

ONTARIO .. K to 10

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

ADVISORY TEAM



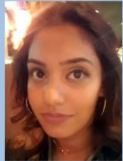
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We appreciate professional advice from our advisory team.

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## PART A. PREPARING FOR THE JOURNEY

- **UMathX** is a journey guided by your planning where students are encouraged to think through concepts, choose strategies and articulate ideas towards constructing understanding.
- **This Journey** is focused on you as the professional who will be challenged to create a rich environment which leads to the understanding of math concepts through the implementation of **UMathX**.
- **UMathX** is a full service K to 10 learning environment, supporting a **growth mindset** within a **learning pit** encouraging students and teachers to **grapple** with concepts.



Grappling is 'Productive Struggling'



The UMathX journey can take many paths.

Frameworks give ideas for UMathX implementation.

For information and resources visit our website at [www.umathx.com](http://www.umathx.com)

Watch the video "UMathX - What is It?" at [umathx.com/videos](http://umathx.com/videos)

Build it  
Draw it  
Talk it  
Write it  
OWN it!

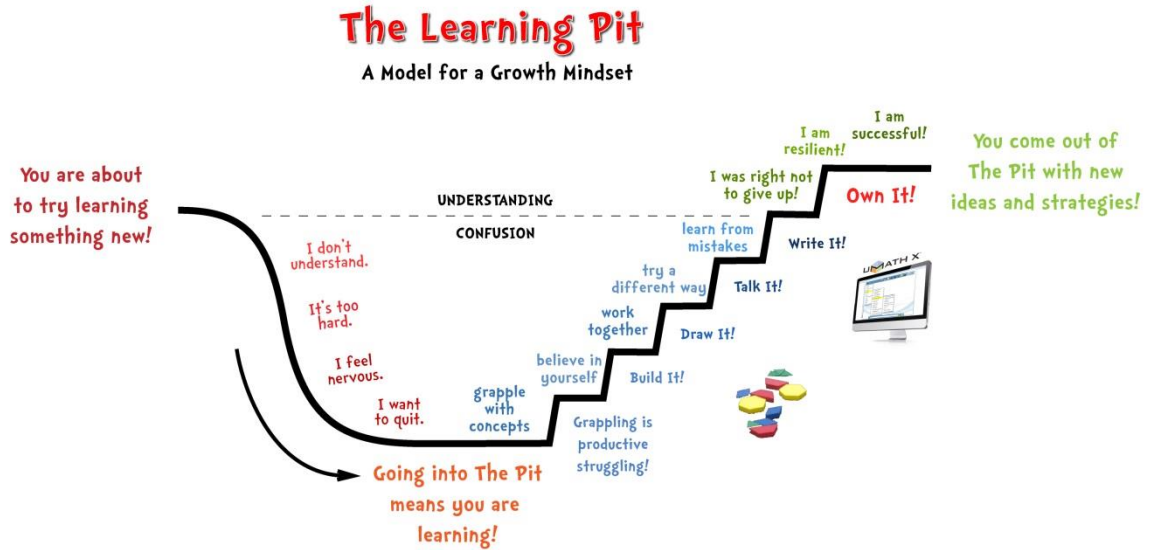
Before beginning this journey, discuss the many possible learning environments.

Show me another way...  
Reflect and Connect  
What would you do if...?  
Why did you... ?



PART A continued  
PREPARING FOR  
THE  
JOURNEY

- REMEMBER to play the video: UMathX–What is it? at [www.umathx.com](http://www.umathx.com) > Media > Videos
- UMathX transforms a “Valley of Despair” into productive struggling in a “learning pit”.



- Play the video <http://www.jamesnottingham.co.uk/learning-pit> followed by a discussion.
- The Learning Environment:  
*“As a former district mathematics leader, I promoted the district-wide purchase and use of previous versions of this system due to modeling, strategies and visual connections.” Dr M.K. Texas*  
*“Our teachers have used it extensively with parents, teachers and students. UMath X is perfect to support research and instruction to teacher candidates.” S.C. TDSB Toronto*  
*“UMathX helps students gain conceptual understanding better than any other program. Content and Teaching Methodology are exceptional.” Master Teachers, LSU .. Faculties of Education*  
*“I still believe that the UMathX system is by far the most effective learning tool for mathematics at all levels that I have seen!” JS - Australia*

TOWARDS  
UNDERSTANDING  
how to use  
UMathX  
as a  
tool  
for learning

## PART B. BEGINNING THE JOURNEY

- UMathX creates an environment of Exploration for Students and thus for Journeys in Mathematics.
- Enter the URL [www.umathx.com/preview](http://www.umathx.com/preview) into the address box of any browser.  
 Enter the Generic Username: **count**  
 Enter the Generic Password: **umathx**  
  
**There exist 4 Login Types:** student, teacher, principal, supervisor  
  
 The Main Menu appears.  
  
**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 2<sup>nd</sup> 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 > Hexagon1**  
 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:**

- **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 3<sup>rd</sup> lesson- **Fractions > Equivalent Fractions > Pattern Blocks > Hexagon1** (Remember this?)  
Do a few <proceeds> into the lesson.

**THREE PART MODEL LESSONS (FRAMEWORKS)**

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

7.Exit the lesson by clicking on the 2<sup>nd</sup> 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”**

**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**

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

**It saves the teacher time and effort.**

- **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](http://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**

**Two Examples .. A Framework is a model lesson already prepared for you.**

**UMATH X**  
**Framework for Learning:** Equivalent Fractions - 3  
 Leader's Name: ..... Instructor's Initials: .....  
 Co-Leader's Name: .....  
**Getting Started:**  
 In **UMATH X** follow the Content Menu path:  
 Fractions > The Meaning of Fractions > Introduction...Think, Write, Say > Circles  
 As you work through the lesson, **Circles**, complete the corresponding notes below.  
**We Think:**  
 The circle on the dreamcatcher is cut into      equal parts.  
     of the equal parts of the circle are green.  
**We Write:**  
 ← Number of equal parts shaded green  
 ← Total number of equal parts  
**We Say:**  
     out of      equal parts is green.  
     of the shape is green.  
**Working In It:**  
 In **UMATH X** follow the Content Menu path:  
 Fractions > Equivalent Fractions > Introduction

**UMATH X**  
**Framework for Learning:** Ratio Tables - Introduction - 1  
 Leader's Name: ..... Instructor's Initials: .....  
 Co-Leader's Name: .....  
**Getting Started:**  
 Log into **UMathX**  
 From the **Content Menu**, follow the path below:  
**Fractions> Section 7: Ratios and Proportions> Ratio Table**  
 Select and complete the Lesson: Introduction 2  
 As you work through the Introduction 2, complete the table and corresponding notes below.  

cups of ginger ale		
cups of cranberry juice		

**Method 2:** Compare given ratio to new ratio to determine how many groups then     .  
 Discuss the method used to complete the table and Record a summary of your discussion in the space provided below.

**PLAN A LESSON:**

**OPTION 1**

1<sup>ST</sup> **CONTENT MENU**

2<sup>ND</sup> **FRAMEWORK**

**OPTION 2**

1<sup>ST</sup> **CURRICULUM menu**

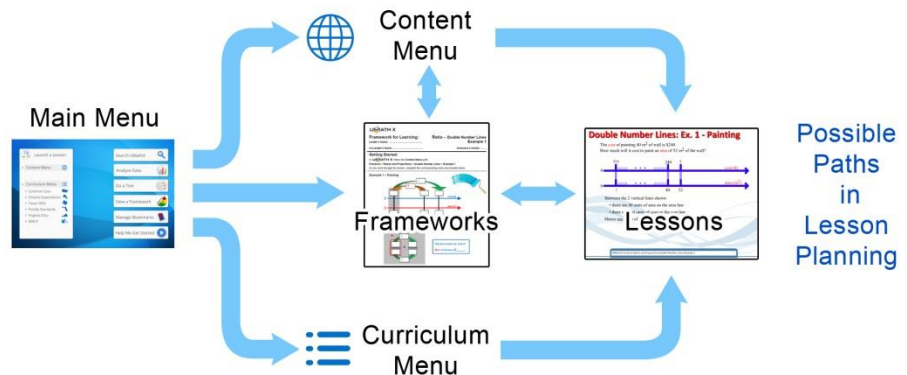
2<sup>ND</sup> **LESSON PATHS**

3<sup>RD</sup> **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)



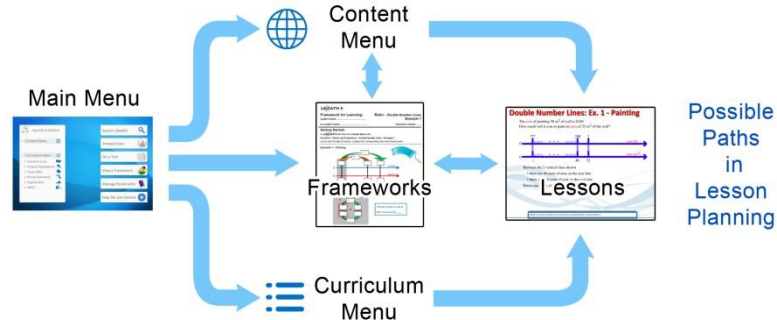
- 3.NSN.01.04 – Place Value>Identify Place Value Patterns (to 1000) >D>Expanded Notation  
 (Place Value to 1000 – Expanded Notation)  
 (Expanded Notation – to 999)  
 (Represent Numbers in Many Ways – Place Value -1)  
 (Represent Numbers in Many Ways – Place Value -2)  
 (Represent Numbers in Many 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

**OPTION 2  
ADDITIONAL  
EXAMPLES**

**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)

**TEST ACCESS**  
Landing page  
Activity window

**TEST TYPES:**  
ONTARIO  
CONTENT  
CUSTOM

**PART C. REFLECTING ON THE JOURNEY**

- **ACCESS:** Landing Page .. Click on “Do a Test” or Activity Window .. Click on the icon



- **TYPES:** **Ontario Tests** – coverage within curriculum for a specific grade (example 5.NF)  
**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  
Usage

For more information on Data Analysis, we welcome you to 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.