 See **www.umathx.com** for More 3 part Model Lessons .. "Frameworks"

Build It -
  Draw It -
    Talk It -
      Write It -
        to OWN IT!!

VISUAL LEARNING to UNDERSTAND

FRACTION MULTIPLICATION & PARTIAL PRODUCTS

Description

We will model blended learning in Fraction Multiplication and Partial Products. Three-part lessons, manipulatives and online resources will lead participants to grapple with strategies and to articulate ideas toward "seeing" solutions. o Participants will receive online resources (UMathX) and three-part lessons for their classes. Participants are invited to bring a laptop or tablet to model a variety of learning environments. **Gr 3 to 6**

The Sketch below shows ...
--- **??** --------

$$\begin{array}{r} \underline{} \\ \text{X} \quad \underline{} \\ \hline \underline{} \end{array}$$

_____	__ Ones by __ Ones
_____	__ Ones by __ Tens
_____	__ Tens by __ Ones
_____	__ Tens by __ Tens

_____

100

10 10 10 10 10 10

10
10

Note the Progression ... Computer, Paper, Base 10 blocks

24 X 37 .. first framework on paper .. Multiply Two 2-digit numbers .. Partial Products

Model of the Product of **24** and **37**

Combine the two sets of blocks representing **24** and **37** to create one large rectangle representing the product of **24** and **37**.

Exchange ones, tens, and hundreds blocks as needed so that the model is one solid rectangle composed of as few base ten blocks as possible.

Record a color coded drawing of the model in the grid to the left.

.. base 10 blocks

.. work thru .. UMathX > Whole Numbers & Integers > Mult & Div of Whole # >

Mult by a 2 digit Multiplier > Partial Products - Area   Ex 1 - With Blocks &
Ex 4 - Without Blocks.

Distributive Method > Ex 1

Partial Products – Example 1 – With Blocks

Part 2	Part 1
Part 4	Part 3

Ones

Part 1: _____ Ones by _____ Ones =

Part 2: _____ Ones by _____ Tens = _____ Tens =

Part 3: _____ Ones by _____ Tens = _____ Tens =

Part 4: _____ Tens by _____ Tens = _____ Hundreds =

+

Summary: 24 × 37 = Sum of 4 _____ _____

= _____ of Part 1 + _____ of Part 2 + _____ of Part 3 + _____ of Part 4

Distributive Method – Example 1

$$\begin{array}{r} 37 \\ \times\ 24 \end{array}$$ (30 + _____) × (20 + _____)

Part 1 Area: _____ × _____ Ones

Part 2 Area: _____ × _____ Tens

Part 3 Area: _____ × _____ Tens

Part 4 Area: _____ × _____ Hundreds

_____ × _____ =

_____ × _____ =

_____ × _____ =

_____ × _____ =

+

Multiply Proper Fractions

GET STARTED: Log into UMath X and follow the Content Menu:

Fractions> Multiplying Fractions> Pattern Blocks

Select & complete Sub Lessons: **Hexagon 1, Hexagon 2, Hexagon 3**
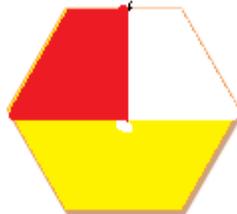
As you work through each Hexagon:

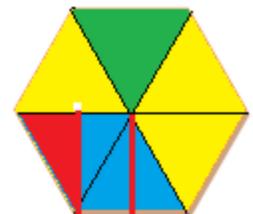First … use real pattern blocks to reproduce the graphics on the computer screen.
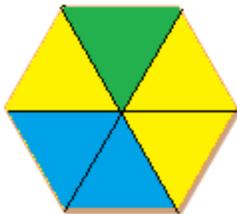
Hexagon 1   Hexagon 2   Hexagon 3

Then Complete the notes below:

We are left with: We are left with: We are left with:

1/2 of 1/3 =   1/2   of 1/2 =   1/4 of 1/3 =

Working In It

In UMath X, in the Content Menu follow the path…

   Fractions > **Multiplying Fractions** > **Developing the Rule**

   Select and complete the Sub Lesson**: Example 3 - Proper Fraction x Proper Fraction**

As you work through the lesson, use 2 colored pencils to record graphics of Example 3 in the box below.

My diagram represents the multiplication of _____ and _____   = _____

The part colored _____ represents the answer.

Talk to your partner about the graphics which led to your understanding of **why** we multiply the way we do when we **multiply a proper fractions by a proper fraction.**

Reflect And Connect

Benoit's Problem: After Benoit received his allowance, he went to the mall and spent 6/7 of his allowance. Of the money spent at the mall, 2/3 was used to purchase a computer game.

How much of his allowance did Benoit spend on the computer game?

If the rectangle below represents Benoit's allowance, work through this problem and show your picture with a clear explanation.

Follow the path in the **Content Menu:**

Fractions > Multiplying Fractions > Real World Problems with Pictures > Boris' Money

Complete the notes below as you work through the lesson.
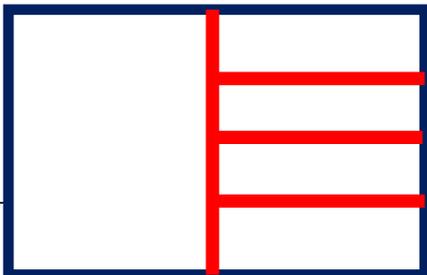
Use the diagram to the left to help you understand the problem.

The question is to find the product of _____.   The product if