

ONTARIO .. K to 10

The “U” in UMathX is ... “UNDERSTANDING”

ADVISORY TEAM



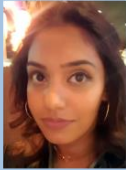
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PART A. PREPARING FOR THE JOURNEY

STEP 1: How Learning is Constructed in UMathX

Click on the link to ... [EmpoweringStudentsToConstructTheirLearning](#)

Summary: How Learning is Constructed in UMathX

- In this **Exploration of Mathematics Content and Teaching Methodology** we use **UMathX**, a learning environment for K to 10. UMathX is the 10th version of “**Understanding Math**”.
- In **UMathX** learners are encouraged to **grapple** with ideas, concepts and strategies towards **constructing** new knowledge **through understanding**. The teacher is not a teller.
- Information flows from **short term to long term memory** through the vehicle, “**Understanding**”.
- **Students** are the **Builders** of their own knowledge. **Questioning** is the key to **Understanding**. **Understanding** is achieved by **Association**.

STEP 2: UMathX .. Possible Learning Environments



STEP 3: Play the video <http://www.jamesnottingham.co.uk/learning-pit>



“UMathX transforms a “Valley of Despair” into grappling in a “Learning Pit.” Dr MKendal, Houston Math Supervisor

“The UMathX Learning System continues to be the best I have seen.” JPyper - Faculty of Ed, Queens U, Kingston, On

“Content and Teaching Methodology are exceptional.” Master teachers, Faculty of Ed. LSU, USA.

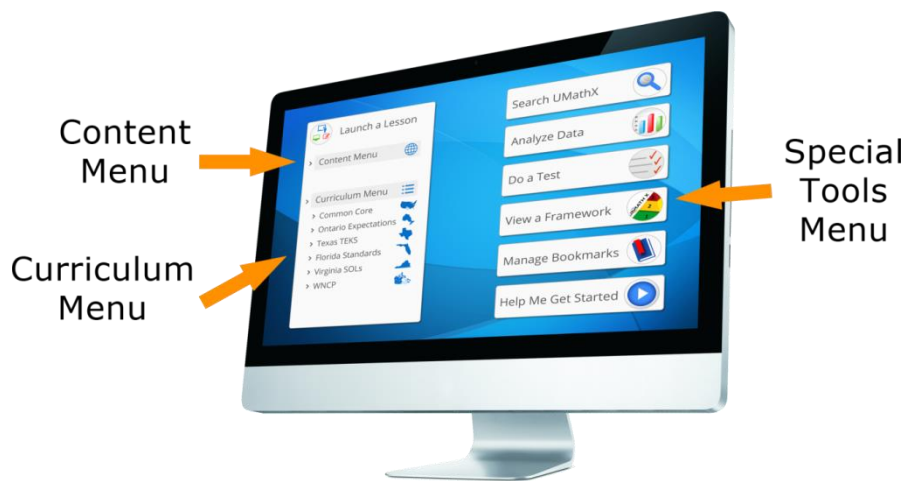
“The Neufeld system is by far the most effective learning tool for mathematics!” JS - Australia

TOWARDS
UNDERSTANDING
how to use
UMathX
as a
tool
for learning

PART B. BEGINNING THE JOURNEY

- Play the video: **UMathX–What is it?** at www.umathX.com > Media > Videos
- Enter URL www.umathx.com/XX(where XX is given to you), into the address box of any browser.
Enter the **Username** that you have been assigned
Enter the **Password**: that you have been assigned or you have chosen
If one enters into UMathX, then want to have another user enter, click on **Logout** on top right.
There exist 4 Login Types: student, teacher, principal, supervisor
Check classes entered into UMathX according to the teacher template submitted.

The Main Menu is the jump off point for both **PLANNING** and **STUDENT USE**.



LET'S EXPLORE THE CONTENT MENU ...

ELEMENTARY Example:

<PROCEED> IS ...

the way that UMathX controls the pace.

It ensures attention to tasks and separates the pieces of the concept being built.

The **Frameworks** are 3 part model lessons on paper. They give ideas for implementing UMathX.

- Select “**CONTENT Menu**” and follow the path below in order:
 1. **Fractions** > Equivalent Fractions > Pattern Blocks. Click on (arrow up)(arrow right)(arrow left)(double arrow up) **Content Menu** .. **Fractions** > Equivalent Fractions > Pattern Blocks > **Hexagon1** to work through lesson, **Hexagon1**
 2. Double click on “**This is one Whole Hexagon**” on the first page to have the line read and highlighted.
When <proceed> appears on the bottom right, click on it.
Key in “1”, then press <enter>. Key in “2” then press <enter>. Now click on <proceed>.
Enter a number ... try the number .. “2” .. three times before entering the correct answer.
NOTE- Encourage students to risk. A mistake is an opportunity to learn.
 3. Click on the 2nd icon at the top of the screen, **MENU**.
Now navigate to **Hexagon1** and complete the lesson.
A blue screen with two options – **GO BACK** .. or .. **CONTINUE**, marks the end of a lesson.
Return to the **Main Menu**.
- Select “**CONTENT Menu**” and again follow the path below in order:

Content Menu..**Fractions** > Equivalent Fractions > Pattern Blocks >

The green pencil beside “**Hexagon1**” indicates that a corresponding printable framework is available. Click on pencil.

Option 1: After printing it, follow the lesson outline on the framework.
Option 2: Earlier (above) you followed the lesson “**Hexagon1**” within UMathX.
Return to the **Main Menu**.
- Select “**CONTENT Menu**”. and follow the path below in order:

Fractions > The Meaning of Fractions > Introduction... Think, Write, Say.

The green pencil beside “**Circles**” indicates that a corresponding printable framework is available. Click on the pencil.

Option 1: After printing it, follow the lesson outline on the framework.
Option 2: Follow the lesson “**Circles**” within UMathX.
Return to the **Main Menu**.

**LET’S EXPLORE
THE CURRICULUM
MENU ...**

**ELEMENTARY
Example:**

**THREE PART
MODEL LESSONS
(FRAMEWORKS)**

1. Tie on-screen knowledge to it's concrete expression off-computer
2. Provide support for RTI & STEAM models.

- **Select “Ontario Expectations CURRICULUM Menu”.**
Follow this path in order:
 1. **Grade 4**, then **4.NSN > 01**.
Click (arrow right)(arrow left)(arrow up)(double arrow up).
 2. Select **Ontario Expectations**.
 3. Click .. **Grade 4 > 4.NSN > 01 > 09**
You have now reached suggested lessons to fit **4.NSN.01.09**
 4. You now have **2 choices** – **Tab 1 – “Lessons”** and **Tab 2 – “Frameworks”**
 5. Select **Lessons**.
You are at lessons selected from the **Content Menu** for **4.NSN.01.09**.
Lessons are in order that we recommend that they be taught.
 6. Double Click the 3rd lesson- **Fractions > Equivalent Fractions > Pattern Blocks > Hexagon1 (Remember this?)**
Do a few <proceeds> into the lesson.
 7. **Exit the lesson** by clicking on the 2nd icon at the top of the screen, **MENU**.
You are returned to the **Selection Menu** within the **Curriculum Selection, 4.NSN.01.09**, ready for another choice.
 8. Click on tab **“Frameworks”**.
You see **tiered 3 part model printable lessons** which give ideas on **implementing UMathX**.
 9. **Double-Click** on ... **Equivalent Fractions -1.pdf**.
Note the 3 part lesson. It can be printed in colour or in black and white double sided to save on paper.
This can be given to a student or a pair of students as a plan for implementation of UMathX.
Note that the instructions to the student(s) direct them within the **Content Menu**.
 10. Return to **UMathX**, by moving the mouse to the top of the screen and click on the **X** for **Equivalent Fractions -1.pdf**.
- **Select “Help Me Get Started” on the Main Menu.**
“UMathX Videos” will appear. **Select and play the video, “Frameworks for Learning”**
Frameworks save much time by providing lessons and lesson ideas ready to be used.

**LET’S EXPLORE
CONTENT MENU &
CURRICULUM
MENU ...**

**SECONDARY
Example:**

- **Select “CONTENT Menu”.**
Follow this path in order:
Graphing > Linear Relations > The Elastic Example.
Note the **green pencil icon** beside the lesson, **“Setup Equations”**. Click on it to display the **framework**.
Option 1: After printing it, follow the lesson outline on the **framework**.
Option 2: Follow the lesson **“Setup Equations”** within UMathX.
Return to the **Main Menu**.
- **Select the ONTARIO CURRICULUM Menu.**
Follow the path to **8.PA.01.02**
Click on tab **“Lessons”**.
Double Click the lesson- **Graphing > Linear Relations > The Elastic Example > Setup Equations**
Click on the tab **“Frameworks”**.
Note tiered 3 part lessons, **Linear Relations – Elastic -1, -2, -3** for a suggestion to implement **UMathX**.

**MODEL LESSONS
(FRAMEWORKS)**

Framework Role:

Model Lessons

Implement:
RTI
STEM

- **A Framework can be found in 4 Possible Ways:**
 1. In the **Content Menu**, a **green pencil** beside a lesson name indicates that a corresponding printable **framework** is available.
 2. In the **Selection Menu**, within a **Curriculum Menu**, the appropriate framework is available.
 3. In the **Main Menu**, select **“View a Framework”**
 4. **Navigate to .. www.umathx.com/frameworks**

Each Framework: .. is on 1 double sided printable page in colour or in black and white
.. has 3 parts: **Get Started**
Working At It
Reflect and Connect

The **FRAMEWORK** offers another way to use UMathX

It saves the teacher time and effort.

PLAN A LESSON:

OPTION 1

1ST **CONTENT MENU**

2ND **FRAMEWORK**

OPTION 2

1ST **CURRICULUM menu**

2ND **LESSON PATHS**

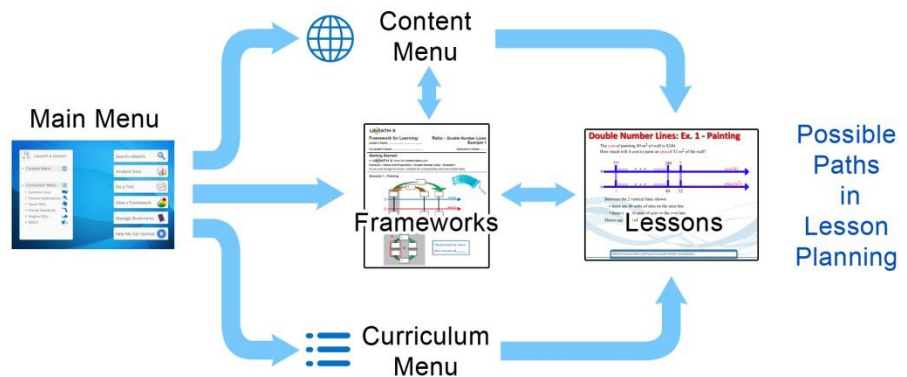
3RD **FRAMEWORKS**

- **PLANNING a LESSON–OPTION 1** – Choose from lessons **scaffolded** within the **Content Menu**.
First .. Select the **Content Menu**. Choose the path to a particular lesson or sets of lessons.
Example: Place Value>Identify Place Value Patterns(to 1000)>D>Expanded Notation
Second .. Note a green pencil icon beside .. 1) Expanded Notation
This indicates that a corresponding framework is available.
 Click on the framework and print it, possibly 1 for every 2 or 3 students in the group.

- **PLANNING a LESSON–OPTION 2-** This is likely the option if you work in Ontario Curriculum..
First .. Follow the steps in the **ONTARIO CURRICULUM** menu for your choice.
Second .. Click on the **LESSON** button to make appropriate lessons available.
Third .. Click on the **FRAMEWORKS** button for appropriate frameworks if they exist. Print.

Some Examples for PLACE VALUE within the ONTARIO EXPECTATIONS Curriculum

- 1.NSN.01.08-Place Value> Model Numbers Grouped in Packages > C > Ones and Groups of Ten
- 1.NSN..01.08-Place Value >Identify Place Value Patterns (to 20) >C>Tens & Ones to Pictures #1
- 1.NSN..01.08-Place Value >Identify Place Value Patterns (to 20) >C>Numbers to Pictures #1
- 2.NSN.01.03-Place Value >Identify Place Value Patterns (to 100) >C>Tens & Ones to Pictures #2
- 2.NSN.01.03-Place Value >Identify Place Value Patterns (to 100) >C>Numbers to Pictures #2
- 2.NSN.01.03-Place Value >Identify Place Value Patterns (to 100) >C>2 Digit Numbers – Different Ways
 (Place Value Patterns to 20 – Pictures to Numbers #1)
 (Place Value – 2 Digit Numbers –Different Ways)



- 3.NSN.01.04 – Place Value>Identify Place Value Patterns (to 1000) >D>Expanded Notation
 (Place Value to 1000 – Expanded Notation)
 (Expanded Notation – to 999)
 (Represent Numbers in Many Ways – Place Value -1)

(Represent Numbers in Many Ways – Place Value -2)
 (Represent Numbers in Many Ways – Place Value -3)

- 4.NSN.01.02 – Fractions> Introduction to Decimals> Place Value >Tens, Ones, and Tenths
- 4.NSN.01.04 – Whole Numbers & Integers>The Meaning of Whole Numbers>Rounding Large Numbers>Concepts
- 4.NSN.01.04- Whole Numbers and Integers>The Meaning of Whole Numbers>Rounding Large Numbers>Examples
 (Rounding Large Numbers – To the Nearest Ten)
 (Rounding Large Numbers – To the Nearest Hundred)
 (Rounding Large Numbers – To the Nearest 10, 100 and 1,000)

5.NSN.01.02- Fractions>Introduction to Decimals>Understanding Place Value> Example 1
 (Expanded Notation – To 9999)

5.NSN.01.02 – Whole Numbers & Integers> The Meaning of Whole Numbers>Place Value to 999,999>Neighbors
 (Place Value to 999,999 – Neighbors)

Etc Etc

Additional Examples within the ONTARIO EXPECTATIONS Curriculum

- 2.NSN.03.05 – Operations>14) Add 2 Digit...Concretely-> C (Add 2 Digit Numbers-Concretely-With Regrouping)
- 3.NSN.03.02 – Operations> 23) Subt 3 Digit Numbers.. Concretely> D (Subtraction With Regrouping #3)
- 4.NSN.01.06 – Fractions> The Meaning of Fract> Intro...Think, Write, Say> Circles(Fraction Intro- Pattern Blocks-1)
- 5.NSN.03.03 -Whole#&Int>Mult&DivofWhole Nu>Multby2DigitMult>Part Prod-Area>Ex 1(Mult 2 digit.PP24x37)
 - Whole # & Int> Mult & Div of Whole Num> Mult by 2 Digit Mult> Partial Prod-Area> Ex 4–Without Blocks
- 5.M.01.04 - Meas& Geom> Per & Area of Polyg> Areas of Polyg>Polyg to Simple Shapes> Ex 1(Polygons Broken -1)
- 6.NSN.02.04 - Fractions> Mult & Division of Dec> Mult by Partial Products Area(Mult Dec by Partial Prod 2.4 x 3.7)
- 6.NSN.03.01 –Fractions >Ratios & Proportions>Ratio,Tape Diagram>Introduction (Ratios & Proportions - Tape)
 And ... Fractions>Ratios & Proportions > Ratio Table> Introduction 1 (Ratio – Ratio Tables_Intro-1 STEM)
- 7.PA.01.04 – Algebra> Patterns, Patterns, Patterns>Patterns to Formulas> Ex. 4 (Patterns with Toothpicks)
 (challenge) – Algebra>Patterns, Patterns, Patterns> Sum of Seq –Geom – Real Life(Sum of Geom Seq)
- 8.NSN.02.04 – Fractions> Multiplying Fractions> Developing the Rule> Ex. 3 (Multiply Proper Fractions -1)
- 8.DMP.02.05-Graphing>Read & Sketch Graphs>Graphs Without Scale> Ex 7, 9, 11 (Graphs Without – Creating -1)
- MFM2P.MLR.02.01 – Graphing > Slope of a Line > Slope > Steepness Factor(Slope In the Real World)
- MFM2P.MLR.02.06 – Graphing> Eq Str Line > Word Prob-Applic>Walker>(Slope & Line –Walk in Real World-1)
- MFM2P.QR.03.01 – Graphing> Quadratic Functions> Max Cage Area>Trial & Error to Summary(Quad-Max Cage-1)
- MFM1P.NSA.01.03 – Fractions> Ratios and Proportions> Proportions> Ex 3 Marbles(Estimation U Proportions)
- MFM1P.NSA.01.05 – Fractions> Ratios & Proportions> Ratio Table> Introduction 1 & 2(Ratio Tables-Intro 2)




**OPTION 2
 ADDITIONAL
 EXAMPLES**

TEST ACCESS
 Landing page
 Activity window

TEST TYPES:
 ONTARIO
 CONTENT
 CUSTOM

BOOKMARKING

PART C. FURTHER INTO THE JOURNEY

- **ACCESS:** Landing Page .. Click on “Do a Test”  or Activity Window .. Click on the  icon
- 
- For a Class
- **TYPES:** **Ontario Tests** – coverage within curriculum for a specific grade
Content Tests cover items within a certain content area across grade levels
Custom Tests are generated by the teacher by choosing any specific content.

DATA ANALYSIS
 Lessons & Tests
 Growth, Useage
**For information on Data
 Analysis, Tests,
 Bookmarking please
 contact us.**

- **Analyze Data” in the Main Menu.** The “Data Module” requires data by students. The full version allows students to do lessons and tests with results recorded into perpetuity. A teacher or student can then check student data .. **tests, lessons, useage, growth and more.**
 After a student has created data, the teacher of that student could do the following:
 Select “Analyze Data”. Select “Test Data”. Select a class or a student, a test category and a test. Click on a specific vertical, then horizontal bar. Click on a question that was answered incorrectly.
2 choices. 1 - see results. 2 - launch an appropriate lesson.