



# symposium

## series with UMathX

Math Symposium  
Sample  
TEXAS

An Experience in Mathematics Content and Teaching Methodology  
(3 to 4 hours - K to Alg1 - group in grades)

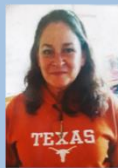
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## Session A. The Learning Environment (1 hr)

- In this **Exploration of Mathematics Content and Teaching Methodology** we will use UMathX, a learning environment for K to 10. UMathX is the 10<sup>th</sup> version of "Understanding Math".
- **UMathX** is a journey, guided by your planning, where learners are encouraged to think through concepts, choose strategies and articulate ideas towards **constructing their understanding**.
- Information flows from **short term to long term memory** through the vehicle, "**Understanding**".
- The power of learning is invested in the student. Questioning is the key to learning. **Understanding** is achieved by association.
- When **UMathX** is married to **Planning Competence**, a leadership team algorithm for life's logical problem-solving and decision making taught by Dr Jesse Jai McNeil Jr., it produces **instructional leaders** within and across multiple disciplines.



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... ?



**UMathX** is a Browser Based Learning System, which makes learning of math a **visual** and **manipulative** experience, giving students an **advantage in the acquisition of and love for mathematics**.

TOWARDS  
UNDERSTANDING  
how to use  
UMathX  
as a  
tool  
for learning

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.

### Outline Today:

The Learning Environment  
Content and Pedagogy  
Bookmarks, Tests, Data Analysis  
The Treasure Hunt

- **UMathX–What is it? at [www.umathX.com](http://www.umathX.com) > Media > Videos**  
Enter the URL [www.umathx.com/preview](http://www.umathx.com/preview) into the address box of any browser.  
Enter the Username **that you have been given for this UMathX session.**  
Enter the Generic Password: **umathx**

There exist 4 Login Types: student, teacher, principal, supervisor



### Introduce the CONTENT MENU – to fill the Gaps

- **Select “CONTENT Menu” and again 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 >**  
**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)

are meant to:

1. Tie on-screen knowledge to it's concrete expression off-computer
2. PROVIDE SUPPORT FOR RTI & STEAM MODELS

LET'S EXPLORE  
CONTENT MENU &  
CURRICULUM  
MENU ...

SECONDARY  
Example:

## Introduce the CURRICULUM MENU

- Select the **"TEXAS TEKS CURRICULUM Menu"**.  
Follow this path in order:
  1. **Grade 3**, then **3.3 > F**.  
Click (arrow up)(double arrow up).
  2. Select Texas TEKS.
  3. Click .. **Grade 3 > 3.3 > F > i**  
You have now reached suggested lessons to fit **3.3.F.i**
  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 **3.3.F.i**.  
Lessons are in order that we recommend that they be taught.
  6. Double Click the only lesson- **Fractions > Equivalent Fractions > Pattern Blocks > Hexagon1 (Remember this?)**  
Do a few **<proceeds>** into the lesson.
  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, 3.3.F.i**, 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 color 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"**  
  
**UMathX** can be used in a wide variety of learning environments.  
**Frameworks save much time** by providing lessons and lesson ideas ready to be used.
- 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 **Texas TEKS CURRICULUM Menu**.  
Follow the path to **7.7.A.ii**  
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**.

**Introduce the FRAMEWORKS – THE MODEL LESSONS**

**MODEL LESSONS  
(FRAMEWORKS)**

Framework Role:

Model Lessons

Implement:

RTI

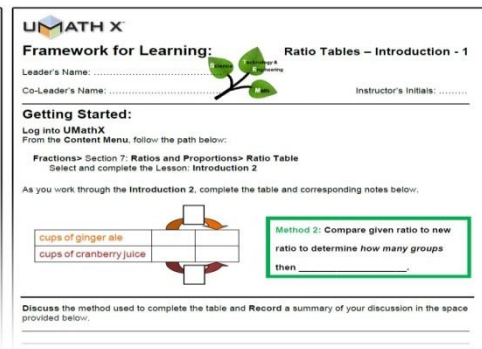
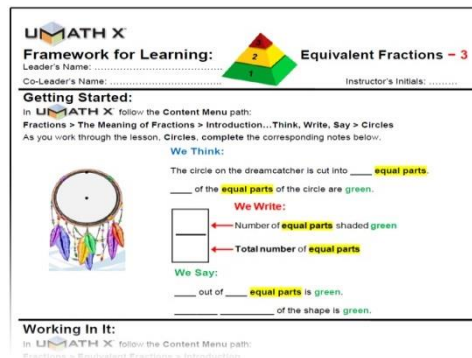
STEM

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

It saves the teacher time and effort.

- **“Find a Framework” 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 color or in black and white  
 .. has 3 parts: **Get Started**  
**Working At It**  
**Reflect and Connect**

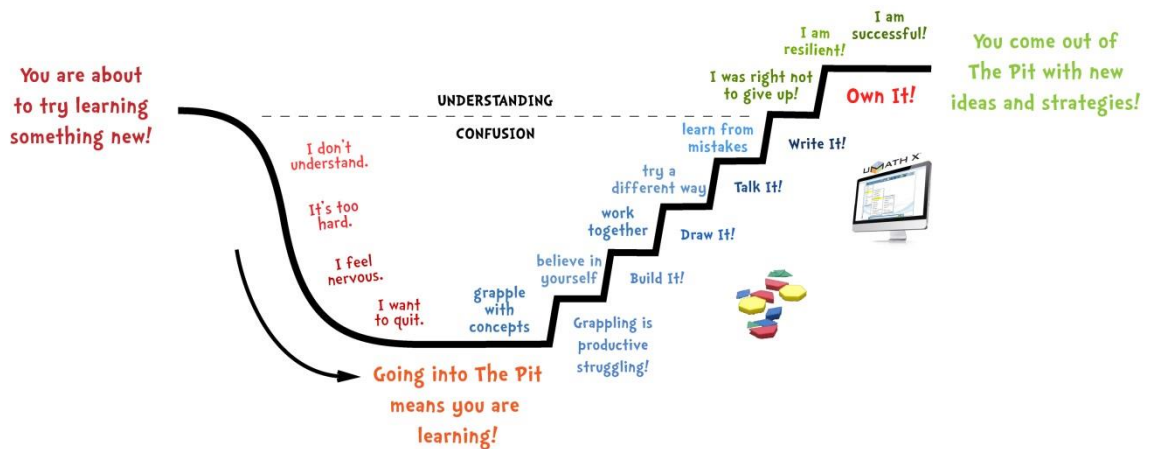


**View and Discuss – The LEARNING PIT**

- UMathX transforms a “Valley of Despair” into productive struggling in a “learning pit”.
- UMathX is a full service K to Algebra1 learning environment, supporting a **growth mindset** within a **learning pit** encouraging students and teachers to **grapple** with concepts.

**The Learning Pit**

A Model for a Growth Mindset



- Play the video <http://www.jamesnottingham.co.uk/learning-pit> followed by a discussion.



**PLAN A LESSON:**

**Session B. Content & Pedagogy(1 hr)**

**OPTION 1**

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

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

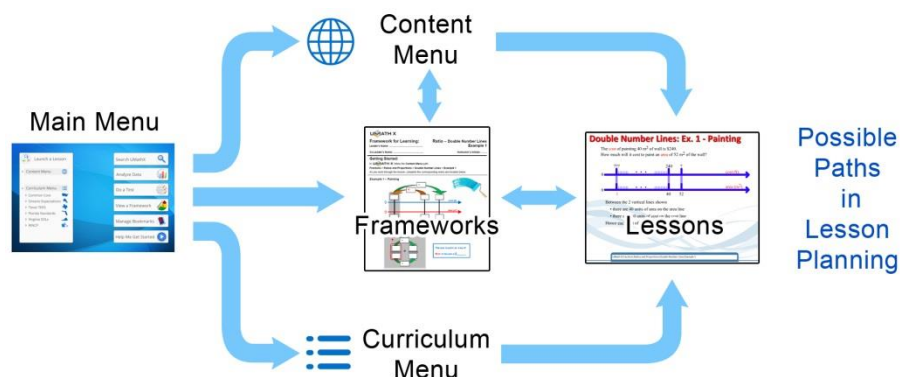
**OPTION 2**

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 set 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 **Texas TEKS**.  
**First** .. Follow the steps within the **TEXAS TEKS CURRICULUM** menu.  
**Second** .. Click on the **LESSON** button to make appropriate lessons available.  
**Third** .. Click on the **FRAMEWORKS** button for appropriate frameworks if they exist. Print.



**CURRICULUM**

**K TO 2**

**1.2.B.i** – Whole Numbers & Integer > The Meaning of Whole Numbers > Represent Numbers in Many Ways> Ex 1  
(**Represent Numbers in Many Ways – Place Value -1**)

**1.2.E** – Comparing and Ordering > Working with Whole Numbers > C > Compare Numbers #1

**2.4.B.iii** – Operations>14) Add 2 Digit...Concretely-> C (**Add 2 Digit Numbers-Concretely-With Regrouping**)

**2.4.D.iv** – Operations> 23) Subt 3 Digit Numbers.. Concretely> D (**Subtraction With Regrouping #3**)

**CURRICULUM**

**3 TO 5**

**3.2A** – Place Value > Identify Place Value Patterns (to 20) > C> Pictures to Numbers #1

**3.2.A** – Place Value >Identify Place Value Patterns (to 20)> C>Tens & Ones to Pictures #1

**3.2.A** - Place Value > Identify Place Value Patterns ( to 20)> C> Numbers to Pictures #1

**3.2.A** – Place Value > Identify Place Value Patterns (to 100) > C > 2 Digit Numbers – Different Ways

**3.2.A** – Place Value > Identify Place Value Patterns (to 1000) > D >Expanded Notation

(**Place Value – 2 Digit Numbers – Different Ways**)

(**Place Value to 1000 – Expanded Notation**)

(**Expanded Notation – Write as Numerals**)

(**Expanded Notation – To 999**)

(**Expanded Notation – To 9999**)

**3.2A.ii** – Place Value > Identify Place Value Patterns (to 100) > C> Pictures to Numbers #2

**3.2.A.ii** – Place Value >Identify Place Value Patterns (to 100)> C>Tens & Ones to Pictures #2

**3.4.B.ii** – Whole Numbers & Integers > Estimation with Compatible Numbers

**4.2.B.i** – Whole Numbers & Integers > The Meaning of Whole Numbers > Millions>Examples> Ex 1

**4.4.G** – Whole Numbers & Integers > The Meaning of Whole Numbers > Rounding Large Numbers:  
Concepts> Concept 2

CURRICULUM

6 TO 7

- 4.4.C.i - Whole & Int > Mult & Div of Whole Num > Mult by 2 Digit Mult > 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 Bloc
- 5.2.C - Fractions > Introduction to Decimals > Rounding Decimals > Example 1  
(Rounding Decimals – To the Nearest Tenth)  
(Rounding Decimals – To the Nearest Hundredth)
- 5.2.A - Fractions > Introduction to Decimals > Expanded Notation > To Hundredths  
(Decimals – Expanded Notation – to Hundredths)  
(Decimals – Expanded Notation \_ to Thousandths)  
(Decimals to Thousandths)
- 5.3.D.ii - Fractions > Mult & Division of Dec > Mult by Partial Prod Area > Ex 1 (Mult Dec by Partial Prod 2.4 x 3.7)
- 6.3.B.i – Fractions > Multiplying Fractions > Developing the Rule > Ex. 3 (Multiply Proper Fractions -1)
- 6.4.E.i – Fractions > Ratios & Proportions > Ratio, Tape Diagram > Introduction (Ratios & Proportions - Tape)
- 6.5.A.viii - Fractions > Ratios & Proportions > Ratio Table > Introduction 1 & 2 (Ratio – Ratio Tables\_Intro-2)
- 6.5.A.x – Fractions > Ratios and Proportions > Proportions > Ex 3 Marbles (Estimation U Proportions-1,2,3)
- 6.6.C.i - Graphing > Read & Sketch Graphs > Graphs Without Scale > Ex 7, 9, 11 (Graphs Without – Creating -1)
- 7.9.C - Meas & Geom > Per & Area of Poly > Areas of Poly > Poly to Simple Shapes > Ex 1 (Polygons Broken -1)

CURRICULUM

8 TO ALG1

- A.3.B – Graphing > Slope of a Line > Slope > Steepness Factor (Slope In the Real World)
- A.3.B – Graphing > Eq Str Line > Word Prob - Applic > Walker > (Slope & Line – Walk in Real World-1)
- A.6.C – Graphing > Quadratic Functions > Max Cage Area > Trial & Error to Summary (Quad - Max Cage-1)
- A.12.D – 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)

see [www.umathx](http://www.umathx) Check the **webinar** topics and lessons

ANOTHER SOURCE OF LESSONS..

Within CONTENT MENU.

Video .. Understanding vs Memorization .. Pa & Ma Kettle.

TEST ACCESS:

Main Menu (first page)  
Activity Window

TEST TYPES:

Texas TEKS Test  
Content Test  
Custom Test

DATA ANALYSIS

Lessons & Tests  
Growth  
Useage

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

## Session C: Book Marks, Tests, Data Analysis

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



- **TYPES:** Texas TEKS Core 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.

- **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.

# Session D. The Treasure Hunt – K to 5 –TEXAS TEKS - 1 hr

This Treasure Hunt contains directions to guide navigation through the **Content Menu**, the **TEKS Curriculum Menu** and the **Frameworks for Learning** of UMathX. An observation question is connected with each set of directions to assist you in experiencing a variety of learning environments in UMathX.

UMathX is created to address the following **Principles of Learning**:

- Interactive with audio;
- Encourage “grappling” to support a “growth mindset” - learning from mistakes;
- Multiple representations of concepts;
- Moving from concrete to pictorial to abstract;
- Pacing controlled by the learner;
- Using a wide variety of teaching strategies – options/suggestions within “Frameworks For Learning”

Record your observations in the “Your Answers” column and note the “Principle of Learning” featured in each lesson. Please appreciate that you may be navigating into the middle of a math topic and may be missing the background information. You may want to navigate to preceding lessons to find the needed information.

Log into UMathX and work your way through the Treasure Hunt in a non-linear, random order.

An Answer Key is available at [www.UMathX.com](http://www.UMathX.com) under Training.

Directions	Questions	Your Answers
<p>In the <b>Content Menu</b>, follow the path – <b>Fractions&gt; Equivalent Fractions</b></p> <p>Now select and work through the menu items within <b>Equivalent Fractions</b> listed below:</p> <p><b>Introduction - Square Pattern Blocks – Hexagon 1</b>  <b>The Clock – Introduction 1</b>  <b>Slicing – Example 1</b>  <b>An Explanation With Sets – Case1</b></p> <p>Then select- <b>Memory Game</b></p>	<p>Make a series of <b>mistakes</b> to see how UMathX responds. List a hint that you felt was particularly helpful.</p> <p>Please double click on a line for audio. Would you use lessons within <b>Equivalent Fractions</b> to: a) Introduce a new concept, b) Reinforce a concept, or c) Intervention?</p> <p>Note the <b>various approaches</b> to understanding Equivalent Fractions. Note the <b>variety of possible learning environments</b>. Would you use a whole group, small group or individual learning? How would you use the <b>Memory Game</b>?</p>	
<p>In the <b>TEKS Curriculum Menu</b>, navigate to and select <b>3.3.F.i</b>. Click on a button labelled, <b>Lessons</b>. Find the lesson: <b>Hexagon 1</b>. Double Click on “<b>Hexagon 1</b>”. Then click on the <b>Menu Icon</b> on menu bar at the top of the screen. Navigate to <b>3.3.F.i</b> again. Click on the <b>Frameworks</b> button. Double click on each of <b>Frameworks</b>.</p> <p>Select <b>2.6.A.i</b> in the <b>TEKS Menu</b>. Click on <b>Lessons</b>. Select the <b>lesson - Multiplication: Groups of 4</b>. Work through a few of 9 questions. Click on the <b>Menu Icon</b> at the top. Navigate to 2.6.A.i again &amp; select the <b>framework –Introduce Multiplication Facts .. Groups of 4</b></p>	<p>The <b>Content Menu</b> contains <b>scaffolded lessons</b> ... great for filling learning gaps. The <b>TEKS Menu</b> takes those items from from the <b>Content Menu</b> that fit the <b>TEKS Curriculum</b>. <b>Compare tiered frameworks ... Equivalent Fractions - 1, Equivalent Fractions -2 and Equivalent Fractions -3</b></p> <p>Note the <b>SET approach in understanding multiplication</b>. Note the relationship between the <b>addition sentences</b> and the <b>multiplication sentences</b> .</p> <p><b>Note value in following instructions on computer, recording on paper to lead to a pattern .. the multiplication table</b></p> <p>What is the path to this lesson within the <b>Content Menu</b>?</p>	

Directions	Questions	Your Answers
<p>Note the 3 tiered frameworks –  <b>Multiplication Introduction – 1</b>  <b>Multiplication – Repeated Addition</b>  <b>Multiplication Introduction - 2</b>  <b>Eggs in Bowls...Introduce x</b>  <b>Multiplication Introduction – 3</b>  <b>Grouping Eggs in Bowls</b>            Glance over the 3 frameworks.</p>	<p>Compare the repeated addition sentences and the multiplication sentences in <b>Getting Started</b></p> <p><b>This method is one approach to help in understand multiplication.</b></p> <p>Note <b>the scaffolding</b> within the 3 frameworks as well as within the 3 corresponding lessons within UMathX.</p>	
<p>Go to <a href="http://www.umathx.com">www.umathx.com</a> .. Resources to Frameworks. Find the framework,  <b>Multiply Two 2-Digit Numbers by Partial Products – 1 at ...</b></p> <p>Grapple through “Getting Started”.</p> <p>Work through part of the instructions in “Working In It” on the framework with the help of your computer and partner.</p> <p>The framework above, leads to the <b>Content Menu:</b> (login and go there)  <b>Whole Numbers and Integers .. to</b>      Multiplication and Division of ..to      Multiply by a 2 Digit Multiplier.. to      Partial Product – Area .. to  <b>Ex 1 – With Blocks...</b> Now go to  <b>Ex 4 – Without Blocks</b></p>	<p>The “Getting Started” section, directs to work away from the computer first.</p> <p>It is suggested that they work with <b>paper</b> and <b>base 10 blocks</b> to model numbers - ____ and ____ and ____</p> <p>Note that in “Getting Started” one needs to <b>grapple to find an answer.</b></p> <p>Then in “Working In It”, UMathX on computer helps toward solutions.</p> <p>Check that the code for this lesson within the <b>TEKS menu</b> is <b>4.4.C.i</b>. Find the particular lesson within the list.</p> <p>Note when ones goes to Ex 1 and then to Ex. 4 . Comment on how relating Ex 1 to Ex 4 helps in understanding. Then check following framework: Go to <a href="http://www.umathx.com">www.umathx.com</a> – Resources Pick Frameworks and find .. Multiplying Decimals – Partial Products – Distributive (<b>TEKS 5.3.E.i</b>)</p>	
<p>From the <b>TEKS Menu</b>, select <b>3.3.C.i</b></p> <p>First select the <b>3 Tiered Frameworks- Fraction Introduction – Pattern Blocks -1</b></p> <p><b>Fraction Introduction - Pattern Blocks -2</b></p> <p><b>Fraction Introduction – Pattern Blocks -3</b></p> <hr/> <p>In the <b>Content Menu</b>, hover over:  <b>Whole Numbers and Integers</b> to <b>Multiplication and Division of Whole Numbers to Divide by Single Digit Divisor</b> to <b>Fair Sharing</b></p>	<p>The <b>frameworks</b> are located in 2 places. What are they?</p> <p>If possible print out the 3 frameworks.</p> <p>How are the frameworks the same?</p>	
<p>Find &amp; work through the framework ...  <b>Subtract 3 Digit Numbers Concretely Subtraction with Regrouping #3</b> at <a href="http://www.umathx.com">www.umathx.com</a> .</p> <p>See <b>Frameworks</b> under <b>Resources</b>.</p>	<p>Work through both :  <b>Fair Sharing Ex. 1 .. with blocks</b> and  <b>Fair Sharing Ex 2 .. without blocks</b>      Find fair sharing in <b>TEKS Menu.. 4.4.E</b></p> <p>In the “Working At It” section, <b>we suggest using paper, real base 10 blocks and UMathX in the computer.</b></p> <p>Would you use all at the same time?      Comment on the <b>critical regrouping step</b> where we see <b>concrete and abstract</b> simultaneously.</p> <p><b>How many different methods of subtraction</b> are listed in this section?</p>	



# Session C. The Treasure Hunt – 6 to Alg1 –Texas TEKS - 1 hr

This Treasure Hunt contains directions to guide navigation through the **Content Menu**, the **Texas TEKS Curriculum Menu** and the **Frameworks for Learning** of UMathX. An observation question is connected with each set of directions to assist you in experiencing a variety of learning environments in UMathX.

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- Moving from concrete to pictorial to abstract;
- Pacing controlled by the learner;
- Using a wide variety of teaching strategies – options/suggestions within “Frameworks For Learning”

Record your observations in the “Your Answers” column and note the “Principle of Learning” featured in each lesson. Please appreciate that you may be navigating into the middle of a math topic and may be missing the background information. You may want to navigate to preceding lessons to find the needed information.

**Log into UMathX and work your way through the Treasure Hunt in a non-linear, random order.**

**An Answer Key is available at [www.UMathX.com](http://www.UMathX.com) under Training.**

Directions	Questions or Suggestions	Your Notes or Answers
<p>In the <b>Content Menu</b>, follow the path <b>Fractions&gt;Multiplying Fractions&gt; Pattern Blocks&gt; Hexagon1</b></p> <p>Return to the <b>Content Menu</b> and follow path <b>Fractions&gt;MultiplyingFractions&gt; Real World Problems with Pictures&gt; Boris’ Money</b></p> <p>Work through the lesson.</p>	<p>Do the short lessons. Make mistakes. Comment on learning from <b>concrete to abstract</b>.</p> <p>Go to <a href="http://www.umathx.com">www.umathx.com</a> . Select “<b>framework</b>” under “<b>resources</b>”, <b>Mult Fractions – Word Problems -1</b></p> <p>Write a note on how <b>the diagram helps in understanding the word problem here</b>. What is the role of “Reflect/Connect” in the framework?</p>	
<p>In <b>TEKS Menu</b>, navigate to <b>6.3.B.i</b></p> <p>Click on the button marked, <b>Lessons</b></p> <p>Find and select the lesson, <b>Ex. 3 – Proper Fraction X Proper Fraction</b></p> <p>Work through the lesson.</p> <p>Now navigate to <b>6.3.B.i</b> again.</p> <p>Click on the button marked <b>frameworks</b>.</p> <p>Select the <b>framework – Multiply Proper Fractions - 1</b></p> <p>Follow instructions in the framework..</p> <p><b>Note the 3 tiered frameworks.</b></p> <p>This is a difficult topic. One must not “tell the rule” . <b>The 3 tiered frameworks help lead towards understanding.</b> Students <b>reflect/connect with Benoit’s Problem.</b></p> <p><b>Note that one can also reach the same frameworks through <a href="http://www.umathx.com">www.umathx.com</a> and select “frameworks” under “resources”</b></p>	<p>Comment on <b>scaffolding in the UMathX menu. Fractions – Multiplying – Pattern Blocks – Fraction Strips - Developing the Rule</b></p> <p><b>This is a rich sequence ..</b></p> <p>List the <b>variety of methods and steps to scaffold to understanding “why”</b> we multiply as we do.</p> <p>In this case, the <b>Getting Started section of the framework refers to another graphic – a simpler example with pattern blocks. This however does not prove the algorithm.</b></p> <p><b>Reflect and Connect</b> with a partner. In doing so, one may at some point say ... <b>“I GOT IT!!”</b> ... not I “believe you” or “you told me”</p>	<p><b>The methods of multiplying here are:</b></p> <p>... pattern blocks(particular/concrete)</p> <p>... number line (fraction strips)</p> <p>... rectangular (area model)</p> <p>Note the 3 methods direct from concrete to abstract. .. <b>note the scaffolding.</b> First we use specific numbers and then we use red and blue arrows to lead to the algorithm for mult of fractions.</p> <p>We suggest a teacher led, whole class lesson here .. difficult concept . Class <b>needs to grapple/reflect &amp;connect to move toward understanding here.</b></p>

Directions	Questions or Suggestions	Your Notes or Answers
<p>From the <b>TEKS Curriculum Menu</b>, find and work through <b>lessons.. Introduction 1 &amp; Introduction 2</b> under <b>6.4.C</b></p> <p>Now from <b>6.4.C</b> in the <b>TEKS Curriculum Menu</b> select the first framework, "<b>Ratio – Ratio Tables _ Introduction-2</b>"</p>	<p>How do the two introductions differ? Please fill in the tables on page 1 of the framework.</p> <p>In the "Working In It" section on pg 2, complete the "Lawn Fertilizer" question.</p>	
<p>From the <b>Content</b> menu bar select <b>Graphing &gt;Quadratic Functions &gt;Maximize Cage Area</b></p> <p>Work through the beginning of each of the sub lessons to the graph in <b>Summary</b>.</p> <p>In <b>TEKS</b> menu, select <b>A.8.B.i</b> Then select the <b>framework ... Quadratic Functions – Maximize Care Area -1</b></p>	<p>Note the "scaffolding" as each concept leads to the next concept.</p> <p>Describe how the real life concept is linked to the visual graph to the abstract equation in ...<b>Summary</b></p> <p>Draw and label the final graph in <b>Summary</b> to the right.</p>	
<p>In the <b>Content Menu</b> follow the path .. <b>Fractions&gt; Ratios and Proportions&gt; What is a Ratio?&gt; Ex 2 - Marbles</b></p> <p>Then work through the lesson on the computer.</p>	<p>How does this lesson help understanding?</p> <p>Write a related question involving ratios to determine the number of pike fish in a lake</p>	
<p>From the <b>Content Menu</b> select the path .. <b>Algebra&gt; Adding Expressions&gt;Adding Expressions with X &amp; YTile &gt;Example 1</b></p>	<p>Go back and recall <b>blue</b> representing positive and <b>red</b> representing negative. With the information above, <b>record how dragging colored tiles helps understanding.</b></p>	
<p>From the <b>TEKS Menu</b> select <b>A.10.E.</b></p> <p>Then select the button, <b>Frameworks.</b> Then select the framework and do ... <b>&gt;Factoring Trinomials</b></p> <p>Work through parts of this framework.</p>	<p>List the 3 parts of every framework. What is the relationship in <b>scaffolding from blue and red algebra tiles to multiplying and factoring.</b> In the framework, <b>Getting Started</b> begins work on paper.</p>	
<p>Navigate to the <b>CCSS Curriculum Menu .. 7.7.A.ii</b></p> <p>First find 2 <b>lessons</b> in <b>The Elastic</b> ... Setup Equations... Graph Equations. Just do the beginning of each. Navigate to the <b>TEKS Menu .. 8.4.C.iii.</b> Find the first lesson "<b>The Walker</b>"</p> <p>It is labelled .. "<b>Same Speed</b>"</p> <p>Work through the first few questions.</p>	<p>How could you utilize the variety of examples to incorporate different teaching strategies in your classroom?</p> <p>These lessons address STEM. How? How do frameworks and lesson on the computer complement each other? Check each of the 3 frameworks and comment on how a teacher might organize a class to <b>accommodate a variety of levels in a class.</b></p>	
<p>From the <b>Content</b> menu bar select <b>Equations.</b> Then select the sections: <b>Problem Solving Solving Linear Systems Solving Linear Inequalities</b></p>	<p>In <b>Problem Solving</b> , scan 5 problems. In <b>Solving Linear Systems</b> List the number of methods. Do Ex 2 in <b>Solve Problems Using Linear Systems</b> In <b>Solving Inequalities</b>,check Graphing Linear Inequalities in 2 Variables.</p>	
<p>Navigate within the <b>Content Menu</b> along path .. <b>Exponents&gt; Pythagorean Theorem</b> Skim through the list of concepts from ... In <b>This Topic</b> To ... <b>The Pythagorean Theorem</b></p>	<p>Find the corresponding lessons on <b>Pythagorean Theorem</b> within the <b>CCSS Curriculum Menu</b> for 8<sup>th</sup> grade. Find and list the corresponding <b>Frameworks.</b></p>	

## Sample – 4 Hour Summer Math Symposium for K to Alg1

### AN EXPERIENCE IN MATHEMATICS CONTENT AND TEACHING METHODOLOGY

#### Location requires:

Good internet access.

1 main room to meet all participants with tables to seat up to 4 participants per table.

Up to 3 additional smaller rooms to be able to meet with up to 4 grade level groups.

Each participant will bring a personal laptop or share a laptop with a partner.

Each room has a room computer to project onto a smartboard for the group.

#### Session 1: 8:00am to 9:00am - Setting the Learning Environment

1 group - 1 hour

Pages 1 to 4 above. Outlines will be provided

#### Session 2: 9:00am to 10:00pm - Content and Pedagogy

Up to 4 Groups depending on the grade levels and # of participants. Groups meet for 1 hour at the same time.

Possibly 4 Groups of K to 2, 3 to 5, 6 to 7, 8 to Alg1

Or .. possibly 2 groups of K to 5 and 6 to Alg1 .. or .. other possibilities.

Pages 5 and 6 above. Outlines and Model Lessons will be provided.

#### Session 3: 10:30pm to 11:15pm - Testing, Data Analysis, Book Marking

1 group – 45 minutes

Page 6 above

#### Session 4: 11:15pm to 12:00pm - Treasure Hunt

1 group .. 45 minutes

Activities for K to 5 and Activities for 6 to Alg1

Pages 7 to 10 above. The Treasure Hunt materials will be provided.

**Costs: Pre Register by connecting with [bmathies@umathx.com](mailto:bmathies@umathx.com) or 866 429 6284 (toll free)**

**Option 1:** Focus on Mathematics for Participants from 1 to many schools with additional focus on their students.

**\$200 per participant** includes 4 hour symposium and personal access for 1 year to:

- all content within UMathX to fill gaps online from K to Alg1 and all curriculum from K to Alg1 online.
- access to all lessons, tests, resources in UMathX
- access to regular webinars to introduce new concepts at no additional charge.

Additional/Optional **\$11 per student** for student personal access for 1 year for all students of a participant.

(Option1 cost is regular cost of UMathX software and resources for a teacher and his/her students)

... so training here is free

**Option 2:** Focus on a Mathematics Resource for students and teachers in a larger school .. \$6,000 per year

Additional/Optional 4 hour symposium for all teachers ... unlimited ... \$2,500.00

- access to regular webinars to introduce new concepts at no additional charge

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