## triumphlearning" PRESENTS

## Instructional Excellence in Mathematics Grades 3-8



## Disciplinary Literacy Defined

## World of Math and the Core Standards

Literacy, the ability to read, write, listen, speak, think critically and perform in different ways and for different purposes, begins to develop early and becomes increasingly important as students pursue specialized fields of study in high school and beyond.

Reading, writing, speaking, listening and critical thinking must be integrated into each discipline across all grades so that all students gradually build knowledge and skills toward college and career readiness.

## Excellent instructional strategies will lead to

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\text { Mathematical understandina! } \begin{gathered}
\text { triumph } \\
\text { learning }
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## Mr. R's World of Math and Science

## Chapter 1: A Strange School

Many years ago, in a small school, in a small town, something very strange happened, something very strange indeed. Here's the whole story. Well, at least a fraction of it...

At this small school, which was tucked into the woods, none of the students ever smiled, and on sunny days nobody ran around and played tag or football, or even talked and laughed about their favorite TV shows. No, this school was different because the math teacher, Mr. Al Geebrah was so mean. He was actually mean squared, which is to say mean times mean. In other words, on the average, he was the meanest! And with him around no one ever had any fun...

One time Mr. Geebrah was so mean, he made the students figure out how many 12ths were in 5 wholes! It took them all day, but they finally figured it out!

How many 12ths do you think are in 5 wholes?

## Three Shifts in Mathematics



## Three Shifts in Mathematics

## Focus on the standards.

- Significantly narrow the scope of content and deepen how time and energy is spent in the math classroom
- Focus deeply only on what is emphasized in the standards, so that students gain strong foundations


## Three Shifts in Mathematics

- Carefully connect the learning within and across grades so that students can build new understanding onto foundations



## Three Shifts in Mathematics

- Transfer of understanding
-1 hundred +4 tens $=$
-4 tens +1 hundred $=$
-14 tens $=\ldots$ tens $+\ldots$ tens
- Rigor also includes the daily of key language and multiple ways to show understanding of a concept.


## Standards for Mathematical Practice

## Target Problem Solving



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## Name that Practice(s)

Partners are given examples. Read and discuss the task provided and identify the SFMP on the sheet provided.

## Reading, Writing Arithmetic Applicable for the $21^{\text {st }}$ Century!

- Make Content Literacy a priority!!!

Vocabulary, Writing, Reading in Math

- Take it slow-Don' t try to implement everything at one time!!
- Make sure what you choose to do has a purpose and is meaningful!!
- Make vocabulary an everyday part of your classroom-Not just one special day of the week or month.
- If you want students to write in math, you have to teach them how to do so!


## Vocabulary

Word Sort- find similarities for words

Word Study- the connection between academic and domain-specific terms

Wordsplash- a preview of vocabulary used before, during, and after reading Math lessons.

# Sort With Four Circles 

- Give a list of vocabulary words, and four circles. Students must group the words into the four circles and give each circle a title!


## Words:

Variable Variable Expression Sum Product Quotient Difference Evaluate Integers<br>Rational Irrational Distributive Terminating Decimal Repeating Decimals Absolute Value



## Wordsplash

A Wordsplash provides students with an opportunity to preview vocabulary and share knowledge or ideas before beginning a lesson or unit.
Directions: Teacher creates a splash of vocabulary terms key to the unit or lesson on a page. In the center, use a graphic or title of the theme of the Wordsplash.
Students receive a copy of the page, read each term and either: draw a picture, write a definition, or give an example for the word. If a student has no idea what the word is or means, they circle it, During or after reading, they go back and correct the vocabulary and meanings if needed.

Teachers add between 4-8 words depending on student age. See example below Idea: Great to use as an assessment- students make their own.

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## Mathematics Vocabulary Wordsplash

numerator

denominator

equivalent
mixed
numbers

## Close Reading in Math Class!

Close Reading of text is an investigation of a short piece of text. Through text-based questions and discussion, students, are guided to:

- Deeply analyze the text or written task - Create deep meaning for vocabulary Martinez and Martinez (2001)


Students learn to use language to focus and work through problems, to communicate ideas coherently and clearly, to extend their thinking and knowledge and understand their own problem-solving and thinking processes. Kathryn Sullivan (1982)

# triumphlearning" Differentiate With a Tiered Web 

Read pp. 53-56. Define
4 key terms from the lesson in your
journal. Explain to a partner how a
fraction is converted to a decimal
and how a decimal is converted to percent.

Read pp. 53-56. Give a real-world example of when you might need to convert a decimal to a percent. Solve the problem on page 56 and discuss answer with a classmate.


Fractions and Decimals
Fractions, Decimals, and Percent's


Read pp. 53-56 with a partner.
Write down 4 key words to remember
from the lesson. Create a chart with
four rows like the one on p. 53.
Complete the table with your own

conversions.
Read pp. 53-56. Write a rap or poem explaining how to convert fraction to decimal and to percent. Use at least 4 terms from the lesson.

## WRITING IN MATH!!!

## TRUE UNDERSTANDING HAPPENS WHEN ONE CAN EXPLAIN A CONCEPT TO ANOTHER!

- Each One Teach One!
- Quick Write
- Interactive Journals


## Quick Write

## Description

A versatile strategy used to develop writing fluency, to build the habit of reflection into a learning experience, and to informally assess student thinking.
The strategy asks learners to respond in 2-10 minutes to an open-ended question or prompt posed by the teacher before, during, or after reading. Directions

1. Explain that a Quick Write helps engage students in thinking about a content topic before, during, and after reading. Stress that in a Quick Write, students respond to a question or prompt related to the text by writing down whatever comes to their minds without organizing it too much.

## Mathematics

Before, during, and after reading a math text selection Help students learn to express their thinking and understanding of math concepts by having them describe their thoughts in short, non-graded writing. Examples:
-What does it mean to "solve" an equation?

- What kind of quadrilateral do you feel is most "balanced?" Why do you think that is so?


## Quick Write to Introduce a Unit

Theme: Arts and Crafts
Problem Solving: Using Ratio, Proportion, and Percent
Directions: Write another paragraph about the jewelry Flora's mom will make. Include some information from the table.

Flora's mom wants to make jewelry to sell. She asks Flora to do research online to find the costs of some supplies. Flora organizes her findings in a table and shows it to her mom.

| Crystal Beads | Glass Pearls | Stringing Wire |
| :--- | :--- | :--- |
| \$2.50 per bag | \$3.99 per <br> package | \$18.99 per spool |

## Impact of Math Notebooks on Student Achievement

Research shows that student
understanding and mathematical literacy skills improve when students do hands-on minds-on math and use the notebooks to make real-world connections.

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## Interactive Journaling Putting the Practices into Play!



## triumphlearning Journaling

This math unit is all about prime and composite numbers, factors and multiples, multiplication and division strategies, and order of operations. For multiplication strategies, make a 6-flap foldable to help students with the different strategies. As you can see, there is a flap for:
-the definition
-common words related to multiplication -the traditional algorithm
-picture strategy
-array strategy
-box and cluster strategies
Taken from: teachingblogaddict.com (Runde's Room)

## Math Interactive Notebooks

What are they? Why use them? How to use them.
Impact on Math thinking!


# What are Interactive Math Notebooks? 

- A student thinking tool
- Reflection on instruction


An organizer for thoughts, questions, and what I learned...

- A way to access and process learning utilizing various modalities (writing, drawing, and discussion)
- A formative assessment tool for teachers
$\square$ A place for math literacy through vocabulary and writing


## Why Use Interactive Math Notebooks?

$\square$ Express understanding through creatively

- Communication through speaking and writing
- Improve critical thinking skills


# Right Side? Left Side? What Goes Where? 



Left Side<br>Student Output<br>Lots of Color

The brain remembers things in color better.

- Concept Maps
- Created word problems using process
Drawings
- Reflective Writing
- Questions
- Data and Graphs
- Graphic organizers and semantic maps
- Raps to remember concept
- Poems for formulas and vocab.
- Cartoons or cartoon strips


## Right Side <br> Teacher Input/Content <br> Blue or Black Ink/pencil

- Information given in class
- Lecture Notes
- Ex. Math Activities
- Definitions of vocabulary
- Summaries/sample problems
- Textbook Notes
- Procedural notes for problem solving
- Classroom Specific Information





## Triumph Learning as your Common Core Solution!

## Accelerate your Students' Success

With Resources Designed and Written for the Common Core Standards!


Phase 2 Common core Clinics 1-8


Readiness for the Common Core


SFMPs Math Problem Solving


Phase 3 Common
Core Coach 1-8 and HS


Common Core Support Coach 3-8


Target Foundational Skills

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