

Understanding Math Plus®

Understanding Numeration Plus®

Neufeld Learning Systems

K – 2/3 Workshop

This is an outline for a three hour workshop. The format of this workshop is very hands-on and teacher orientated. Your session leader will introduce you to many lessons and properties of the Understanding Math Plus® and Understanding Numeration Plus® software. You will have the opportunity to watch and listen, participate in discussions and break into groups to complete both on and off computer activities covering K to 3 content. The objective of this workshop is to have you feel confident and comfortable to integrate this technology within your mathematics curriculum.

Throughout this session we will present material that is appropriate for Kindergarten through third grade. When directed, please navigate the software for the suggested activity at the grade level that is most relevant to your students and/or teaching assignment. We respect your needs as a teacher and realize that you are the key to success in your classroom. This software is an excellent tool to help ALL students. It can be used for remediation, enrichment and intervention for a wide variety of learning environments both within and outside of your classroom.

Please use the following handouts to help guide you through our session and to help you keep notes for future use of the Understanding Math Plus® and Understanding Numeration Plus® software.

Workshop Leaders: Neufeld Learning Consultants

DATE: August 2006

Support Documents

Understanding Math PLUS[©] and Understanding Numeration PLUS[©]

1. Neufeld Learning Systems Inc. website: www.neufeldmath.com
2. Neufeld Learning Systems Office and Support
 - 1-866-429-MATH (1-866-429-6284)
 - support@neufeldmath.com email Simon re technical questions on installation/tracking/networking
 - info@neufeldmath.com email Graham re questions/concerns on website/correlations/worksheets
 - rneufeld@neufeldmath.com email Rudy re questions/suggestions on workshops/presentations/math content
3. Worksheets/lesson outlines for Understanding Math PLUS[©] in PDF format available at www.neufeldmath.com and select worksheets
4. Worksheets/lesson outlines for Understanding Math PLUS[©] in Microsoft Word (".doc") format available at www.neufeldmath.com/worksheets/worddocs/
5. For convenience, worksheets have been merged together so that they are available now in a single download. You will find the link on our regular worksheets page: www.neufeldmath.com/worksheets/ Note that the file is large so it will take some time to download.
6. Solution sheets for each worksheet are available at www.neufeldmath.com/worksheets/answers.html. This is not a direct link from the NLS website as we do not want these solutions to be readily available for our students.
7. Worksheets for Understanding Numeration PLUS[©] can be printed from within the software. These worksheets are of the same format as the lesson completed.
8. A Word bank is available at www.neufeldmath.com/wordbank/. This includes a list of words needed to input for each lesson within Understanding Math PLUS[©].
9. The Understanding Math Series: Integration Into Your Mathematics Curriculum DVD. This DVD provides support for teachers, including topics such as navigation, tracking and model lessons.
10. Lesson Synopsis for Understanding Numeration PLUS[©] available at www.neufeldmath.com (follow link to products and then to Numeration). This tool helps teachers navigate through the software and obtain short and quick information about the content of the lesson from a teacher's perspective.
11. Tracking and testing, which are built right into the Understanding Math PLUS[©] and Understanding Numeration PLUS[©] software. This tracking is for topic tests and cumulative tests.
12. List of topics and subtopics for Understanding Math PLUS[©] available on website.
13. Correlations for the software with various District/State/Provincial curricula are available at www.neufeldmath.com/correlations/
14. Ordering information is available at our website www.neufeldmath.com/order/
15. We have over 30 representatives across North America. The following Senior Consultants work out of our main office:
 - Rudy Neufeld(senior author) rneufeld@neufeldmath.com
 - David Watson dwatson@neufeldmath.com
 - Heather Summers hsummers@neufeldmath.com
 - Cynthia Rutledge c.rutledge@tvdsb.on.ca

Our workshop will be completed in the following order.
Please take notes for future reference as we work through the series of lessons.

Do the first question of each of the lessons on this page in order to become familiar with navigation in the program.

UNDERSTANDING NUMERATION Plus©
K – 3
Concept: Counting

Skill: 6) Recognize and Count Solids

Level: B

Lesson: 1) Counting Solids
Note .. the hints when you make mistakes.

Your Notes:

Counting Solids #1 Name: _____
 Answer the question for each picture.

How many pyramids are there? _____

How many spheres are there? _____

How many cones are there? _____

How many cubes are there? _____

How many cylinders are there? _____

How many rectangular prisms are there? _____

Counting - Recognize and Count Solids - B - Counting Solids #1

UNDERSTANDING NUMERATION Plus©
K – 1
Concept: Counting

Skill: 1) Reading and Printing Numerals

Level: A

Lesson: 1) Counting 1 to 10
 2) Joining up to 10 Dots
 3) Things in a Square #1

Off Computer Extension: Making Music with Digits

Worksheet/Off Computer:

Things in a Square #1 Name: _____
 Count the number of apples in each box.
 Shade the correct number in the numberline below.

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

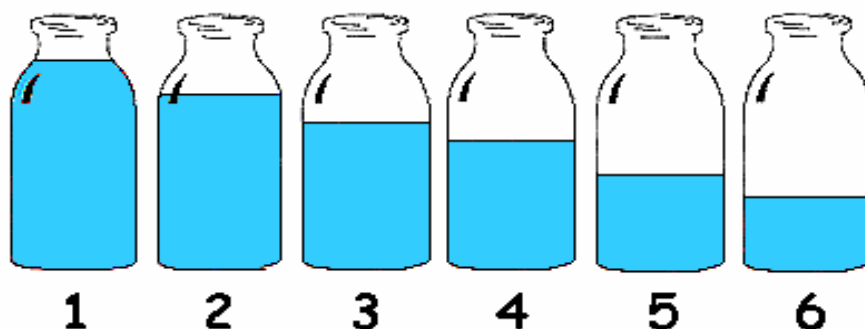
1 2 3 4 5 6 7 8 9 10

Counting - Reading and Printing Numerals - A - Things in a Square #1 C-1-A-02

Your Notes:

Making Music With Digits

Try This!



By filling juice bottles with different amounts of water, you can create some catchy tunes! Here's how to do it with real bottles at home: take six glass juice bottles or very tall drinking glasses and fill them with different heights of water to make a six note scale. Number your bottles, starting with the one holding the most water, so they look like the ones above. Fill the first bottle up to 5 ½ inches, the second bottle to 4 inches, the third to 3 ¼ inches, the fourth to 3 inches, the fifth to 2 ¼ inches and finally that last bottle to 2 inches.

Try composing your own songs. Add two more juice bottles to your collection and you will be able to make a whole octave!

Here are some songs you can play on your bottles:

Mary Had a Little Lamb

3212333 222 355

3212333 322321

Jingle Bells

333 333 35123

444 4433 3355421

Twinkle, Twinkle Little Star

11 55 66 5 44 33 22 1

55 44 33 2 55 44 33 2

11 55 66 5 44 33 22 1

This Old Man

535 535 6543234

345 1 111 12345

5224321

Worksheet/Off Computer:

Ways to Make 10 – Reverse Order Worksheet #1 Name: _____
 Complete each addition sentence.
 Use the RED and BLUE tiles to help you.

Operations – Demonstrate Addition Facts ... Making 10 – A - Ways to Make 10 – Reverse Order

UNDERSTANDING NUMERATION Plus©

K – 3

Concept: Operations

Skill: 10) Making 10

Level: A

Lesson: 1) Ways to Make 10
2) Ways to Make 10 Reverse Order
Note the creation of the = sign.

Your Notes:

Worksheet/Off Computer:

Add 3 Numbers – Chain Addition #2 Worksheet #1 Name: _____
 Add the numbers together.
 Use the number line to help you.

Operations – Add 3 or 4 Numbers – B – Add 3 Numbers – Chain Addition #2

UNDERSTANDING NUMERATION Plus©

ALL

Note the Variety of Approaches in the lessons below.
Also investigate the tutorial mode, worksheet mode and the hidden button.

Concept: Operations

Skill: 12) Add 3 or 4 Numbers

Level: B and C


Lesson: 1) Add 3 Numbers Vertically #2 (B)
2) Add 3 Numbers Horizontally #2 (B)
3) Add 3 Numbers Chain Addition #2 (B)
4) Magic Squares (C)

Your Notes:

Lesson Synopsis


A lesson synopsis is available at the following link on the Neufeld Learning Systems website: <http://www.neufeldmath.com/numeration/index.html> The lesson synopsis was written for the Understanding Numeration Plus© software.

Following are a few samples from the lesson synopsis. Each synopsis include outcomes, written from a teacher's perspective, descriptions, written from the programmer's perspective and some include additional suggestions. These two synopses show the difference between Addition Using Beans #1 and Addition Using Beans #2 (the use of the word "and" is included in the second lesson).



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Concepts	Lesson: Addition Using Beans #1	Level: <u>A</u>
Skills	Skill: <u>Introduce Addition... Concretely... 'in all' and 'altogether'</u>	Concept: <u>Operations</u>
Levels	Outcomes: Students will demonstrate an understanding of addition facts to 10 using beans. Students will be presented with the vocabulary "altogether" and "in all", demonstrating total.	
Lessons	Description: This lesson has 14 questions. The first 9 questions are set and the students must consider the different sums of the numbers 5 (4 + 1, 2 + 3 etc.), 4, and 3, in that order. The last five questions have random sums from 1 to 10 and can include addition with 0. The lesson uses vocabulary that includes "Altogether" and "In all".	
	Suggestions: Corresponding Manipulative: 2 groups of 10 colored cubes	



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Concepts	Lesson: Addition Using Beans #2	Level: <u>A</u>
Skills	Skill: <u>Introduce Addition... Concretely... 'and'</u>	Concept: <u>Operations</u>
Levels	Outcomes: Students will demonstrate an understanding of addition facts to 10 using beans. Students will be presented with the vocabulary "altogether" and "in all", demonstrating total and "and" demonstrating addition.	
Lessons	Description: This lesson has 10 questions. The questions include random sums from 1 to 10 and can include addition with 0 after the first two questions. The lesson uses vocabulary that includes "Altogether" and "In all". It introduces the word "and".	
	Suggestions: Corresponding Manipulative: 2 groups of 10 colored cubes	

UNDERSTANDING NUMERATION Plus©

2 – 3

Concept: Place Value

Skill: 4) Identify Place Value Patterns to 100

Level: C

Lesson: 4) 2 Digit Numbers – Different Ways

Worksheet/Off Computer:

3 Digit Numbers – Different Ways Name: _____
Worksheet #2
Fill in the missing numbers in the chart up to 100.

Hundreds	Tens	Ones	Hundreds	Tens	Ones
100	10	1	100	10	1
125					
112					
118					
137					
120					

Your Notes:

UNDERSTANDING NUMERATION Plus©

1 – 3

Concept: Place Value

Skill: 3) Identify Place Value Patterns to 20

Level: C

Lesson: 1) Pictures to Numbers #1

2) Tens and Ones to Pictures #1

3) Numbers to Pictures #1

Off Computer: Place Value Mat Activities

Worksheet/Off Computer:

Pictures to Numbers #1 Name: _____
Worksheet #1
Write the number under each place value mat.
The first one is done for you.

Tens	Ones
10	9
19	

Your Notes:

You will be introduced to a DVD of Model Lessons here.

Note the Beans example .. on and off computer activities.

UNDERSTANDING NUMERATION Plus©

2 – 3

Concept: Operations

Skill: 23) Subtract Three Digit Numbers Concretely

Level: D

Lesson: 4) Subtract with Regrouping #3
Note the use of manipulatives and color to help understanding

Your Notes:

Worksheet/Off Computer:

Subtraction With Regrouping #3 Name: _____
Worksheet #1
 Subtract by regrouping and crossing out.

Hundreds	Tens	Ones	Hundreds	Tens	Ones
2	0	1	2	0	1
1	3	5	1	3	5

Subtract 135 by regrouping and crossing out blocks.

Hundreds	Tens	Ones	Hundreds	Tens	Ones
3	2	8	3	2	8
1	4	9	1	4	9

Subtract 149 by regrouping and crossing out blocks.

Hundreds	Tens	Ones	Hundreds	Tens	Ones
3	0	5	3	0	5
1	6	7	1	6	7

Subtract 167 by regrouping and crossing out blocks.

Operations - Subtract 3 Digit Numbers ... Concretely - D - Subtraction With Regrouping #3

UNDERSTANDING NUMERATION Plus©

2 – 3

Concept: Comparing and Ordering

Skill: 15) Reading and Comparing Temperature

Level: C

Lesson: 2) Compare Temperatures in a Day

Your Notes:

Worksheet/Off Computer:

Compare Temperatures in a Day Name: _____
Worksheet #1

The temperature at 8am is _____°F.
 The temperature at 2pm is _____°F.
 The temperature is _____°F warmer in the afternoon.

The temperature at 8am is _____°C.
 The temperature at 2pm is _____°C.
 The temperature is _____°C warmer in the afternoon.

The temperature at 8am is _____°F.
 The temperature at 2pm is _____°F.
 The temperature is _____°F warmer in the afternoon.

The temperature at 8am is _____°C.
 The temperature at 2pm is _____°C.
 The temperature is _____°C warmer in the afternoon.

The temperature at 8am is _____°F.
 The temperature at 2pm is _____°F.
 The temperature is _____°F warmer in the afternoon.

The temperature at 8am is _____°C.
 The temperature at 2pm is _____°C.
 The temperature is _____°C warmer in the afternoon.

Counting - Reading and Comparing Temperature - C - Compare Temperatures in a Day

UNDERSTANDING NUMERATION Plus©

2 – 3

Concept: Operations

Skill: 39) Given Graph Perform Operation
 (Make mistakes here throughout lesson.. note the help)

Level: C

- Lesson:** 1) Operations with Tally Charts
 2) Operations with Pictograph
 3) Operations with Bar Graph

Your Notes:

Worksheet/Off Computer:

Operations with Bar Graphs Name: _____
Worksheet #2
 Mr. Rochester asked the students in four of his classes to choose their favorite game. He stored the information in Bar Graphs.

<p>Favorite Game</p> <p>Number of Students</p> <p>Chess Checkers Marbles</p> <p>Game</p> <p>How many people chose Chess? _____ How many people chose Checkers? _____ How many people chose Marbles? _____ _____ more people chose Marbles over Checkers. The total number of students in the class is: _____ + _____ + _____ = _____</p>	<p>Favorite Game</p> <p>Number of Students</p> <p>Chess Checkers Marbles</p> <p>Game</p> <p>How many people chose Chess? _____ How many people chose Checkers? _____ How many people chose Marbles? _____ _____ more people chose Chess over Checkers. The total number of students in the class is: _____ + _____ + _____ = _____</p>
<p>Favorite Game</p> <p>Number of Students</p> <p>Chess Checkers Marbles</p> <p>Game</p> <p>How many people chose Chess? _____ How many people chose Checkers? _____ How many people chose Marbles? _____ _____ more people chose Checkers over Chess. The total number of students in the class is: _____ + _____ + _____ = _____</p>	<p>Favorite Game</p> <p>Number of Students</p> <p>Chess Checkers Marbles</p> <p>Game</p> <p>How many people chose Chess? _____ How many people chose Checkers? _____ How many people chose Marbles? _____ _____ more people chose Marbles over Chess. The total number of students in the class is: _____ + _____ + _____ = _____</p>

Counting - Performing Operations after Interpreting - C - Operations with Bar Graphs

UNDERSTANDING NUMERATION Plus©

2 – 3

Concept: Operations

Skill: 41) Find the Area of a Shape

Level: D

- Lesson:** 1) Area of a Shaded Region #1
 2) Area of a Shaded Region #2

Off Computer Extension: Wacky Areas
Note the Model lesson on DVD here.

Your Notes:

Worksheet/Off Computer:

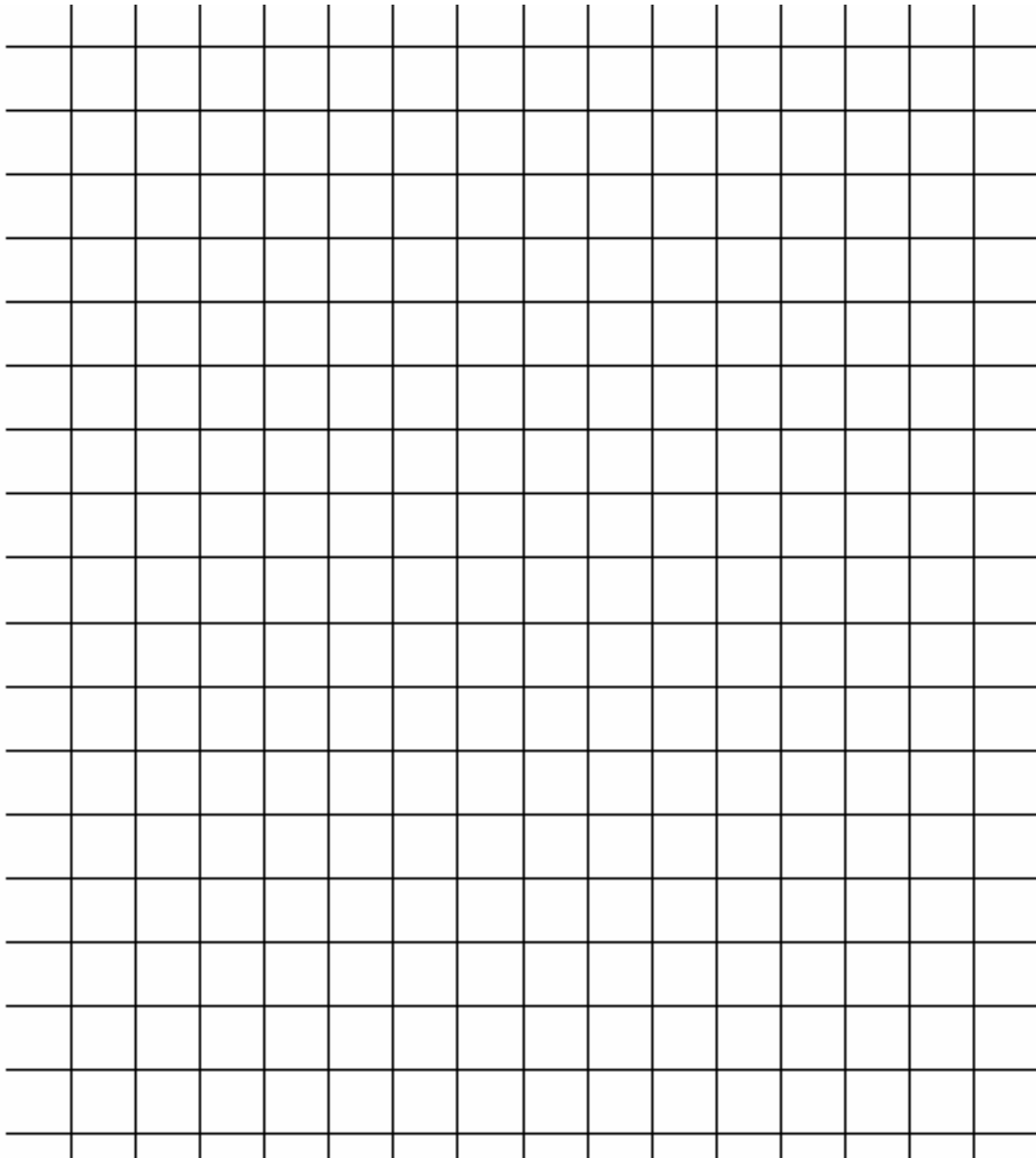
Area of a Shaded Region #2 Name: _____
Worksheet #2

<p>The shaded area covers _____ whole squares and _____ half squares. _____ half squares equal _____ whole squares. The shaded area is _____ square units.</p>	<p>The shaded area covers _____ whole squares and _____ half squares. _____ half squares equal _____ whole squares. The shaded area is _____ square units.</p>
<p>The shaded area covers _____ whole squares and _____ half squares. _____ half squares equal _____ whole squares. The shaded area is _____ square units.</p>	<p>The shaded area covers _____ whole squares and _____ half squares. _____ half squares equal _____ whole squares. The shaded area is _____ square units.</p>
<p>The shaded area covers _____ whole squares and _____ half squares. _____ half squares equal _____ whole squares. The shaded area is _____ square units.</p>	<p>The shaded area covers _____ whole squares and _____ half squares. _____ half squares equal _____ whole squares. The shaded area is _____ square units.</p>

Counting - Finding the Area of a Shape - D - Area of a Shaded Region #2

Wacky Areas!

Your job is to create as many different shapes as you can with an area of _____ square units. Remember, be creative and think “outside the box!” Please label each area and color them in. On a separate sheet of paper, record and prove that the areas are equal. You may use pictures, words or numbers to justify your answers.



UNDERSTANDING NUMERATION Plus©

K – 3

Concept: Counting

Skill: 9) Introduce Fractions – Equal Parts
(a critical lesson)

















Level: B

Lesson: 2) Three Equal Parts

Your Notes:

Worksheet/Off Computer:

Three Equal Parts Name: _____
Connect the dots to make 3 equal parts or 3 unequal parts.
The first one is done for you.

 Cut into 3 equal parts.	 Cut into 3 unequal parts.	 Cut into 3 equal parts.	 Cut into 3 unequal parts.
 Cut into 3 equal parts.	 Cut into 3 unequal parts.	 Cut into 3 unequal parts.	 Cut into 3 equal parts.
 Cut into 3 unequal parts.	 Cut into 3 equal parts.	 Cut into 3 equal parts.	 Cut into 3 unequal parts.
 Cut into 3 equal parts.	 Cut into 3 equal parts.	 Cut into 3 equal parts.	 Cut into 3 unequal parts.

777 Counting - Introduce Fractions ... Equal Parts - B - Three Equal Parts

UNDERSTANDING NUMERATION Plus©

K – 3

Concept: Counting

Skill: 10) Introduce Fractions – Parts of a Whole
(note the graphics in helping understanding)







Level: B

Lesson: 2) One Third

Your Notes:

Worksheet/Off Computer:

One Third Name: _____
Cut the shapes into 3 equal parts by connecting the dots.
Shade 1 part.
Write the fraction.

 The circle is cut into 3 equal parts. 1 out of 3 equal parts is shaded.	$\frac{1}{3}$	 The trapezoid is cut into ___ equal parts. ___ out of ___ equal parts is shaded.
 The hexagon is cut into ___ equal parts. ___ out of ___ equal parts is shaded.	_____	 The triangle is cut into ___ equal parts. ___ out of ___ equal parts is shaded.
 The rectangle is cut into ___ equal parts. ___ out of ___ equal parts is shaded.	_____	 The circle is cut into ___ equal parts. ___ out of ___ equal parts is shaded.

777 Counting - Introduce Fractions ... Parts of a Whole - B - One Third

UNDERSTANDING NUMERATION Plus©

2 – 3

Concept: Operations


Skill: 25) Introduce Multiplication Concretely


Level: C


Lesson: 3) Eggs in Bowls – Introduce “X”


Your Notes:


Worksheet/Off Computer:


 Eggs in Bowls – Introduce X
Worksheet #2 Name: _____


We have 5 bowls and 5 eggs
We have _____ groups of _____ egg
 $1 + 1 + 1 + 1 + 1 =$ _____
 $5 \times 1 =$ _____


We have 3 bowls with 12 eggs
We have _____ groups of _____ eggs
 $4 + 4 + 4 =$ _____
 $3 \times 4 =$ _____


We have 5 bowls and 10 eggs
We have _____ groups of _____ eggs
 $2 + 2 + 2 + 2 + 2 =$ _____
 $5 \times 2 =$ _____


We have 2 bowls and 10 eggs
We have _____ groups of _____ eggs
 $5 + 5 =$ _____
 $2 \times 5 =$ _____


We have 3 bowls and 9 eggs
We have _____ groups of _____ eggs
 $3 + 3 + 3 =$ _____
 $3 \times 3 =$ _____

Operations – Introduce Multiplication Concretely – C – Eggs in Bowls – Introduce X

UNDERSTANDING NUMERATION Plus©

2 – 3

Concept: Operations

Skill: 33) Note Patterns in Multiplication Table

Level: D

Lesson: “X” Table – Computer Picks

Off Computer: Head Bangers

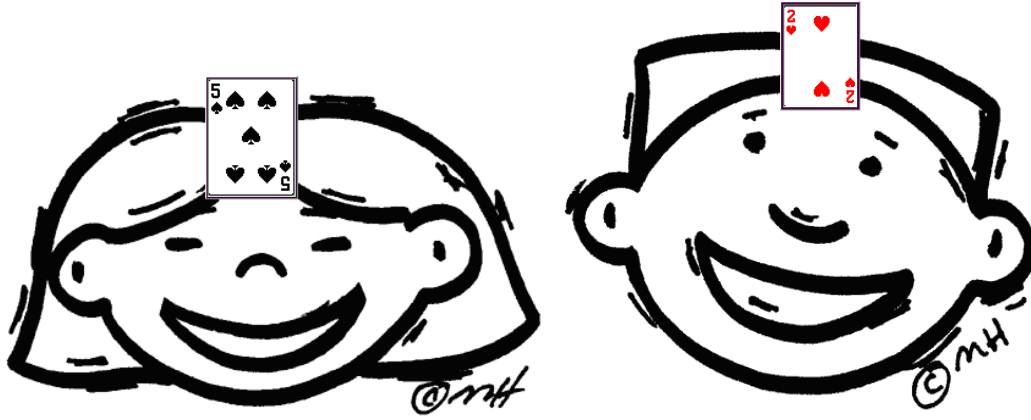
Your Notes:

Worksheet/Off Computer:

 X Table – Computer Picks Name: _____
Fill in the multiplication table by columns or rows.

X	1	2	3	4	5	6	7	8	9	10
1						6			9	
2		4		8				16		20
3			9		15				27	
4			12				28			
5	5								45	
6						36		48		60
7	7		21		35					
8						48		64		
9		18		36					81	
10					50			80		

Operations – Note Patterns in 10 X 10 Multiplication Table – D – X Table – Computer Picks



Head Bangers!

This fun activity can be adapted in your classroom for addition, subtraction or multiplication.

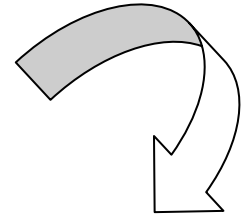
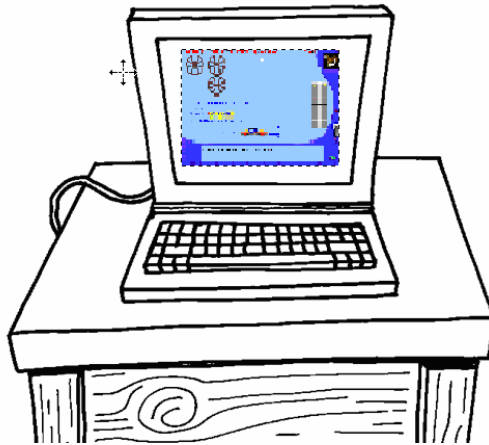
What do you need?

- A deck of cards for each group of 3 students (take out the face cards)
- 3 students

How do you play?

With your three students, assign two of them to be the players and one to be the referee. Each of the players draws one card from the deck and without looking at their own card they place it on their forehead. By doing this, the opponent can see your card but you cannot. The referee then states the product of these two cards (or the sum or the difference depending on the skills you are working on in class). The players then have to figure out what card is resting on their forehead. This will reinforce the multiplication facts and also begin some algebraic thinking skills. The player that is able to solve the problem first gets to keep the cards. After 10 questions have the students rotate positions.

What could the Understanding Math© Look Like in Your Classroom?

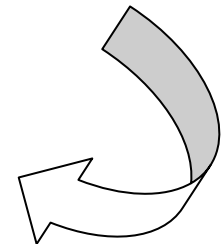
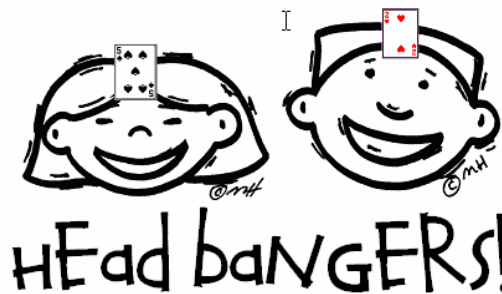
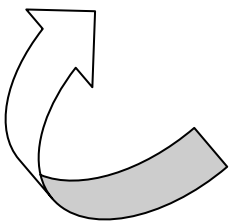


Station #1 – Have students working in pairs at a computer on an assigned Understanding Numeration© Lesson selected by the teacher. Have the students rotate positions between ‘the mouser’ and ‘the motivator’ while completing the lesson.



Station #4 – Have a teacher directed station where you can work one-on-one with students that need extra support. For those with understanding, have them complete a summative task.

Station #2 – Have the students work independently to complete the corresponding worksheet from Understanding Numeration©.



Station #3 – Have the students work in groups of three and play Head Bangers (as described on the page before)

UNDERSTANDING NUMERATION Plus©

1 – 3

Make mistakes and note the hints...count by 5's etc

Concept: Comparing and Ordering

Skill: 9) Understand Measurement of Time

Level: B

Lesson: 1) The Clock – An Introduction ..wow!

2) Times to the Hour

3) Analog and Digital

Skill: 9) Understand Measurement of Time

Level: C

Lesson: 1) Time to Five Minutes

Skill: 10) Describe Elapsed Time...Hours, 5 Minutes

Level: C

Lesson: 1) Elapsed Time in Hours #1

UNDERSTANDING NUMERATION Plus©

ALL

Concept: Problem Solving

Skill: Draw a Picture


Lesson: 1) Eating Apples







Skill: Problems

Lesson: 2) Brick Paths

Your Notes:

Worksheet/Off Computer:

 **The Clock – An Introduction Worksheet #1** Name: _____
Look at the minute and hour hands on each clock.
Use the hands to tell what time it is.

 The time shown is ____ o'clock.	 The time shown is ____ o'clock.
 The time shown is ____ o'clock.	 The clock shows the time ____ o'clock.
 The time shown is ____ o'clock.	 The time shown is ____ o'clock.

Comparing and Ordering – Understand Measurement of Time – B – The Clock – An Introduction

Your Notes:

Worksheet/Off Computer:

 **Eating Apples** Name: _____

Eating Apples: In the morning, Julie is given 4 apples.
At noon, she gets 2 apples.
In the afternoon she gets 3 more apples.
Before bedtime, Julie gets 1 apple.
How many apples does Julie have left at the end of the day?
Draw a Picture

Conclusion:

Problem Solving – Eating Apples



Brick Path

Name : _____

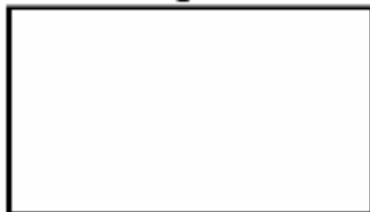
Brick Path: Brian makes a design in a brick path.
He places the bricks as shown (1 in row one, 2 in row two, etc.):



How many bricks does Brian need to make an 8 row design?

Draw a Picture

Design Box



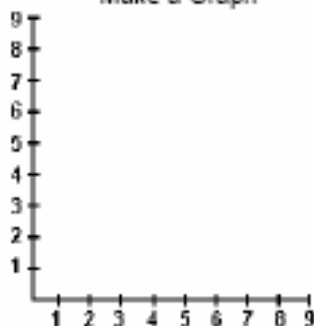
Guess and Check

Make a Number Sentence

Make a Table

Row	Bricks

Make a Graph



Find a Pattern

Conclusion:



UNDERSTANDING MATH Plus©

ALL

Program: Understanding Fractions

Do the first section in each of following.

Topic: 1) The Meaning of Fractions

- Think, Say, Write
- Parts of a Fraction
- Fraction Strips

3) Equivalent Fractions

- Introduction
- Number Line
- Multiplication Table
- Memory Game
- Improper Fractions and Mixed Numbers
- What Are They?

(note the variety of approaches)

Screen
Sample:

Introduction... Think... Write... Say

What Fraction of the circle is green?

We Write

$$\frac{1}{3}$$

We Say

1 out of 3 equal parts is colored green.



Your Notes:

UNDERSTANDING MATH Plus©

ALL

Program: Understanding Whole Numbers and Integers

In this workshop, try to do the noted items below.

Topic: 1) The Meaning of Whole Numbers

Note the worksheets on www.neufeldmath.com

- Seeing the Number to Thousands Ex. 1
- Representing Numbers in Different Ways Ex. 1, 5
- Place Value to 999,999
- Comparing Large Numbers Ex. 3
- Ordering Large Numbers Ex. 1

2) Add and Subtract Whole Numbers

- Add – Trade First Ex. 1
- Whole Numbers Around Us Ex. 5 and 8

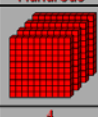


(note the help in the last hint in Examples 5, 8.)

(also note the DVD model lesson on Broken Calculator)

Screen Sample:

Seeing the Number... To Hundreds: Ex. 1

We want to build the number 435.

Hundreds	Tens	Ones
		
4	3	5

Here 435 is shown as Hundreds, Tens and Ones.

Your Notes:

First two pages of the Understanding Whole Numbers and Integers©, Topic 1 Off Computer Worksheet:

Concept: The Meaning of Whole Numbers (American and International Versions)

Name: _____

COMPUTER COMPONENT

Instructions: Select the computer program

Understanding Whole Number and Integers (Newfield)

Follow the instructions to the Main Menu.

Select *The Meaning of Whole Numbers* from the Main Menu.

Work through all sections of this topic in order:

- Seeing the Number
- Expanded Notation
- Represent Numbers in Many Ways
- Place Value to 999, 999
- Millions
- Billions
- Comparing Large Numbers
- Ordering Large Numbers
- Rounding Large Numbers

As you work through the computer exercises, make your own notes in your notebook.

When you reach the end of the section *Practice Questions* on the computer, move on to the **OFF COMPUTER EXERCISES** below.

OFF COMPUTER EXERCISES

1) → SEEING THE NUMBER

(a) Draw the number 34 using as many Tens blocks as possible.

Tens	Ones

(b) Draw the number 286 using as many Hundreds blocks as possible and then as many Tens blocks as possible.

Hundreds	Tens	Ones

(c) 245 could be represented as _____ Hundreds, _____ Tens, and _____ Ones.

(d) 6,894 could be represented as _____ Thousands, _____ Hundreds, _____ Tens, and _____ Ones.

2) → EXPANDED NOTATION

Represent the following numbers in Expanded Notation and then add the numbers. The first one is done for you.

(a) 453

$$\begin{array}{r} 3 \\ + 50 \\ + 400 \\ \hline 453 \end{array}$$

(b) 2,581

(c) 8,637

Sample page of Understanding Whole Numbers and Integers©, Topic 2 and 3 Off Computer Worksheets:

b) Add 633 and 429. Write out the partial sums and complete the addition in the diagram below.

Hundreds →
Tens →
Ones →
+ _____

c) Add 174 and 362. Write out the partial sums and complete the addition in the diagram below.

Hundreds →
Tens →
Ones →
+ _____

= Add - Trade First

a) Add 154 and 172. In the chart below, add the numbers and adjust the sums by trading. Cross out and draw blocks to show the regrouped numbers.

Hundreds	Tens	Ones
1	5	4
+	1	7
-----	-----	-----

b) Add 667 and 279. In the chart below, add the numbers and adjust the sums by trading.

Thousands	Hundreds	Tens	Ones
6	6	7	7
+	2	7	9
-----	-----	-----	-----

= Multiply by a Two Digit Multiplier

(a) Multiply the following numbers using "Partial Products". Add the digits to get the number of Ones. Then add the Ones. The first one is done for you.

(1)

$$\begin{array}{r} 35 \\ \times 28 \\ \hline 280 \\ + 700 \\ \hline 980 \end{array}$$

(2)

$$\begin{array}{r} 27 \\ \times 29 \\ \hline \end{array}$$

(3)

$$\begin{array}{r} 34 \\ \times 34 \\ \hline \end{array}$$

(b) Multiply the following numbers using the "Distributive Method". The first one is done for you.

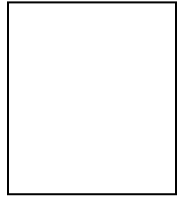
(1) $35 \times 18 = (30 + 5) \times (10 + 8)$

$$= 300 + 240 + 50 + 40 = 635$$

Freyer Definition

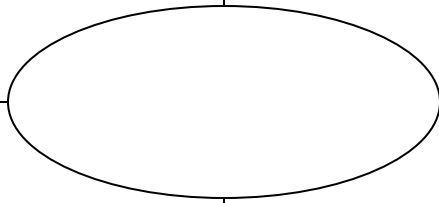
Definition

Characteristics



Examples

Non-Examples



UNDERSTANDING MATH Plus©

K – 3

Program: Understanding Algebra

Topic: 3) Patterns, Patterns, Patterns

- Geometric Patterns

Your Notes:

Screen Sample:

Number & Geometric Patterns - Example 1

# of boxes in a particular row	total # of boxes
1	1
2	3
3	6
4	10

How many blocks will there be in total?

UNDERSTANDING MATH Plus©

2 – 3

Program: Understanding Probability

Topic: 1) Introduction to Probability

- Probability Line
- Experiments with Spinners
- Spinner Game

AND/OR

UNDERSTANDING MATH Plus©

Program: Understanding Graphing

Topic: 4) Transformations

Introduction to Common Transformations

.. Translations, Reflections, Rotations

Your Notes:

Screen Sample:

Experiments With Spinners - Experiment 6

When I spin Spinner G 24 times, I PREDICT that I will spin BLUE times.

Tracking Utility for Understanding Math PLUS© and Understanding Numeration PLUS©

Steps to successfully track student progress:

1. Have students enter a topic test in any of the Understanding Math Series programs. They will be asked to login to the tracking system by entering in their username (it is recommended to use first and last name only) and a password (it is recommended for you to record their passwords as they are not trackable).
2. After all of your students have logged into the tracking system you are ready to create a class list. Go to the Understanding Math© folder on your desktop, open the U Math Utilities folder, then select Progress Tracking and Management Utility
3. You need to register as a user for the first time. When asked if you have logged in before, select NO, if this is your first time. Enter in a name and a password. Hit enter after each entry.
4. Now you are in the tracking utility. You need to create a class. Select Manage from the top tool bar. Then select Create a Class. At this time you should see a list of students' names. Select the ADD buttons beside each student name you would like to add to your class. Then set a class name by typing in the name and hitting enter. Next, click the SAVE button and your class data will be saved under your name.
5. Now to view your class list and test scores, select CLASSES from the top menu. On this screen press SELECT CLASS and you should see the name of the class you just created. Double-click this class and your student names will appear.
6. To preview data, anything that highlights in red when the cursor is moved over it can be selected. This will allow you to see student information right down to the expectations they can and cannot meet.

For further information, please refer to the booklet that is provided with the software when purchased or the DVD "The Understanding Math Series: Integration Into Your Mathematics Curriculum"

January 2006

New Software Engages Math Students Across the Valley



In an effort to expose students to an innovative new way of learning math, Thames Valley has purchased new computer software that helps primary, junior, and intermediate students grasp mathematical concepts in a unique way.

Understanding Math has been purchased for every elementary school in the system, in addition to three secondary schools that have a high population of at-risk learners.

“What we really like about *Understanding Math* is that the focus is not on drill and practice – the focus is on understanding mathematics on a conceptual level to the point where students can learn and apply the skills,” said Cheryl McQueen, Learning Coordinator, Mathematics, Grade 7-12. “The feedback we have received has been phenomenal.”

But McQueen noted that the new technological tool is not meant to take the place of traditional teaching methods.

“This software is one tool that we add in with our other activities,” she said. “It’s another piece to enhance the classroom experience.”

The software is flexible enough so that teachers can use it in three different modes. It can be used with the whole class working together in conjunction with downloadable worksheets; it can be used as an activity centre with other areas; and it can be used as a teacher-directed tool with the images projected on a screen while the students are guided through a lesson.

“We have suggested to teachers that they use a combination of traditional approaches and the new software,” McQueen said.

Students have embraced the new software partly because it is a different way of learning math in terms of the visuals and interactive nature of the exercises.

“We hope that it’s another way of hooking our students into wanting to learn by creating some excitement about solving mathematical problems. It was purchased to appeal to a wider range of learners so all students can be successful,” said McQueen. “We are very pleased with the software and support we have received, and it seems to be working very nicely all around.”



October 12, 2005

Neufeld Learning Systems Inc.
7 Conifer Crescent
London, Ontario
N6K 2V3
Canada

ATTENTION: Mr. Mike Pankratz & Mr. Rudy Neufeld

RE: **Understanding Mathematics Software**

Dear Mike and Rudy:

I'm writing to thank you, yet again, for your *Understanding Mathematics Software*. As I'm sure you will recall, I first began using your software six years ago when, as a math/science specialist for Spring Branch ISD in Houston, Texas, the schools I serviced were faced with multiple concerns. We were, in fact, overwhelmed. Texas had just implemented their new math standards; our district had become very "diverse" in a short period of time, and we found ourselves needing tools, strategies, and resources that would help us reach a student population of struggling math students who were classified as "at-risk", economically disadvantaged, second-language learners, and deficient in reading and math. Many of these students had never been successful in school; some had never attended school in their country of origin.

We purchased your software and implemented it into a "computer-assisted" middle school math program. (I even used your Algebra, Equations, and Graphing units with struggling Algebra 1 students.) I was amazed at how well the students responded to the presentations and how well they performed on our TAKS math test, Texas' standards'-based testing instrument.

Your presentations were concept-based; students able to learn along the continuum from the concrete modeling stage, to the conceptual development stage, and finally into the abstract realm. This natural process made math easy to grasp. Even my most fundamentally challenged students thrived. The graphics and activities were interactive, fun, and sequenced so students could build on prior knowledge. Students remained engaged and on-task because your product challenged them in an interesting, "kid-friendly" manner. Feedback was immediate and managed in such a way that each student could embrace his/her errors as just another "learning opportunity".

I must also mention that your interactive graphics, in color, were a great asset to my ESL students who were first-year English language learners. *Understanding Mathematics* software gave these students the opportunity to learn at their own pace, to study the graphics as they acquired the English

vocabulary necessary to achieve in mathematics, and to repeat or review certain topics or sections without feeling inferior to other students.

At the end of that first year, using your software, my formerly “lowest performing” campus had a TAKS passing rate equal to the “highest performing campus” in the district. I truly attribute their success to your materials, the software and the on-line activity pages that students were able to download.

I continued to use your materials until leaving Spring Branch ISD last August to accept a position as Secondary Math Director for Spring ISD. Here again, when faced with similar issues that resulted from needing to serve an economically disadvantaged student population, that is ethnically diverse and historically labeled as “at-risk”, I, once again, encouraged my teachers to review your software for purchase and immediate implementation. Presently, 60% of my middle school campuses are using your resources and they are “ON-FIRE”! I have teachers and students who sing your praises daily and are so very grateful to your company. (One school, in particular, demonstrated a 26% increase in middle school math TAKS scores when compared to the previous year.)

I would also be remiss if I did not mention to you that I frequently use your software program as a tool when staff developing teachers. As the program unfolds on the “smart-board” or overhead projector, teachers are able to grasp the process of concept-based teaching. As I proceed from frame to frame, your program serves to model the natural progression of inquiry-based learning. Teachers gain incite and pedagogy from this software.

I have had access, have previewed, and have worked with many, many math teaching/learning software packages. Your software is, by far, superior to all that I have ever used. I would recommend this product to all teachers, across the continent who want the best for their math students, who want to reach even the most math-phobic child on campus, and who believe that all children can learn mathematics.

I thank you.

Sincerely,

Dr. Lorraine R. Maneen,
Director – Secondary Mathematics
Spring ISD

Understanding Math Plus[©]

Understanding Numeration Plus[©]

Neufeld Learning Systems
K – 2/3 Session
Summary Sheet

Name:

School:

Assignment:

List three things that you learned today during the session.

1.

2.

3.

Outline one lesson that you are excited to go back and use with your class (could be small groups, one-on-one, teacher led lesson, lab etc.) Please be specific and possibly include an off computer link you would do with your students.

Do you have any further questions or concerns you would like to have addressed?

Check this box if you would like us to contact you.