DENTON

INDEPENDENT SCHOOL DISTRICT

Denton ISD Mathematics Update

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DISD School Board Workshop
December 12, 2017

Overview

- ★ Developing Mathematicians
- ★ Elementary and Secondary Programs
  - Support and Tools for Teachers
  - Professional Learning
  - Support for Students
  - Assessment/Performance
- ★ Future Work

"I was never good at math."

"I just don't have the math gene."

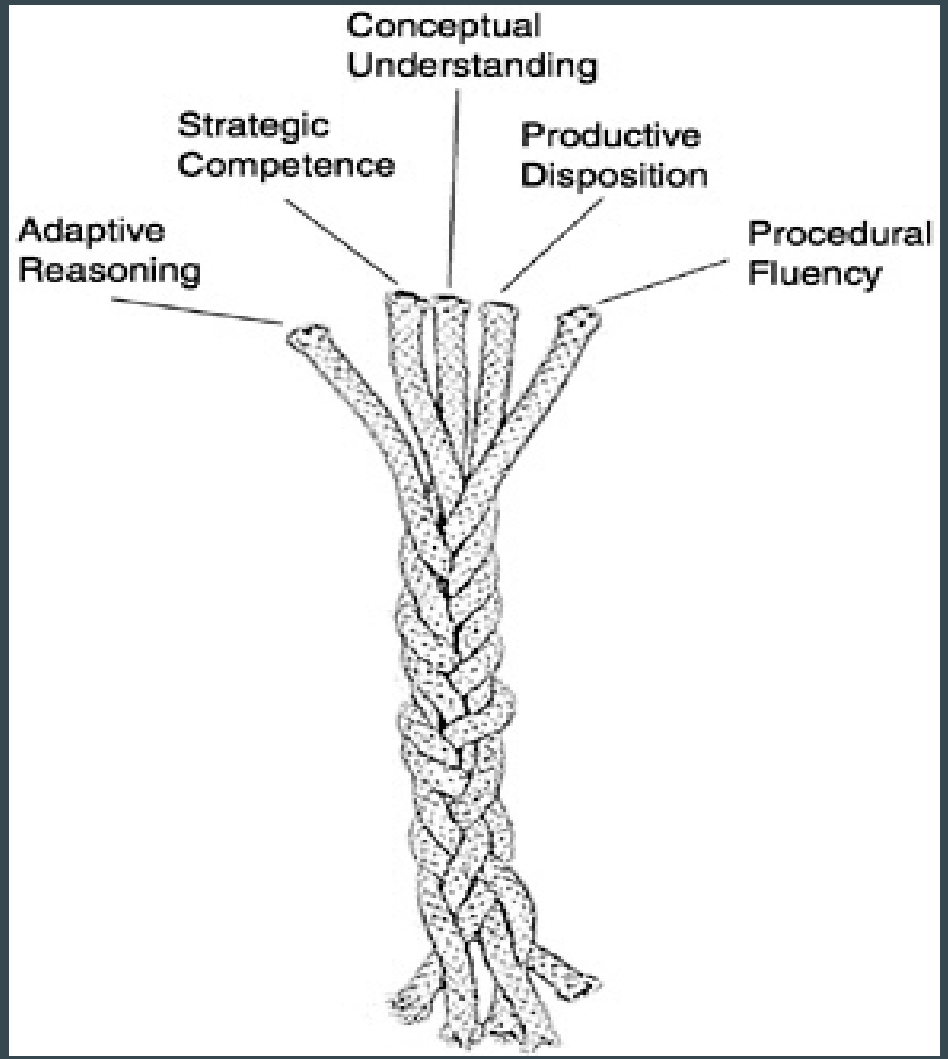
"I hate math."

"People who like math are nerds."

"I'm not good with numbers."

Developing Mathematicians: The Strands of Mathematical Proficiency

National Research Council, Adding it Up, 2001



Developing Mathematicians: Process Standards

The student uses mathematical processes to **acquire** and **demonstrate** mathematical understanding.

A. Apply mathematics to problems arising in everyday life, society, and the workplace	B. Use a problem solving model and evaluate the process and reasonableness of the solution C. Select tools and techniques to solve problems	*Modeling and Using Tools*
	E. Create and use representations F. Analyze mathematical relationships to connect and communicate mathematical ideas	*Representing and Connecting*
	D. Communicate mathematical ideas, reasoning, and their implications G. Display, explain, and justify using precise mathematical language	*Communicating and Justifying*

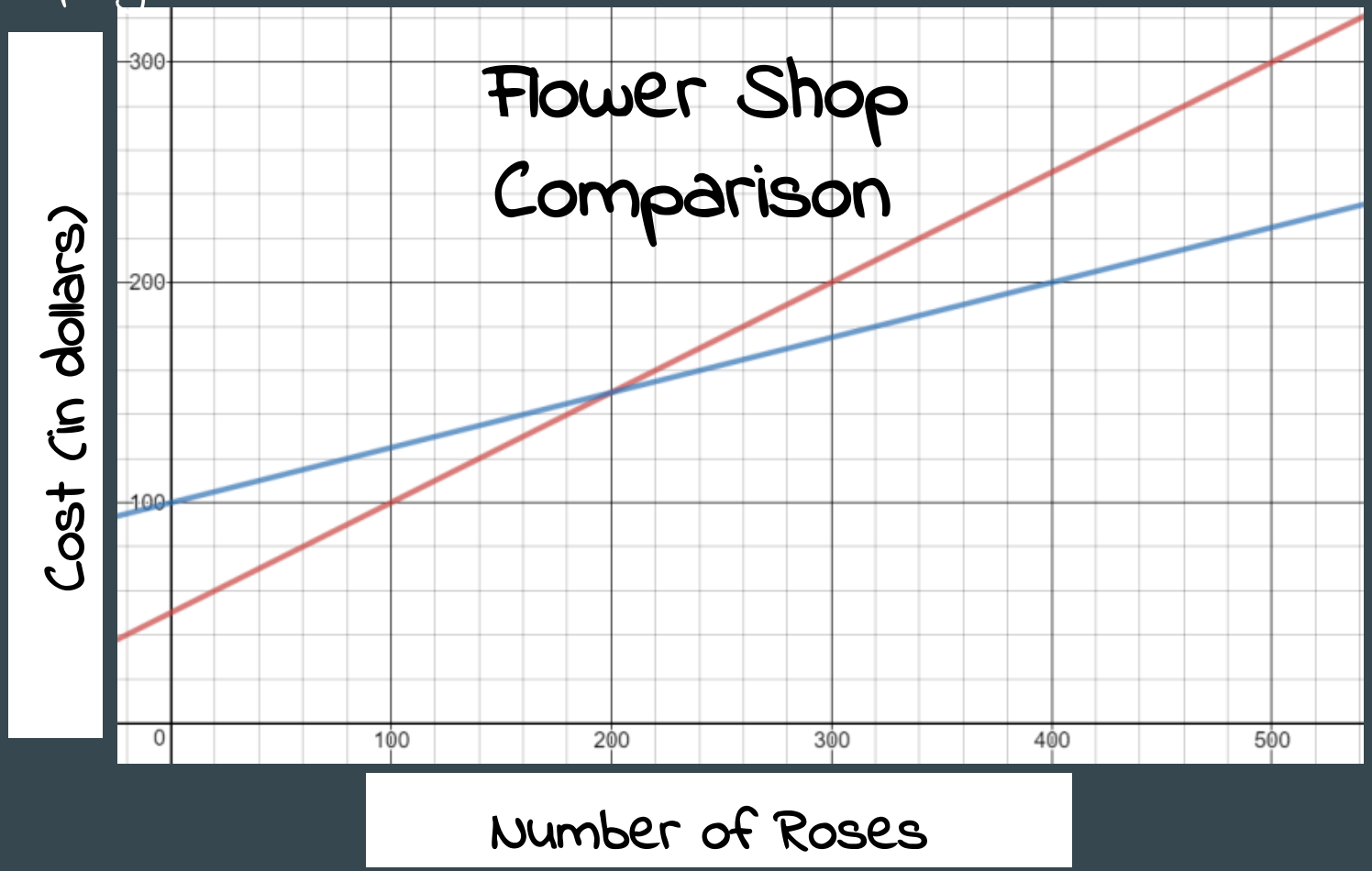
Developing Mathematicians: Context

Developing Mathematicians: Context

$$6 \div \frac{1}{2} = ?$$

How many groups of $\frac{1}{2}$ are in 6 wholes?

Developing Mathematicians: Context



“There is no single method or single combination of methods that can successfully teach all children. Therefore, teachers must have a strong knowledge of multiple methods of teaching and a strong knowledge of the children in their care so they can create the appropriate collection of methods needed for the children they teach.”

International Reading Association

Support and Tools for Teachers: Curriculum Documents

Unit Description: The second 6 weeks focuses on place value of and operations with decimals to the thousandths place. The student will be responsible for identifying the place value of decimals, comparing and ordering decimals, and rounding decimals to the tenths and hundredths place. The student will represent the multiplication and division of decimals using objects and pictorial models, as well as, solving for the product and quotient of decimals to the hundredths place. The student will continue to work on simplifying expressions that now include decimal numbers.
Family Letter

Stage 1 Desired Results

Established Goals	*Transfer*
Process Standards **5.1** The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: **(A)** apply mathematics to problems arising in everyday life, society, and the workplace; **(B)** use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution; **(C)** select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems; **(D)** communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate; **(E)** create and use representations to organize, record, and communicate mathematical ideas; **(F)** analyze mathematical relationships to connect and communicate mathematical ideas; and **(G)** display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication. **Content Standards** **(5.2)** The student applies mathematical process standards to represent, compare, and order positive rational numbers and understand relationships as related to place value. The student is expected to: **(A)** represent the value of the digit in decimals through the thousandths using expanded notation and numerals; **(B)** compare and order two decimals to thousandths and represent comparisons using the symbols >, <, or =; and **(C)** round decimals to tenths or hundredths. **(5.3)** The student applies mathematical process standards to develop and use strategies and methods for positive rational number computations in order to solve problems with efficiency and accuracy. The student is expected to:	Students will be able to independently use their learning to understand ways of representing numbers, number systems, relationships among numbers, and how they are used in everyday life.

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Third Grade's Birds Eye View

2017-2018

First Semester				
First Six Weeks	Second Six Weeks	Third Six Weeks		
Place Value 3.2 A, B, C, D	Addition and Subtraction 3.4 A, B, C, and 3.2 C, and 3.5 A	Data Analysis 3.8 A, B	Geometry 3.6 A, B	Measur ement 3.7 D, E
Unit of Study	Unit of Study (3.7 B and C are in 2nd six weeks but not in the unit of study)	UbD	UbD	
Report Card Folder	Report Card Folder	Report Card Folder		
Process standards are integrated into all lessons 3.1 A-G				

Second Semester				
Fourth Six Weeks	Fifth Six Weeks	Sixth Six Weeks		
Multiplication and Division 3.4 D, E, F, G, H, I, J, K, and 3.5 B, C, D	Fractions 3.3 A, B, C, D, E, F, G, H, and 3.6 E, and 3.7 A	Multiplication with Standard Algorithm 3.4 G	Review Before STAAR	Digging Deeper and Building a Strong Foundation for our students through problem-based learning projects
Unit of Study	Unit of Study Personal Financial Literacy 3.9 A-F			
(3.5E is in the 4th six weeks but not in the unit of study) (3.6C, D are in the 4th six weeks but not in the unit of study)	Continued work on multiplication and division facts for recall with automaticity 3.4 F			
Report Card Folder	Report Card Folder			
Process standards are integrated into all lessons 3.1 A-G				

Number and Operations | Data Analysis | Personal Financial Literacy (Integrate into economics unit)
Geometry and Measurement | Algebra | Process Standard

Math Rubric

	Beginning 1	Developing 2	Meets Standard 3	Advanced 4
Conceptual Understanding I	I attempted to demonstrate the concept but got stuck. Scaffolding or support didn't help.	I demonstrated some understanding of the concept. Scaffolding was needed and may have helped.	I independently demonstrated a reasonable understanding of the concept based on patterns and connections I am making.	I independently demonstrated a deep and accurate understanding of the concept based on patterns and connections I am making.
Computational Accuracy	I attempted to complete the computation but got stuck or I got confused by the symbols even with teacher assistance.	I completed the computations but have mistake(s) in my work or needed teacher assistance to get the right answer.	I independently completed the computations to get the right answer.	I independently and efficiently completed the computations to get the right answer.

Algebra I Unit 3A Part 1 Feedback Form **Name:**_____

Description	TEKS	Questions/Items	Score
Slope: • I can find the slope given a table. • I can find the slope given a graph. • I can find the slope given two points on the line. • I can find the slope given an equation in any form. • I can calculate the rate of change from tables, graphs, or problems.	3A 3B	5, 6, 7, 8, 9, 10, 11, 12	/8
Key Features and Graphs of Linear Functions: • I can identify key features of linear functions (x-intercept, y-intercept, zeros, slope). • I can graph linear functions from key features.	3C	13, 14, 15, 16, 17, 18, 19, 20	/8

Assessment

Student self-assessment & reflection:	Acceptable evidence or artifacts:
Unit 5 CA Review Unit 5 CA Feedback Form Unit 5 EA Rubrics (in the Embedded Assessment folder) Assessment Checks	Embedded Assessments Unit 5 COMMON ASSESSMENT (see O drive for official version)

Major/Minor Grading Recommendations

Major
*Predicting Probabilities 7.6H
*Compound Probability and Sample Space 7.6I

Minor
*Calculating Probability and Complements 7.6C, 7.6D, 7.6E

*assessed on Unit 5 CA

Support and Tools for Teachers: Curriculum Documents

The Planning Process:

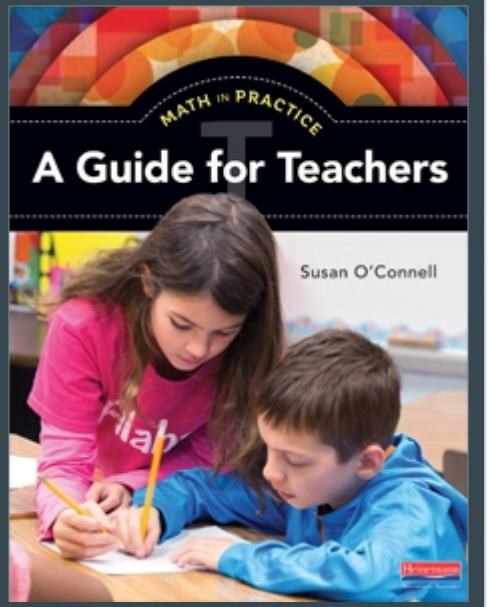
This work should be done several weeks before teaching. Since it is a lengthy process, prioritize the work for your most essential units of study according to your campus data. This work is best done in ***collaborative*** teams.

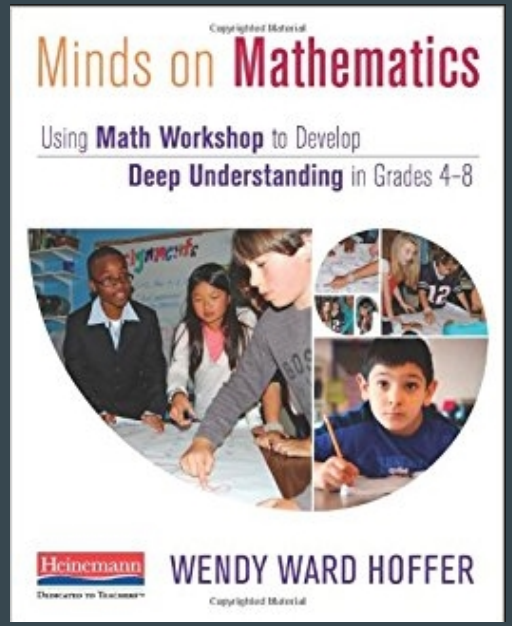
- Study, discuss and unpack TEKS.
- Review report card documents (assessments, rubric, etc) and STAAR released questions if appropriate to keep the end in mind.
- Create learning targets based on TEKS, Learning Communication Tool, and UbD units of study.
- Sequence the targets into a logical learning progression. This might be based on cognitive demand (least difficult to most difficult), prerequisite skills, or clusters of like content.
- Discuss and anticipate common student misconceptions and misunderstandings of content to avoid repeating these pitfalls.
- Create criteria for common understanding of success.
- Decide what evidence of learning you will collect and how this will be gathered and documented.

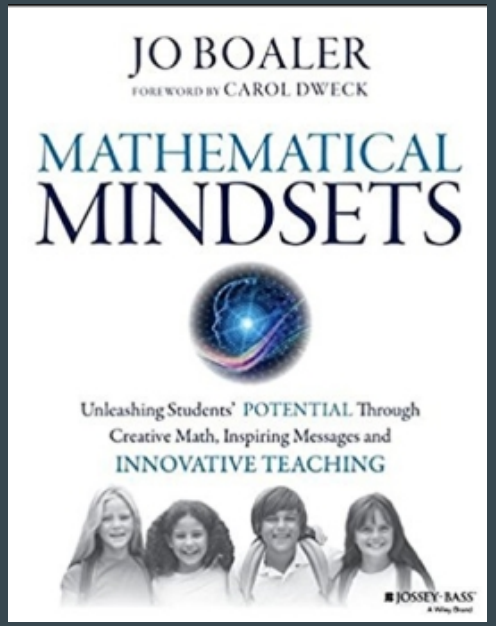
Support and Tools for Teachers : Instructional Coaches

Support and Tools for Teachers : New Teacher orientation

Professional Learning: Book Studies





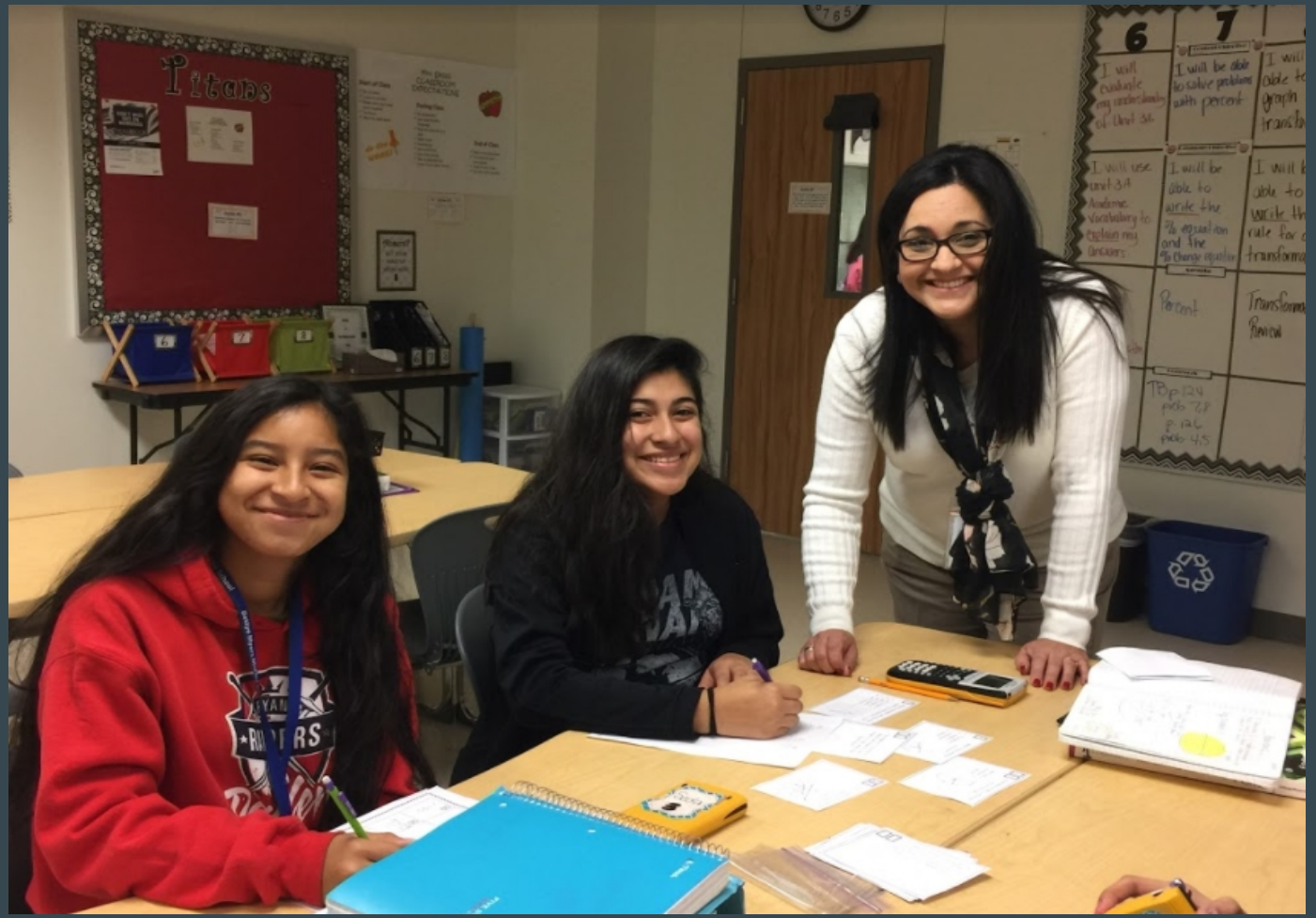


Professional Learning: Sessions with Teachers

- Math Workshop Training
- Elementary/Middle School Transition Sessions
- Math Content Trainings
- Math Talk
- Communication Structures

Supports for Students: Resources

Supports for Students: Intervention



UNIVERSAL SCREENERS

ACADEMIC	MATH	LITERACY
English Language Learners- Proficiency Level Descriptor Rubrics for formative assessment	Pre-K - CLI Engage -English & Spanish Kindergarten: TX-KEA -English & Spanish K-1 Kathy Richardson Assessing Math Concepts K-1 Think through Math - Imagine Learning (Optional) 2-5 Think Through Math (Imagine Learning) - English & Spanish Past STAAR results	Pre-K - CLI Engage -English & Spanish Kindergarten: TX-KEA -English & Spanish K-2 ELI/SELI - English & Spanish K-1 IStation (Optional) 2-5 IStation IRI 3-5 DRA/EDL - K-5 - English & Spanish Past STAAR Results

Performance and Assessment:

Formal

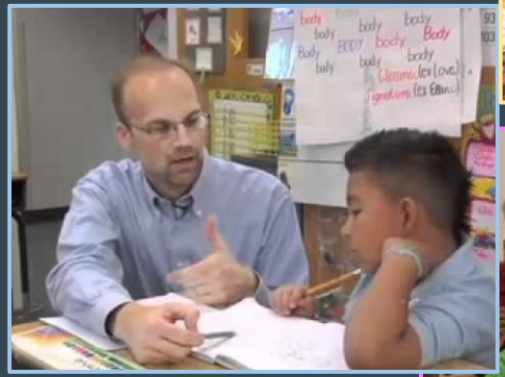
Imagine Math

NWEA Northwest Evaluation Association

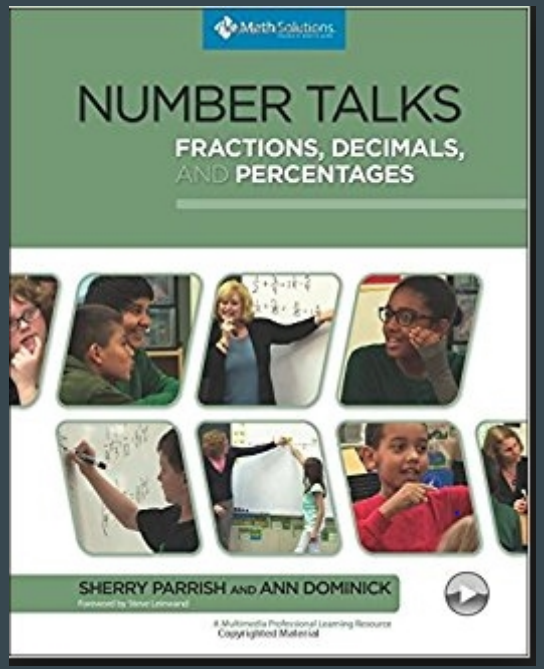
MAP Measures of Academic Progress

STAAR State of Texas Assessments of Academic Readiness

Informal



Future Work



TRANSITIONS