

# Mathematical Modeling to Make Thinking Visible



**PROFESSIONAL LEARNING K TO ALG1 TEXAS**

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**Model to Make Thinking Visible in Linear Relationships and Slope in "STEAM" Gr 6 to Algebra1**

We will model blended learning in diverse learning environments(computer/manipulative/paper) and offer 3 part lessons to "grapple", "see" solutions and construct understanding in Slope and Linear Relationships. Access will be given to a computer program and 3 part lessons.

**Model to Make Thinking Visible in Adding with Regrouping, Multiplying Fractions & Partial Products. Gr 3 to 6**

We will model blended learning in diverse learning environments(computer/manipulative/paper) and offer 3 part lessons to "grapple", "see" solutions and construct understanding in Base 10, Fractions and Partial Products. Access will be given to a computer program and 3 part lessons.

**LEARNING ENVIRONMENT**

**CORE & INTERVENTION**

**Grappling is.. more than "persevering"**  
**.. more than "engaging"**  
**.. "productive struggling"**

**Concrete to Pictorial to Abstract**

**Build it - Draw it - Talk it - Write it - OWN it!!**

**A MISTAKE IS AN OPPORTUNITY TO LEARN**

**Multiple Representations**

**The Learning Pit**  
A Model for a Growth Mindset

<http://www.jamesnottingham.co.uk/learning-pit>

**LOGIN**

1 month: [www.umathx.com/preview](http://www.umathx.com/preview) Login: **count**(as a teacher) Generic Password: **umathx**  
After 1 month: [www.umathx.com](http://www.umathx.com) and select **Preview** to set up your own access.

**3 PART LESSONS (FRAMEWORKS) WWW.UMATHX.COM RESOURCES**

- Students articulate ideas, consider peer perspectives as a way to construct understanding.**
- |  |   |
|--|---|
| 1. <b>Creating &amp; Interpreting Line Graphs</b>          | 1. <b>Add 2 Digit Numbers With Regrouping</b>             |
| 2. <b>Slope in the Real World</b>                          | 2. <b>Fraction Introduction – Pattern Blocks -1 (RTI)</b> |
| 3. <b>Linear Relations – Elastic (STEAM)</b>               | 3. <b>Multiply Two 2-Digit Numbers – Partial Products</b> |
| 4. <b>Slope and the Line – Walk in Real World -1 (RTI)</b> | 4. <b>Multiply Proper Fractions</b>                       |

**MENUS: CURRICULUM CONTENT**

- 2.4.B.iii – Operations>14) Add 2 Digit ... Concretely-> C -> **Addition With Regrouping**
- 3.3.C.i – Fractions> The Meaning of Fractions> Introduction...Think, Write, Say> **Circles – Pattern Blocks**
- 4.4.C -Whole#&Int>Mult&Div Whole Num>Multby2Digit Mult>Partial Prod-Area>**Ex 1–With Blocks(24x37)**  
then> **Ex 4–Without Blocks(24x37)**..then **6.NS.02.03-Fract>Mult&Div Dec>Mult PartialProd>Ex1-With Blk(2.4x3.7)**
- 6.3.B.i – Fractions> Multiplying Fractions> Developing the Rule> **Ex. 3 – Proper FractionXProper Fraction**
- 6.4.E.i/6.5.A.viii – Fractions>Ratios & Proportions>Ratio,Tape Diagram>**Introduction & > Ratio Table> Introduction 1**
- 6.6.C.i –Graphing>Reading & Sketching Graphs>Graphs Without A Scale> Ex 7, 9, 11>**Glasses of Water+ STEAM**
- 7.7.A.ii –Graphing>Linear Relations> The Elastic Example> **Setup Equations AND THEN Graph - STEAM**
- A.2.B -Graphing>Slope of a Line> Introduction to Slope & Slope > Steepness Factor**
- A.3.B –Graphing> Equation of a Straight Line > Word Problems-Applications> The Walker> Same Speed - RTI**