

Welcome to a Session that Couples Fun Math Activities with Literature Making Meaningful Connections

Math Skills Skyrocket with Challenging and Fun Everyday Activities for Grades 1,2, and 3

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## Goals for the Sessions

I. Share practical, attention getting activities to get students to skyrocket math learning.
2. Contextualize and make math learning intellectually vibrant and fun with math-themed literature to promote math thinking, fluency, and meaningful math-centered conversations.

## Session Focus

I. Coupling fun math activities with literature makes meaningful connections with everyday living.
2. Skyrocketing math learning by using:

Error Pattern Analysis.
Literature and stories to get the rocket busters operating.
Poems, and Songs.
Movement Math Activities.

## Common Core Math Standards-Grades I, 2, and 3

## Agenda

Part I: Hosting a "Morning Meeting" The Task ..

Part II: Instructional Ideas to Consider (stand up if... sit down when named)
A. Six Online Math Fundamentals
I. Establish a math routine.
2. Give actionable \& specific feedback (formative assessment).
3. Communicate regularly and clearly with students and parents.
4. Maintain expectations.
5. Scaffold math learning.
6. Offer student choice.
B. Adding one more .....*7

Analyzing students' math answers (Error Pattern Analysis)
Part III: Focusing on Activities to Accelerate Math Learning
A. Fun and engaging activities.
B. Math-themed books, poems, and songs.

## Let's pretend it is our "Morning Meeting" time.

I. You had a "Task" ... Please tell let everyone know what you were asked to do.

You were asked to take a picture of a room where you live or out the window.

## The question this morning is:

What math is conveyed in your photo?
(What math do you see in the photo/picture?)
(Picture may convey an idea more quickly and effectively than the written word.)
II. Everyone please hold your pictures to your screens.


If you have a birthday in January, please describe the math that is in your photo. Next have a birthday in March please share. Birthday in September


## Narre: Elias

For illustrative purposes only 10 of the 25 problems are shown.



Accelerate Math Learning by
Pinpointing Error Patterns in Students' Work
How do we know students know?

- Let's look at Madison's work on the left, telling time.
- Now, look at Elias' work on the right.


## Let's Take a Quick Look at Solving Word Problems

## Applying the Error Pattern Analysis Strategy

I. Common factual, procedural, and conceptual mathematical errors.

II. Reading skills .

Limited math vocabulary (e.g., difference, addend, subtrahend, factor, etc.).


Limited In reading text with vocabulary and complex sentence structure, struggling to understand what is being asked.
Inability to identify relevant information (determining which pieces of information are relevant and which are irrelevant to solve the problem). Lack of prior knowledge in experiencing the context in which the problem is embedded.
Inability/challenge to translate the information into a mathematical equation.

## So, what do you do?

III. Pinpointing errors using five prompts as students solve word problems.

| Prompts | Hurtles <br> What is the difficulty? What will you do? |
| :--- | :--- |
| I. Please read the problem to me. (decoding). | Reading |
| 2. Tell me what the question is asking you to do. | Comprehension |
| 3. Tell me how you are going to find the answer. | Transformation |
| 4. Show me what to do to get the answer. | Processing skills |
| 5. | Now, write down your answer. | Encoding |  |
| :--- |

# Continuing with Promoting Problem Solving Activities to Accelerate Math Learning 

\#I. Who listened to this book read?
What is the message in this book?
https://www.youtube.com/watch?v=UrEIYjblITk or
https://www.youtube.com/watch?v=r3-iWtnFq3A.

How would you use this book with your student as a way introduce problems solving?
I. Think of a problem that you have experienced.
2. What would the opportunities be associated with that problem?
3. Prepare a sheet like the one below to keep track of the problems and opportunities.

By Yobi Yamada



## Other books that focus on challenges that students might encounter.



Too Shy for Show-and-Tell by Beth Bracken. https://www.youtube.com/watch?v=ITsa8X0VZ9Y

The Book of Mistakes by Corinna Luyken. https://www.youtube.com/watch?v=LE3167gBtG0

The Invisible Boy by Trudy Ludwig https://www.youtube.com/watch?v=iTz6Vv6MEkI

My Very Own Space by Pippa Goodhart. https://www.youtube.com/watch?v=wKahCLinZHc

## \#2 Tic-Tac-Toe, a simple yet one of the best games for practicing decision making.

A. Not only do you need to choose squares that will help you get a row of three. It takes a lot of concentration to win at this game.
B. Draw a simple table like the one below in Jamboard/Padlet/Sketch Pad. Check out https://playtictactoe.org/.

## \#3 Looking for Patterns


A. Define what a pattern is. Have students look for patterns in their homes. When students are solving a mystery, they look for patterns in time, place or people to gather facts. Take a look at a short video, What are Patterns? https://drive.google.com/drive/folders/122sqmrrjeJfDBctRC7P6TpA9jWXuFuLP

Check out, The Missing Mittens by Stuart Murphy at https://www.youtube.com/watch?v=vuGj6-qlo5c

Start with taps and claps. Begin rotating between tapping on a counter/table and clapping your hands: tap, clap, tap, clap, etc. For more pattern ideas, http://albany.kl2.or.us/media/2016/04/snap_cap_patterns.pdf Another sequence, flap arms, clap hands, snap fingers ... Good way to keep your students moving. Ask students develop patterns using different sounds.

As students to describe the sequence of movements and sound (Math Talks). You are looking for the word "pattern" in their explanations. Continue this process of making patterns that are increasingly more difficult to decipher.
B. Then use figures like the following:

Ask the following questions about the example above:
I. Does anyone see a pattern?
2. What pattern do you see? What comes next?
3. Is there more than one possible pattern?
C. Looking for weather patterns with a paper plate Caterpillars.

\#4 Shapes Sudoku. Have the students solve the shapes Sudoku problem below. Have the students create their own Sudoku problems to share with the class.



Georgia O'Keeffe Museum

Extending The Greedy Triangle book. https://www.youtube.com/watch?v=kPul4XyyZUE
I. Let's play "I Spy Shapes" Game https://www.youtube.com/watch?v=-Hh2 x7jujl
2. Georgia O'Keeffe for Kids, continue with the "I Spy Shapes Game."


## \#6 Number Talks (or "Math Talks")

A. The focus is on identifying all the possible strategies to find the answer. to a problem. Students explain their strategies/methods, while others learn from these explanations of how they solve the problem.
B. Get started by giving students a SHORT math problem to solve without a calculator or paper \& pencil. The goal is to have them solve it in their heads! Ex. below shows 4 different ways of finding $5 \times 18$.

C. Besides talking, teachers and students exchange math ideas. Exchange is key so that students share their ideas, communicate their understandings, and ask questions.
D. Math Talks provide opportunities to understand and analyze students' thinking (formative assessment) by posing meaningful questions and developing grade-level-specific grade level problems. Number Talks support the Common Core State Standards for Mathematics.
E. Use Hand Signals during Number Talks. [Phonemic Awareness]

## \#7 Everyday Real Life Math Learning at Home

A. Math in the Kitchen (Cooking with Kids, popular program at school)
B. Math on the Road

C. Math at the Grocery Store. [Now with masks!]

D. Math Through Whining (Learning about time, estimation .... how long will it take you to clean your room?)


## \#8 Math with Mr. R's ...

A. Use choral responses https://www.youtube.com/watch?v=uDSWMjtMff4 (counting by 5 s )
B. Donut Subtraction https://mathstory.com/youtube-math-videos/subtraction-song-missing-donuts-mystery/
C. Math Songs, Poems https://mathstory.com
D. Music Videos https://mathstory.com/youtube-math-videos/
https://mathstory.com/youtube-math-videos/7-x-8-song/


## E. Plus, Other Songs

https://video.search.yahoo.com/yhs/search?fr=yhs-pty-pty forms\&hsimp=yhs-
pty forms\&hspart=pty\&p=distributive+property+songs\#id=2\&vid=c9ba9751449abd5e39404c8e9fl5cdde\&actio $\mathrm{n}=$ click
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\#9 Connecting Math and Literacy by ...

## Writing a Number Poem

By $\qquad$

Number $\qquad$ looks like $\qquad$
and sounds like $\qquad$

Number $\qquad$ smells like $\qquad$
and tastes like $\qquad$
Writing an Addition, Number $\qquad$ feels like $\qquad$ -

[^0]$\qquad$ because $\qquad$
Subtraction Story ... .


Wha listened ta .....?

## By Stuart Murphy

https://www.youtube.com/watch?v=LNZUErh3rUM

## By Kathi Appelt

https://www.youtube.com/watch?v=CUnTVIX5yc4


## By Brian Cleary

https://www.youtube.com/watch?v=sSW2Vmq7epl


Mark Cassino
https://www.youtube.com/watch?v=ZtXUOWKmuBE


## Snowflake Bentley

https://www.youtube.com/watch?v=rtyLpo3cWic
Bentley's photographs revealed that no two snowflakes are exactly alike and provides an context for problem solving involving multiples of three and six.


## Counting on Literacy to Scaffold Math Learning...

## https://www.sftumbleweeds.com/articles/counting-on-literature



Fiction and nonfiction literature and informational materials contextualize math concepts and offer opportunities to make sense of problems, construct viable arguments, and model by thinking, talking, and writing math.

Math-themed literature engages students in active learning by getting them to persevere while using concrete-representational-abstract learning sequences. Math and literacy in concert support and strengthen students' math reasoning and problem-solving skills and contribute to meaningful and targeted math talks and higher order thinking.

For practice, have students read math-themed books to a pet, stuffed animal, or friend.

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Mission: Addition

## Loreen Leedy


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Books
Subtraction and Counting

https://www.youtube.com/watch?v=A vxSUi1Zv4।

Measuring Penny by Loreen Leedy is a fun story about a young girl who has a homework assignment to measure something in several ways. https://www.youtube.com/watch?v=-kHI Qh6bgq0


## On Reflection ...

- Q\&A, Comments ....
-One take away from the session?


What did you discover or learn?
-What surprised you?


## Thank you!

Keep in Touch! Contact: jreinhartz@utep.edu


While waiting for our session to start, please remember to:

USE only your FIRST NAME in your image. (right click in your image box, then click "Rename").
$\checkmark$ Make sure your VIDEO is on (bottom of your screen).

## Welcome

$\checkmark$ Make sure your AUDIO (Mic) is on (unless you have excessive background noise).
$\checkmark$ If you have questions, please use the CHAT box at the bottom center of your screen.

## Many Thanks!

Orr. Yudy and Yenifer


Skyrocketing Math Learning
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## Jennifer Benzo Sotodosos and <br> Ericka Encinias <br> Teacring Matr Virtually in Grade 3

Sweeney Elementary School, SFPS

MathAmigos E-Coaching
Program

## Creating Word Problems

## $+$ <br> 

Giving equations for multiplication.
Students write the story for the problem.
Model the equation.
Solve the equation.
Explain their answer in words.
gle.com to meet.google.com
Share this tab instead
nsert Format lools Add-ons Help Last edit was made 3 minutes ago by Ericka Encinias


Word problem and solve for $3 \times 4$.


## Student Work

Word Problem: There are 3 white squares times 4 black squares how many squares are in total? $3 \times 4=$ ?

Answer: I found the answer by making a column of 4 with 3 rows and added them up and got 12 for the answer $3 \times 4=12$

## $5 \times 3=$

The were 5 pens with 3 pigs in each pen. How many pigs
 are there in all?

There are 15 pigs
 all together.

## Student Work (Sketch Pad)

## Student Work (Sketch Pad)



## Student Work (Sketch Pad)



## Student Work (Sketch Pad)



## Student Work (Sketch Pad)



## Student Work (Sketch Pad)



## Student Work (Math Manipulatives)

https://docs.google.com/presentation/d/1jadlg9nk64U9gWtj4QEbd-AEzVtCXQeH-
y44LPXIF3M/present?slide=id.g27b693dca5 0261


## Student Work (Virtual Math Manipulatives)



## Student Work



## Links for Virtual Tools

INTERACTIVE BOARD : https://sketch.io/sketchpad/

VIRTUAL MATH MANIPULATIVES: https://docs.google.com/presentation/d/ljadlg9nk64U9gWtj4QEbd-AEzVtCXQeH-y44LPXIF3M/present?slide=id.g27b693dca5 0 261


READ ALOUD BOOK, The 512 Ants on Sullivan Street by Carol A. Losi
https://video.search.yahoo.com/yhs/search?fr=yhs-pty-pty forms\&hsimp=yhs-

pty forms\&hspart=pty\&p=5I2+ants+read+on+youtube\#id=2\&vid=df4380ab7c3babd87e760d3b8329a8ad\&action=view
This tale teaches the concept of doubling and can be used as an introduction to multiplication. A family goes on a picnic and attracts ants, listen to the story to see what happens.

Here Comes the Teacher from El Camino Real Academy, SFPS

MathAmigos E-Coaching Program


Here Comes ... Anne Brito

Fourth Grade Team Leader Sweeney Elementary School, SFPS

MathAmigos E-Coaching Program

## Activities

A. Students were divided into two groups.
B. Group I used geoboards and virtual geoboards to create the polygons from the story.
C. Group 2 used the writing prompt: Which polygon do you want to be and why?


## सum a


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$\pm$






I would want to be a circle because I would be able to roll down the tallest hills and be thrown by someone and it would be fun because you could travel as far as you like because you could become a tire.


I want to be a pentagon so I can hear all the While House top secrets.


I want to be a circle because I want to roll around and down stairs and because I get to be the middle of a bow tied in someone's hair.


More Samples from Fourth Graders
Creating buildings using polygons and applying different types of angles.

- Q\&A and Comments
- Do you have ideas to share?
- What did you discover or learn?
- What surprised you?



## Thank you!

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[^0]:    and I like number

