/The Standard Method/Examples 1-3
Whole Numbers & Integers/Multiplication and Division of Whole Numbers/Multiply by a Two Digit Multiplier/The Standard Method/Questions 1-5
Frameworks: Multiply by a Single Digit Multiplier_Standard Method
Multiply by a Two Digit Multiplier_Standard Method
- 5.NBT.02.06** Whole Numbers & Integers/Multiplication and Division of Whole Numbers/Divide by a Single Digit Divisor/Fair Sharing/Example 1 - With Blocks
Whole Numbers & Integers/Multiplication and Division of Whole Numbers/Divide by a Single Digit Divisor/Fair Sharing/Example 2 - Without Blocks
Whole Numbers & Integers/Multiplication and Division of Whole Numbers/Divide by a Single Digit Divisor/Fair Sharing/Questions 1-6
Whole Numbers & Integers/Multiplication and Division of Whole Numbers/Divide by Partial Quotients/Partial Quotient - Examples 1-4
Measurement & Geometry/Perimeter and Area of Polygons/Problems Section/Harvest Time – Metric
Measurement & Geometry/Perimeter and Area of Polygons/Problems Section/Harvest Time - US Standard
Framework: Divide by a Single Digit



- 5.NBT.02.07** Fractions/Percents, Fractions, Decimals/Decimal Strips/Concept 2 and Concept 3
 Fractions/Addition and Subtraction of Decimals/Adding Decimals/Click and Drag
 Fractions/Addition and Subtraction of Decimals/Adding Decimals/Tenths - The Line/Examples 1-4
 Fractions/Addition and Subtraction of Decimals/Adding Decimals/Tenths - The Pencil/Example 1-5
 Fractions/Addition and Subtraction of Decimals/Adding Decimals/Hundredths - The Town/Example 1-4
 Fractions/Addition and Subtraction of Decimals/Adding Decimals/Method 1 - Partial Sums/Examples 1-2
 Fractions/Addition and Subtraction of Decimals/Adding Decimals/Method 2 - Columns/Examples 1-6
 Fractions/Addition and Subtraction of Decimals/Adding Decimals/Method 3 - Right to Left/Example 1- 6
 Fractions/Addition and Subtraction of Decimals/Subtracting Decimals/Click and Drag
 Fractions/Addition and Subtraction of Decimals/Subtracting Decimals/Tenths - The Pencil/Examples 1-5
 Fractions/Addition and Subtraction of Decimals/Subtracting Decimals/Hundredths - The Field/Ex 1-4
 Fractions/Addition and Subtraction of Decimals/Subtracting Decimals/Method 1 - Right to Left/Ex 1-6
 Fractions/Addition and Subtraction of Decimals/Subtracting Decimals/Method 2 - Trade First/Ex 1-6
 Fractions/Addition and Subtraction of Decimals/Subtracting Decimals/Method 3 - Add Up/Ex 1-8
 Fractions/Addition and Subtraction of Decimals/Subtracting Decimals/Method 4 - Add Up to Zero/Ex 1-2
 Fractions/Addition and Subtraction of Decimals/Decimals Around Us/Money/Ex 1-5
 Fractions/Addition and Subtraction of Decimals/Decimals Around Us/Pencils/Ex1-5
 Fractions/Addition and Subtraction of Decimals/Decimals Around Us/School Supplies
 Fractions/Addition and Subtraction of Decimals/Decimals Around Us/Length in Metric Units/Ex 1-5
 Fractions/Multiplication and Division of Decimals/Multiply by Partial Products Area/Ex1-6
 Fractions/Multiplication and Division of Decimals/Multiply by Partial Products Area/Questions 1-3
 Fractions/Multiplication and Division of Decimals/Multiply by Repeated Addition/Ex 1-2
 Fractions/Multiplication and Division of Decimals/Perliminaries to Division/Summary for Decimals
 Fractions/Multiplication and Division of Decimals/Fair Sharing Long Division/Ex 1-2
 Fractions/Multiplication and Division of Decimals/Fair Sharing Long Division/Questions 1-4
 Fractions/Multiplication and Division of Decimals/Standard Method/Ex 1-3
 Fractions/Multiplication and Division of Decimals/Standard Method/Questions 1-3
 Fractions/Multiplication and Division of Decimals/Distributive Method/Ex 1-3
 Fractions/Multiplication and Division of Decimals/Distributive Method/Questions 1-3
 Fractions/Multiplication and Division of Decimals/Partial Quotients/Ex 1-4
 Fractions/Multiplication and Division of Decimals/Pictorial Models for Decimal Division/Tenths/Ex 1 and 2
 Fractions/Multiplication and Division of Decimals/Pictorial Models for Decimal Division/Hundredths/Ex 1-2
 Fractions/Multiplication and Division of Decimals/Special Case - Multiply a Decimal by a Wh No/Ex 1-2
 Fractions/Multiplication and Division of Decimals/Decimals Around Us Word Problems/Examples 1-9
- Frameworks:** [Adding Decimals – Right to Left](#)
 [Subtract Decimals – Right to Left](#)
 [Multiplying Decimals by Partial Products](#)
 [Multiplying Decimals_Partial Products-Distributive Method](#)
 [Multiplication – Decimals](#)
 [Pictorial Models for Decimal Division_Tenths](#)
 [Pictorial Models for Decimal Division_Hundredths](#)
- 5.MD.01.01** Measurement & Geometry/An Introduction to Measurement/US Standard Conversions - Length/Converting
 Measurement & Geometry/An Introduction to Measurement/Metric Conversions - Length/Understanding
 Metric Prefixes
 Measurement & Geometry/An Introduction to Measurement/Metric Conversions - Length/Metric Prefixes at
 Work
 Measurement & Geometry/An Introduction to Measurement/Metric Conversions - Length/Metric
 Match/Introduction
 Measurement & Geometry/An Introduction to Measurement/Metric Conversions - Length/Metric
 Match/Examples
 Measurement & Geometry/An Introduction to Measurement/Metric Conversions - Length/Converting
- Framework:** [Metric Prefixes – Length](#)



Unit 9: Apply and Extend Understandings of Multiplication and Division with Fractions

5.NF.02.05a Fractions/Multiplying Fractions/Developing the Rule/Ex. 3 - Proper Fraction X Proper Fraction
Fractions/Multiplying Fractions/Developing the Rule/Ex. 4 - Proper Fraction X Proper Fraction
Fractions/Multiplying Fractions/Developing the Rule/Ex. 5 - Whole Number X Mixed Number
Fractions/Multiplying Fractions/Predicting Products/Example 1
Fractions/Multiplying Fractions/Predicting Products/Example 2
Fractions/Improper Fractions and Mixed Numbers/Multiplying Mixed Numbers/Fraction x Mixed Number/Predicting Products/Example 1
Fractions/Improper Fractions and Mixed Numbers/Multiplying Mixed Numbers/Fraction x Mixed Number/Predicting Products/Example 2

Frameworks: Multiply Fractions – Demonstrate Understanding
Multiply Proper Fractions .. tier 1, tier 2, tier 3
Multiply Fractions – Word Problems

5.NF.02.05b Fractions/Improper Fractions and Mixed Numbers/Multiplying Mixed Numbers/Method 2
Fractions/Multiplying Fractions/Developing the Rule/Ex. 1 - Whole Number X Unit Fraction
Fractions/Multiplying Fractions/Developing the Rule/Ex. 2 - Whole Number X Any Fraction
Fractions/Multiplying Fractions/Developing the Rule/Ex. 3 - Proper Fraction X Proper Fraction
Fractions/Multiplying Fractions/Developing the Rule/Ex. 4 - Proper Fraction X Proper Fraction
Fractions/Multiplying Fractions/Developing the Rule/Ex. 5 - Whole Number X Mixed Number
Fractions/Improper Fractions and Mixed Numbers/Multiplying Mixed Numbers/Fraction x Mixed Number/Patterns in Multiplying by Factors Less Than 1
Fractions/Improper Fractions and Mixed Numbers/Multiplying Mixed Numbers/Fraction x Mixed Number/Patterns in Multiplying by Factors Greater Than 1
Fractions/Equivalent Fractions/Equivalent Fractions... The Pattern

Frameworks: Multiply Fractions – Demonstrate Understanding
Multiply Proper Fractions .. tier 1, tier 2, tier 3
Multiply Fractions – Word Problems

5.NF.02.06 Fractions/Multiplying Fractions/Real World Problems with Pictures/Boris Money
Fractions/Multiplying Fractions/Real World Problems with Pictures/Marias Trip
Fractions/Multiplying Fractions/Real World Problems with Pictures/The Blanket
Fractions/Multiplying Fractions/Real World Problems with Pictures/Harry Meets Sally
Fractions/Multiplying Fractions/Predicting Products/Ex 1-2
Fractions/Improper Fractions and Mixed Numbers/Multiplying Mixed Numbers/Fraction x Mixed Number/Predicting Products/Ex 1-2
Fractions/Improper Fractions and Mixed Numbers/Multiplying Mixed Numbers/Fraction x Mixed Number/Sharing Candy Bars
Fractions/Improper Fractions and Mixed Numbers/Multiplying Mixed Numbers/Fraction x Mixed Number/Half a Recipe

Frameworks: Multiply Fractions – Demonstrate Understanding
Multiply Fractions – Word Problems
Fractions Multiplication and Area

5.NF.02.07a Fractions/Dividing Fractions/Real World Problems with Diagrams/The Pie - Divide a Proper Fraction by a Whole Number
Fractions/Dividing Fractions/Real World Problems with Number Lines/Sharing Fudge - Unit Fraction/Whole Number

Frameworks: Divide Proper Fraction by Whole Number
Divide Fractions – Unit Fraction by Whole # with # Lines



5.NF.02.07b Fractions/Dividing Fractions/Understanding Division/Introduction
Fractions/Dividing Fractions/Examples Without Diagrams/Central High School
Fractions/Dividing Fractions/Real World Problems with Diagrams/Piece of Wood - Divide a Whole Number by a Proper Fraction
Fractions/Dividing Fractions/Real World Problems with Number Lines/Servings of Yogurt - Whole Number/Unit Fraction

Frameworks: **Division - Fractions – Why and How**
 Divide Fractions – Whole # by Unit Fraction with # Lines

5.NF.02.07c Fractions/Dividing Fractions/Understanding Division/Introduction
Fractions/Dividing Fractions/Examples Without Diagrams/Central High School
Fractions/Dividing Fractions/Examples Without Diagrams/The Cheeseburger
Fractions/Dividing Fractions/Examples Without Diagrams/Chicken Noodle Soup

Framework: **Division – Fractions – Why and How**

FRAMEWORKS FOR LEARNING:

- are models of concept driven, 3-part lessons which help to implement UMath X into the K to alg 1 curriculum.
- are available at www.neufeldlearning.com/frameworks and adding to regularly.
- are also available within the Common Core Curriculum Menu.



Response to Intervention (Rtl) is a multi-tier approach to the early identification and support of students with learning needs. Remediation of major concepts in **Tier 1** through **Tier 2** and **Tier 3** frameworks occurs with the ultimate goal of quickly funneling the student back into the next **Tier 1** lesson to build on examples with similar problems. In this way, students catch up by using "Big Picture" concepts instead of falling further behind with the tedious, time consuming and often ineffective reteaching of facts in isolation.

Rtl tiered lessons occur in some of the frameworks above
.. see **5.NF.02.05a** and **5.NF.02.05b**