

Math Storytelling

The Purpose and Power of Math Storytelling

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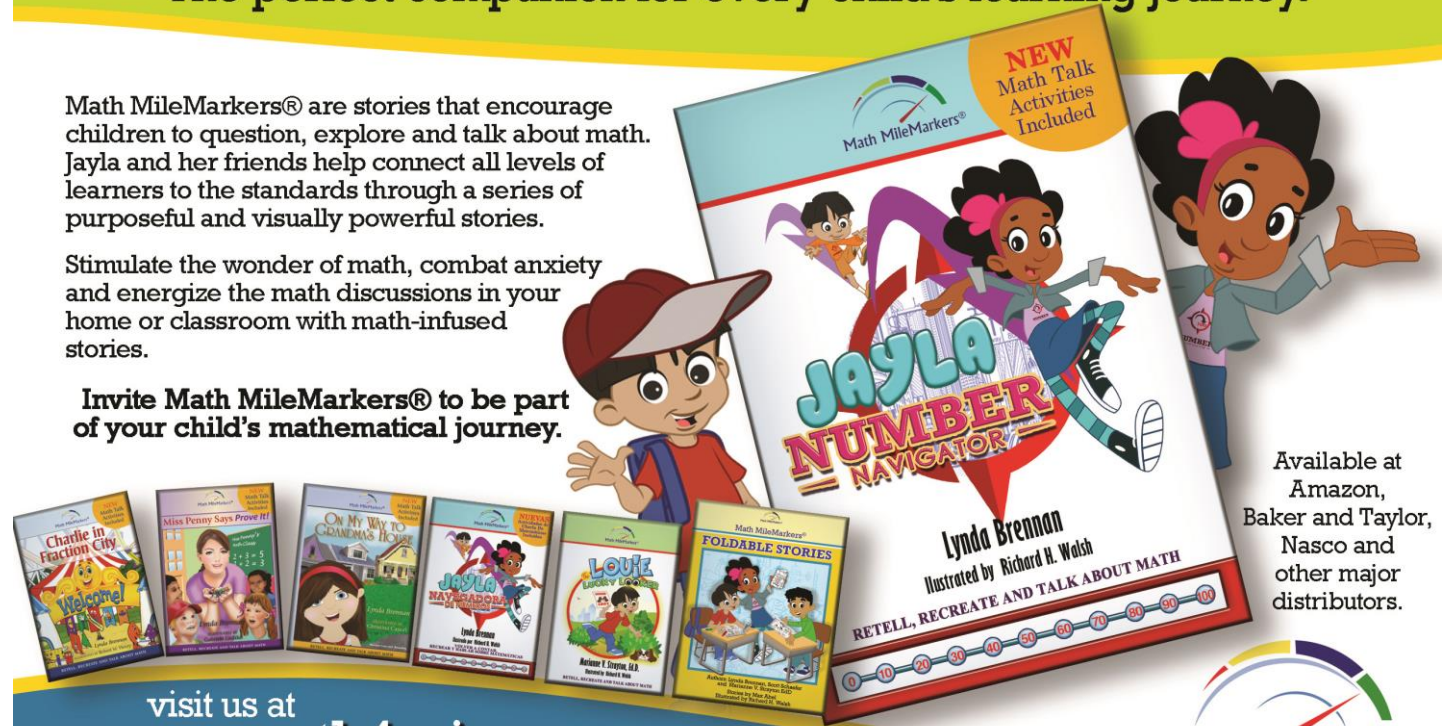
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Math MileMarkers® Math-Infused Stories The perfect companion for every child's learning journey.

Math MileMarkers® are stories that encourage children to question, explore and talk about math. Jayla and her friends help connect all levels of learners to the standards through a series of purposeful and visually powerful stories.

Stimulate the wonder of math, combat anxiety and energize the math discussions in your home or classroom with math-infused stories.

Invite Math MileMarkers® to be part of your child's mathematical journey.



Available at
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Baker and Taylor,
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distributors.

visit us at
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Standards-Based Stories that Help Students Learn to Love Math!





Math Storytelling

Picture books allow all children entry into the mathematical learning!

“It is not our intention to simply capture the students’
We also intend to focus that attention on the
mathematics contained within the story. For us, the
story is a means to an end, not an end unto itself.”

Rina Zazkis and Peter Liljedahl

<https://www.sensepublishers.com/media/1019-teaching-mathematics-as-storytelling.pdf>





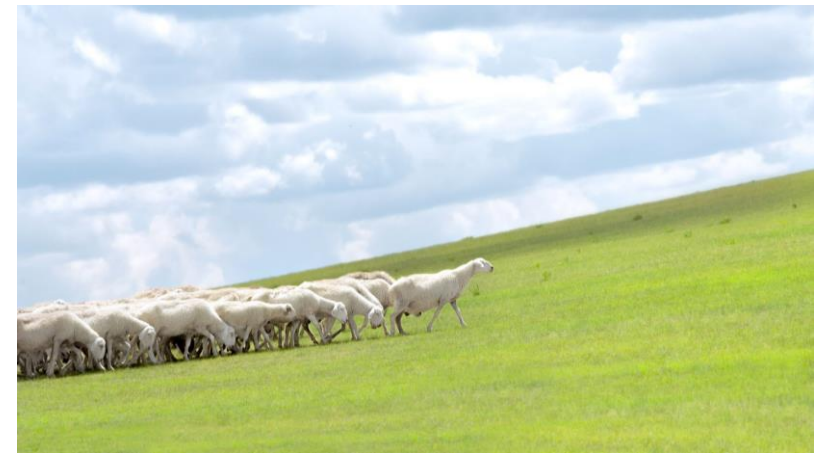
The Purpose and Power of Math Storytelling



“A Story”

Is it possible, without counting, to make sure that the same number of sheep returned in the evening as left in the morning?

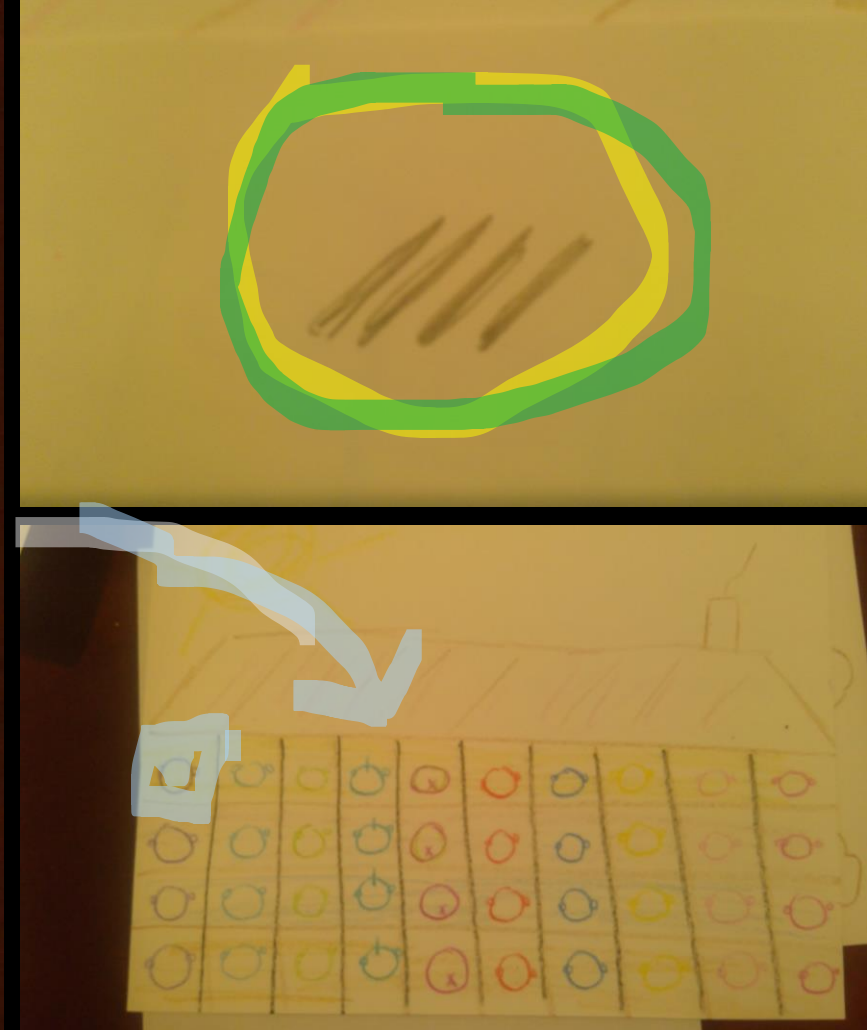
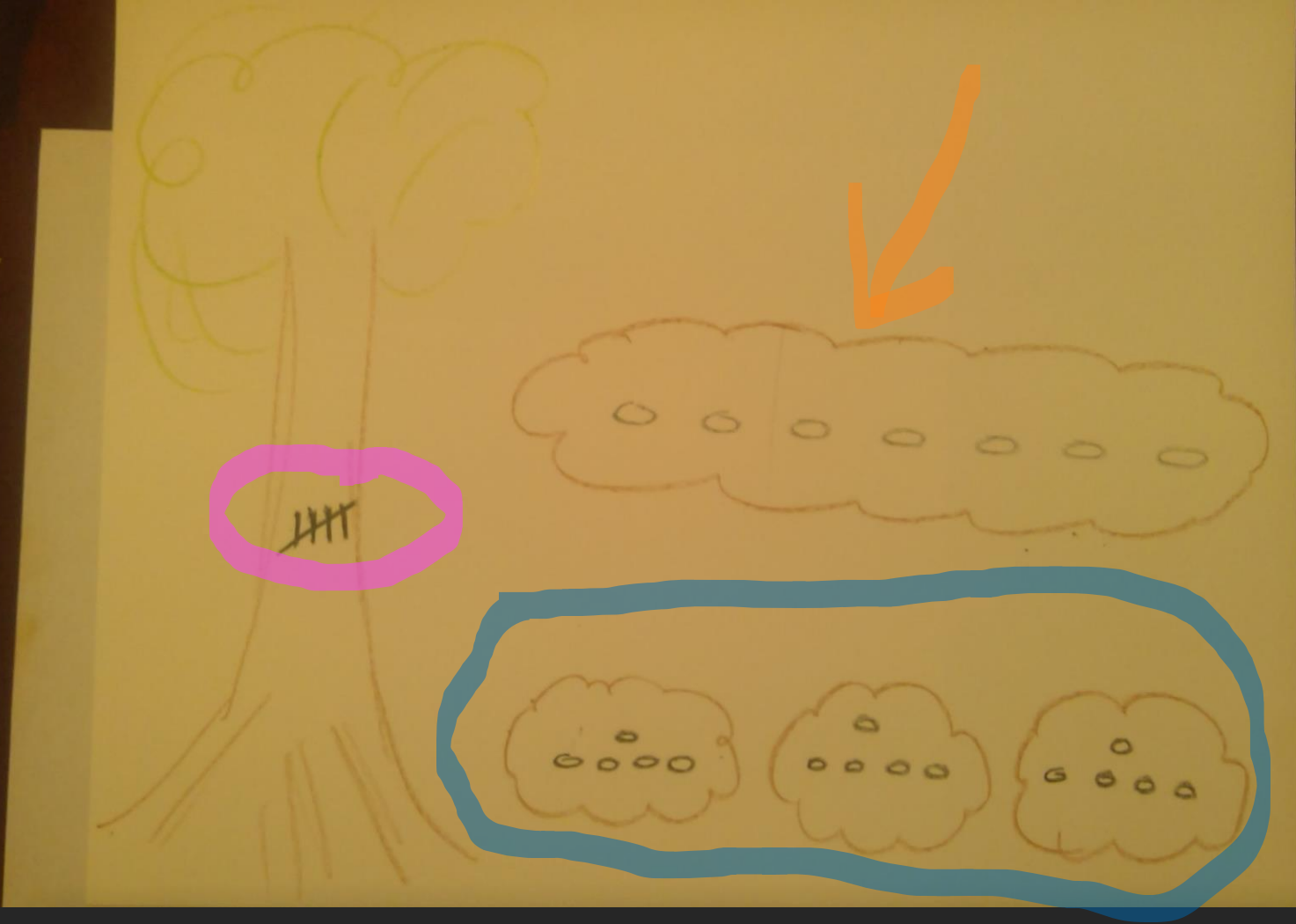
Source:
Teaching Mathematics as Storytelling
Written by Rina Zazkis and Peter Liljedahl



“Amzula, the chief shepherd of the Zalla tribe, was responsible for watching over the sheep. Every morning Amzula woke up before the sun rose and let the sheep out of their pens and into the pastures. The sheep explored the hills and the meadows, grazed on the green grass, breathed the crisp air, and satisfied their thirst with the fresh cold water of mountain fed streams. At dusk Amzula would call the sheep back to the safety of the pen before the fall of darkness. His most important job was to make sure that all the sheep had returned, for if any sheep were left out, they might fall prey to the wild animals that prowled the hills and the meadows at night. But here was the problem. Amzula could not count. In fact, no one in the tribe of Zalla could count. And no one in all the neighboring tribes of Agraba could count either. Not that these people were not smart, for they were. They just lived a long, long time ago, before humans knew how to count. Still, Amzula’s most important job was to ensure that all the sheep returned for the night. Remember, these sheep were very important to the people of Zalla.”

<https://www.sensepublishers.com/media/1019-teaching-mathematics-as-storytelling.pdf>



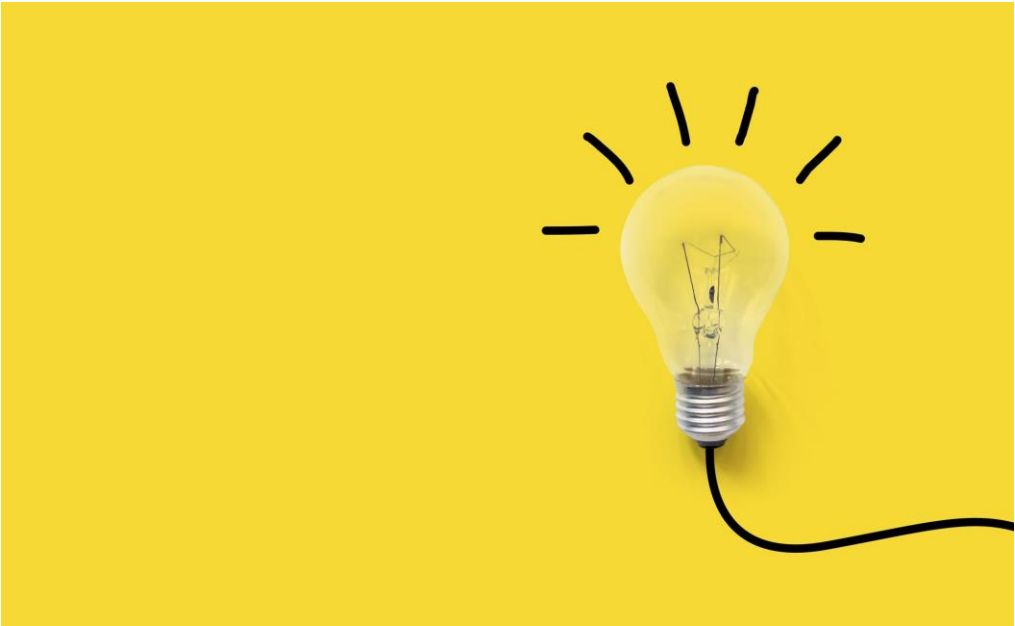


Counting Sheep without
Number Knowledge



Main Sources for Instructional Clarity

Establish your learning intention.



CCSS WHERE TO FOCUS GRADE 2 MATHEMATICS

This document shows where students and teachers should spend the large majority of their time in order to meet the expectations of the Standards.

For all content in a given grade is emphasized equally in the Standards. Some clusters require greater emphasis than others based on the depth of the ideas, the time that they take to master, and/or their importance for future mathematics on the domains of college and career readiness. Focus time on those areas to best prepare the students to meet the Standards for Mathematical Practice.

Students should spend the large majority of their time on the major work of the grade. Supporting work and, where appropriate, additional work can engage students in the major work of the grade.

MAJOR, SUPPORTING, AND ADDITIONAL CLUSTERS FOR GRADE 2

Clusters are given in the order of their importance to the Common Core State Standards for Mathematics for the specific standards that fall within each cluster.

Key: ■ Major Cluster ■ Supporting Cluster ■ Additional Cluster

2.OA.A ■ Represent and solve problems involving addition and subtraction.

2.OA.B ■ Add and subtract within 20.

2.OA.C ■ Work with equal groups of objects to gain foundations for multiplication.

2.NBT.A ■ Understand place value.

2.NBT.B ■ Use place value understanding and properties of operations to add and subtract.

2.MD.A ■ Measure and estimate lengths in standard units.

2.MD.B ■ Relate addition and subtraction to length.

2.MD.C ■ Work with time and money.

2.MD.D ■ Represent and interpret data.

2.GA ■ Reason with shapes and their attributes.

HIGHLIGHTS OF MAJOR WORK IN GRADES K-8

K-2 Addition and subtraction: concepts, skills, and problem solving; place value.

3-5 Multiplication and division of whole numbers and fractions: concepts, skills, and problem solving.

6 Ratios and proportional relationships; early exponents and equations.

7 Ratios and proportional relationships; arithmetic of rational numbers.

8 Linear algebra and linear functions.

REQUIRED FLUENCIES FOR GRADE 2

2.OA.B.2 Single-digit sums and differences from memory by end of Grade 2.

2.NBT.B.5 Add/subtract within 100.



Official

VISIBLE LEARNING FOR MATHEMATICS

What Works Best to Optimize Student Learning

GRADES K-12

MPACT

JOHN HATTIE, DOUGLAS FISHER, AND NANCY FREY
WITH LINDA M. GIOIAK, SARIA DELANO MOORE, AND WILLIAM MELLMAN
Foreword by Daniel J. Brans

Official FREE ONLINE VIDEO



Calm, Command and Conquer the Curriculum ®

Calm

- Establish Learning Intentions/Focus on the Standards
THINK BIG

Command

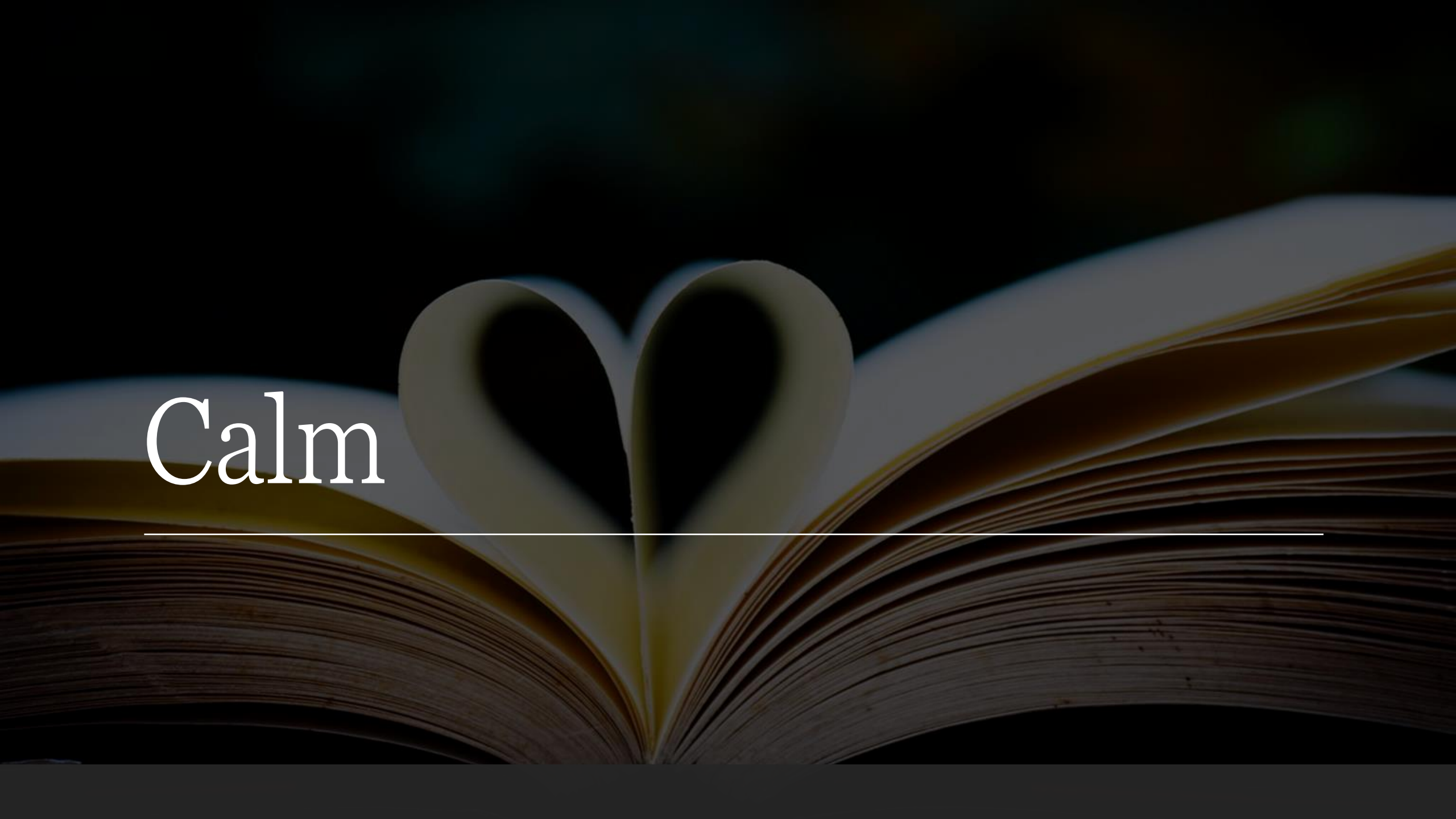
- Stories, Rich Tasks and Games
- PLAY HARD

Conquer

- Cultivate a Math Culture

HAVE FUN!



An open book is shown from a top-down perspective, lying flat. The pages are a light cream color and show signs of age with some yellowing and slight discoloration. In the center of the book, two pages have been cut out to form a symmetrical heart shape. The background is dark and out of focus. The word "Calm" is written in a white, serif font on the left side of the image, partially overlapping the book's pages.

Calm

Promoting in-depth understanding through Math Storytelling

Teacher's Ask....

What is the Learning Intention?

Will this story prompt Great Math Discussions and Discovery?

How can I actively Engage Students in Learning both during and after the story?



Mathematical Practice Standards

Help our students
become lifelong learners

Practice	Practice Standards
Make	Make sense of problems & persevere in solving them
Reason	Reason abstractly & quantitatively
Construct	Construct viable arguments & critique the reasoning of others
Model	Model with mathematics
Use	Use appropriate tools strategically
Attend	Attend to precision
Look	Look for & make use of structure
Look	Look for & express regularity in repeated reasoning





Horton Hears a Who?

Dr. Seuss

A person's a person
No matter how
small

Because after all...

A number's a number
No matter how small

Why do we tell stories in math?

Spark
Imaginations

Experience
Emotion

Encourage Deep
Thinking

Find Joy

Attach Memorable
experiences

Explore concepts

See Math in the
world around
them

Make connections
across grade
levels

Ask Questions

Resolve Conflicts

Inspire Creativity

Learn to Love
Math

Break through
language barriers

Make visual
Connections

Visualize Math
Models



Key Factors that influence growth

Feedback

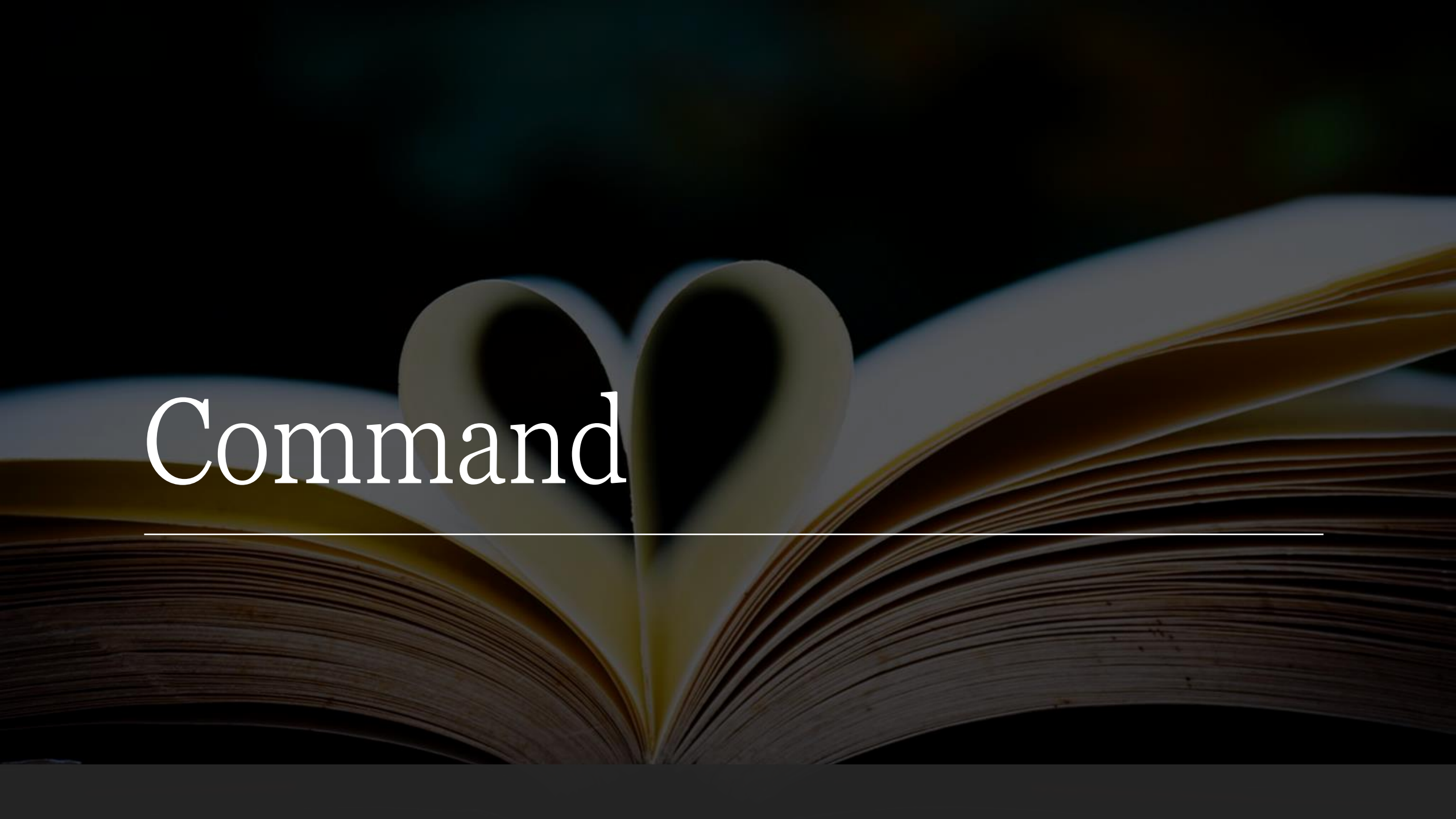
Visual Models and Connections

Classroom Discussion

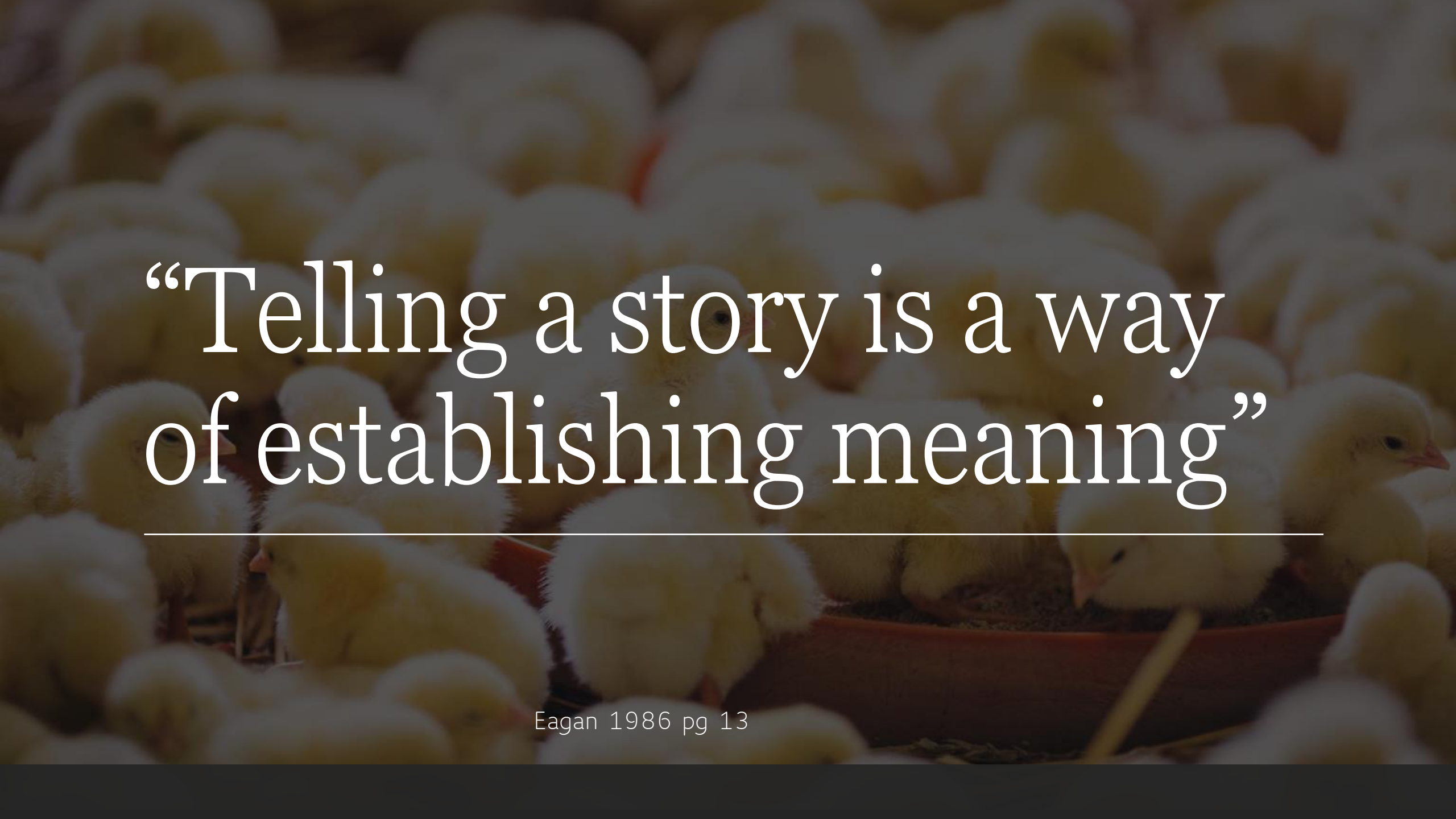
Teacher-Student Relationship

This reflect only a sampling of the key
influencers for growth inherent in
good math storytelling.

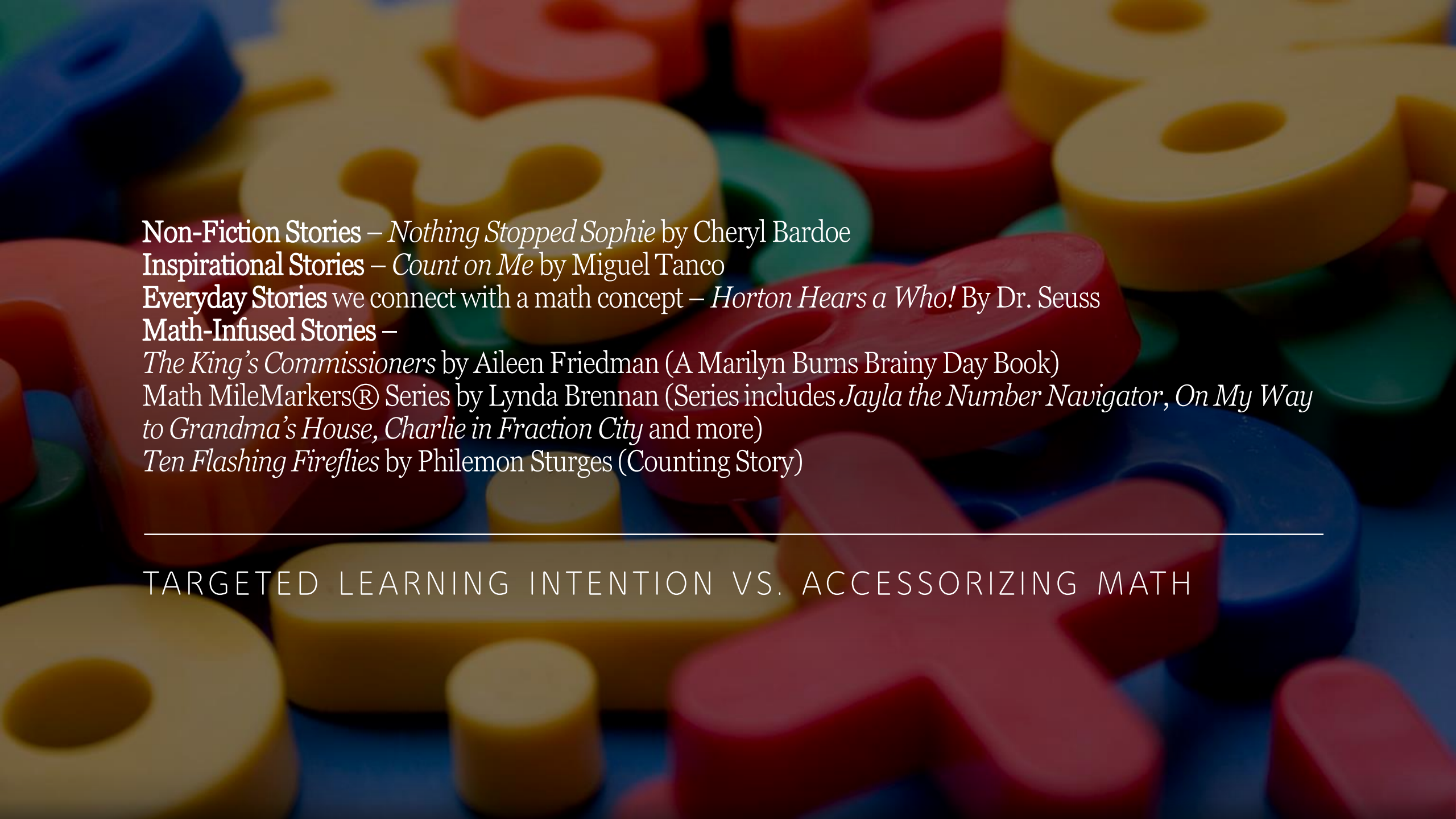


An open book is shown from a top-down perspective, with its pages fanned out. In the center of the book, a heart shape has been cut out of the pages, creating a symmetrical heart silhouette. The word "Command" is written in a white, serif font across the middle of the book, partially overlapping the heart cutout. A thin white horizontal line is positioned below the text.

Command

A large group of fluffy yellow chicks are gathered in a wooden bowl. The chicks are very young, with soft, downy feathers. They are looking in various directions, some towards the camera and others away. The background is a soft, out-of-focus yellow, suggesting more chicks or a warm environment. The overall tone is warm and nurturing.

“Telling a story is a way
of establishing meaning”



Non-Fiction Stories – *Nothing Stopped Sophie* by Cheryl Bardoe

Inspirational Stories – *Count on Me* by Miguel Tanco

Everyday Stories we connect with a math concept – *Horton Hears a Who!* By Dr. Seuss

Math-Infused Stories –

The King's Commissioners by Aileen Friedman (A Marilyn Burns Brainy Day Book)

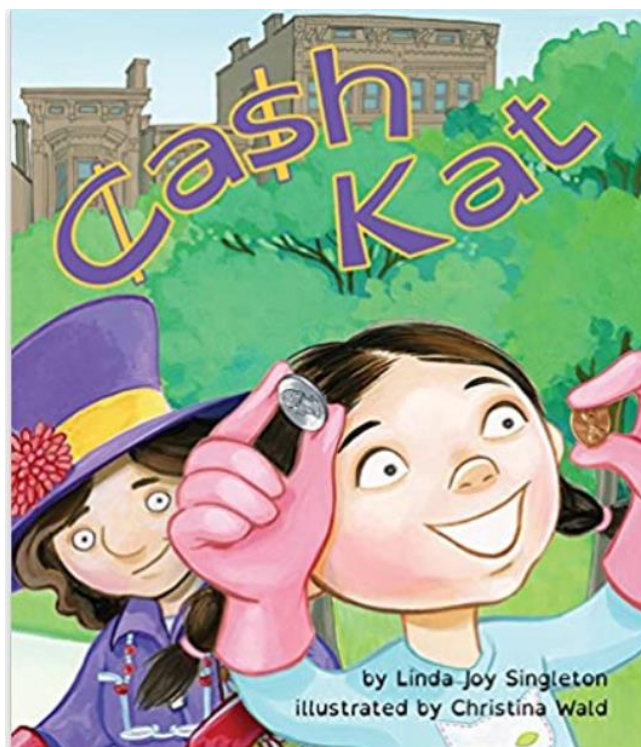
Math MileMarkers® Series by Lynda Brennan (Series includes *Jayla the Number Navigator*, *On My Way to Grandma's House*, *Charlie in Fraction City* and more)

Ten Flashing Fireflies by Philemon Sturges (Counting Story)

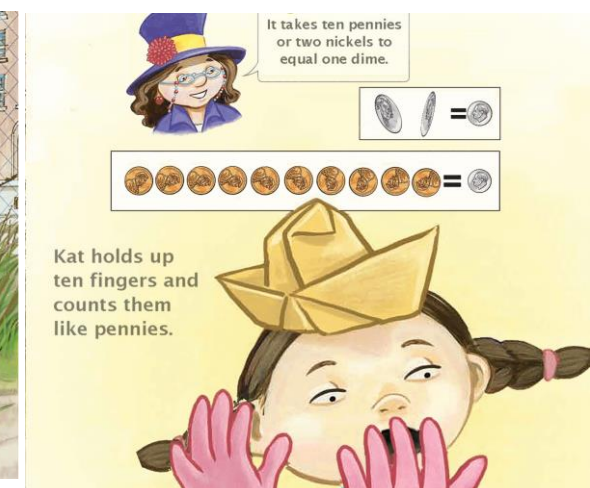
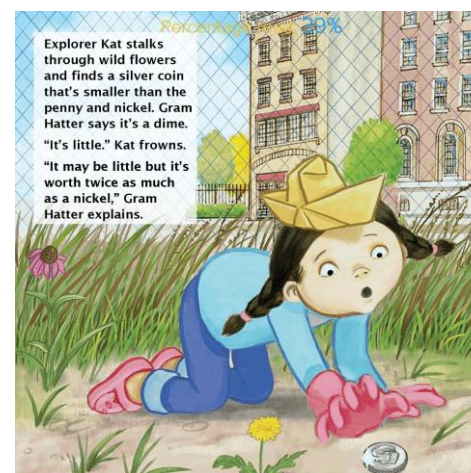
TARGETED LEARNING INTENTION VS. ACCESSORIZING MATH



Largest digital collection of math companion books.
Narrated and Animated to enhance content and student engagement. Accessible to all students.
Math library that currently serves over 100 countries.



It's so much more than a picture book . . . this book is specifically designed to be both a fun-to-read story and a launch pad for discussions and learning. We encourage adults to do the activities with the young children in their lives both at home and in the classroom. Free online resources and support at www.ArbordalePublishing.com include:



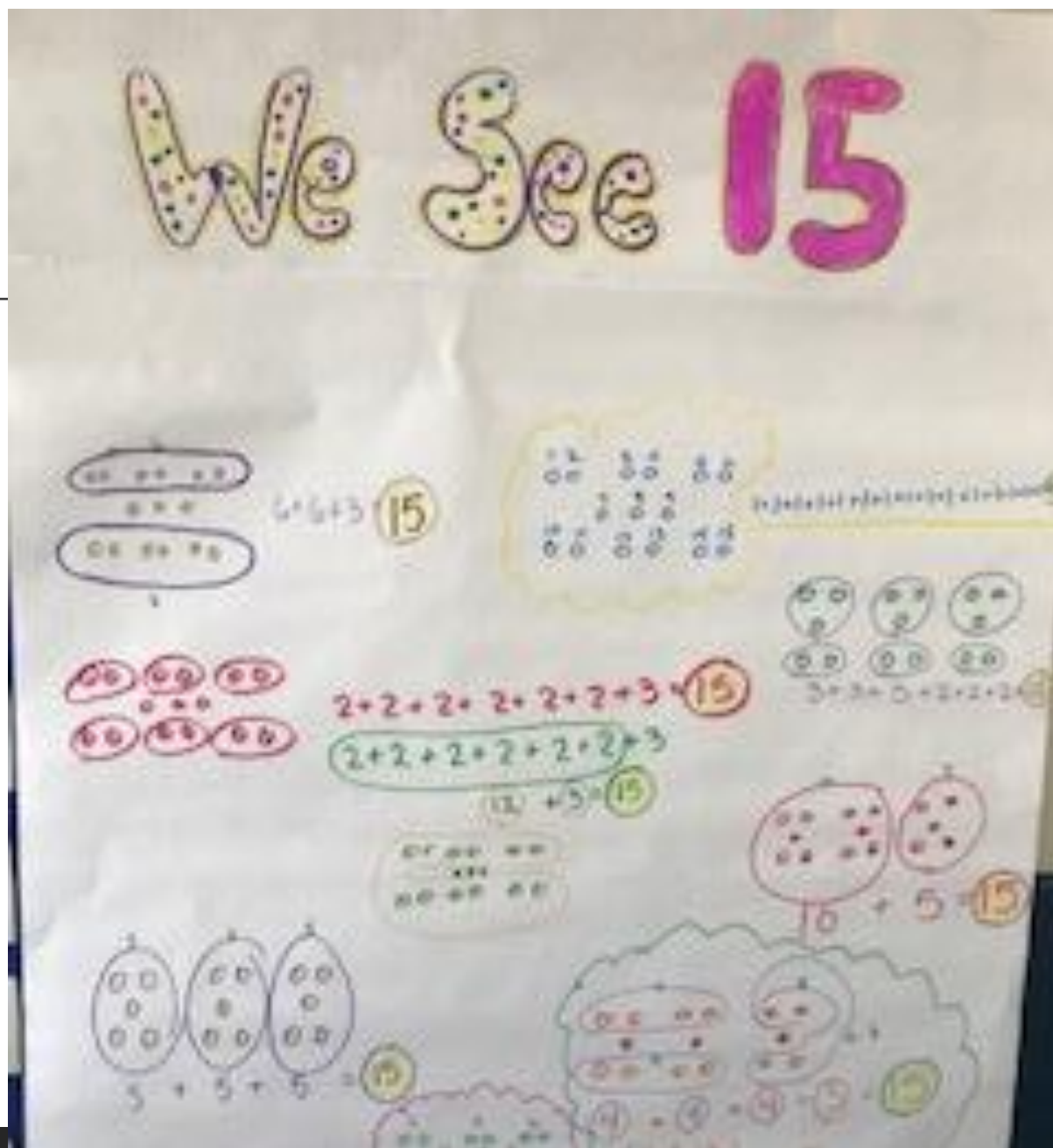
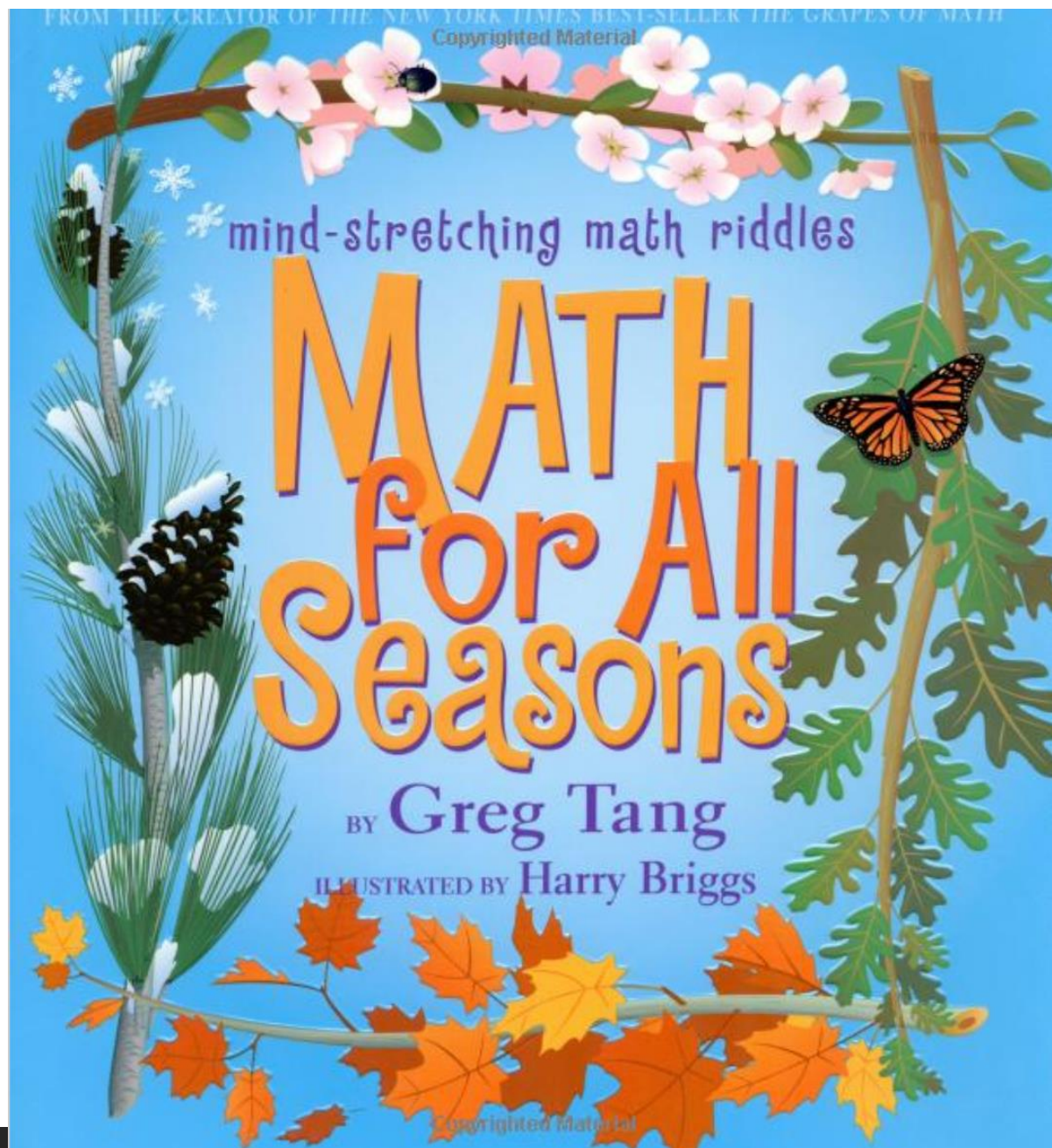
Author Linda Joy Singleton
Illustrated by Christina Wald

Gram Hatter and Kat set off on an adventure. Gram quickly folds up a pirate hat and places it on Kat's head and they begin their mission to help clean up the city park. Volunteering turns into a treasure hunt as Kat finds pennies, nickels, dimes, quarters and even a dollar. With each discovery Kat gets a new hat and Gram Hatter teaches Kat how to count her coins as they pick up litter at the park. When Kat adds up her money, there's enough for ice cream. Or should she donate the money to support the park instead?

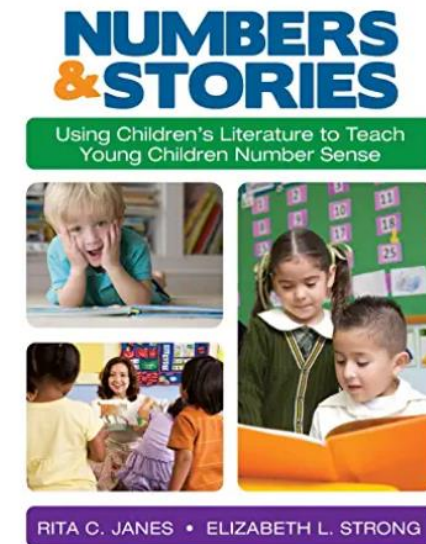
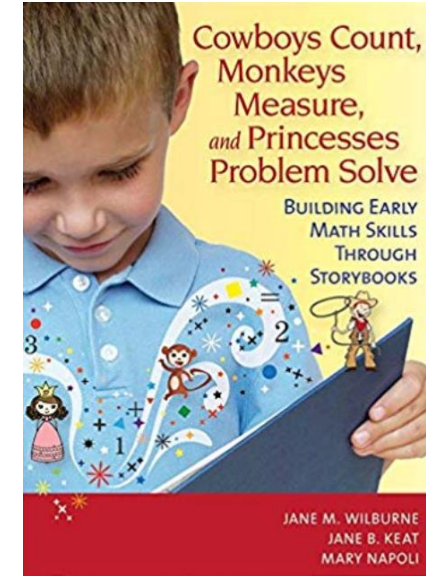
Arbordale Collection

TumbleMath.com





Focus on your Learning Intention



An open book is shown from a top-down perspective, lying flat. The pages are a light cream color and show signs of age with some yellowing and slight discoloration. In the center of the book, where the two pages meet at the spine, a heart shape has been carefully cut out. The heart is symmetrical and its edges are smooth. The background behind the book is dark and out of focus, making the book the central subject. The word "Conquer" is written in a white, serif font on the left page, positioned over the heart cutout.

Conquer



MATH STORYTELLING DAY

Math Storytelling Day is observed annually on September 25. This is a day to appreciate all the ways math enhances our daily lives.

Math Storytelling Day is a great opportunity to get children excited about math through stories and games. Math stories can include logic, patterns, puzzles, and numbers. Tell math jokes and sing songs about math.



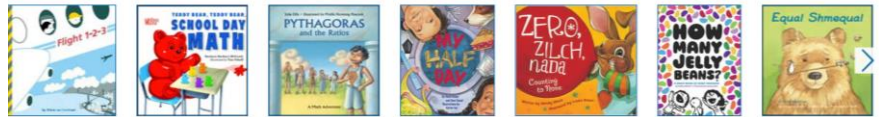
ew Books



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imbleMath Favorites



athStart



Tumble MATH



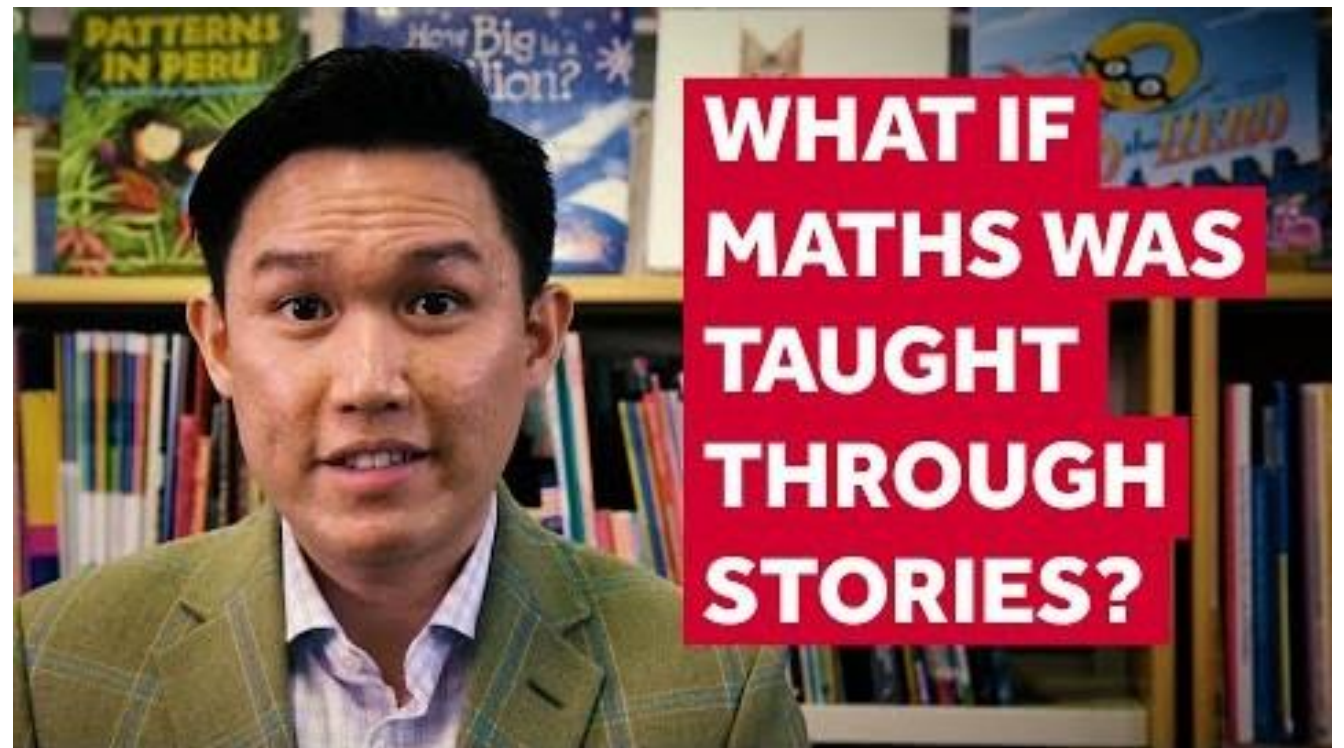
“TumbleMath is the comprehensive collection of picture books available online. It is an indispensable resource for math teachers.”

Terry L
Kinnelon, NJ

Largest digital collection of math companion books.
Narrated and Animated to enhance content and student engagement.
Accessible to all students.
Math library that currently serves over 100 countries.

FREE TRIAL ACCESS THROUGH AUGUST 31ST.

MathThroughStories.org
Dr. Natthapoj Vincent
Trakulphadetkrai



NUMBER
RECOGNITION

ONE-TO-ONE
CORRESPONDENCE

COUNTING FORWARDS
TO AND BACKWARDS
FROM 10/20

COUNTING FORWARDS
TO AND BACKWARDS
FROM 100

SKIP
COUNTING

LARGE
NUMBERS

COMPARING AND
ORDERING NUMBERS

ODD & EVEN
NUMBERS

ORDINAL
NUMBERS



About the YMSA Competition

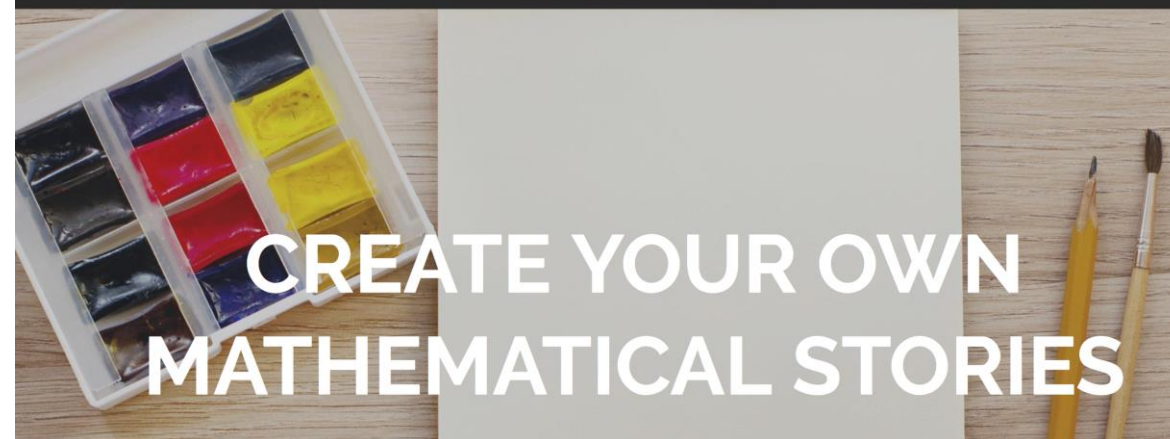
The Young Mathematical Story Author (YMSA) Competition is an annual international competition set up to encourage young mathematics learners (8-13 years old) from around the world to embed their mathematics learning in a meaningful and engaging context through creating their own mathematical story picture book. This competition is organised by MathsThroughStories.org, and its first competition will be held during the 2018/2019 academic year.

Judging Panel

In addition to **Dr. Natthapoj Vincent Trakulphadetkrai** (Founder of MathsThroughStories.org and Lecturer in Mathematics Education at the University of Reading, UK), our judging panel also includes two of the world's most prolific and best-selling mathematical story authors, Stuart J. Murphy and Cindy Neuschwander. Both Stuart and Cindy have also kindly agreed to let us name our annual awards for the winners of the 8-10 and 11-13 age group categories as **The Stuart J. Murphy Award** and **The Cindy Neuschwander Award** respectively.

<http://www.mathsthroughstories.org/create-your-own-mathematical-stories.html>

MATHSTHROUGHSTORIES.ORG



MSRI

Mathematical Sciences Research Institute

Mathical

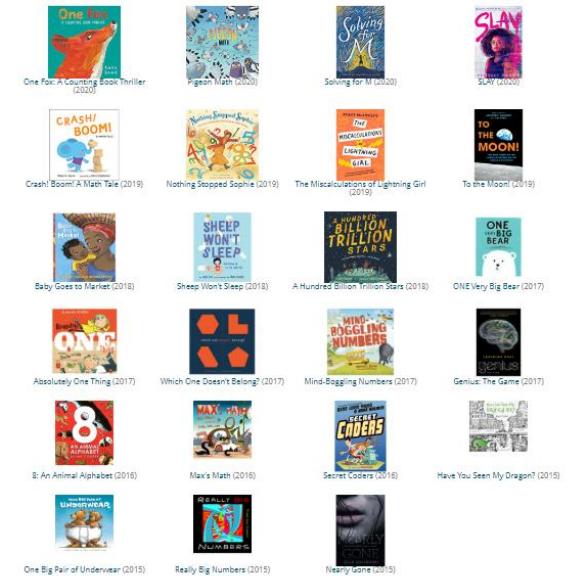
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Get the Mathical Book List

Math is more than numbers and equations! The Mathical Book Prize is an annual award for fiction and nonfiction books that inspire children of all ages to see math in the world around them.

2015-2020 Mathical Award Winners



Have a favorite mathy book to share with the world? **Suggest titles for the Mathical Book Prize!**

In coordination with:



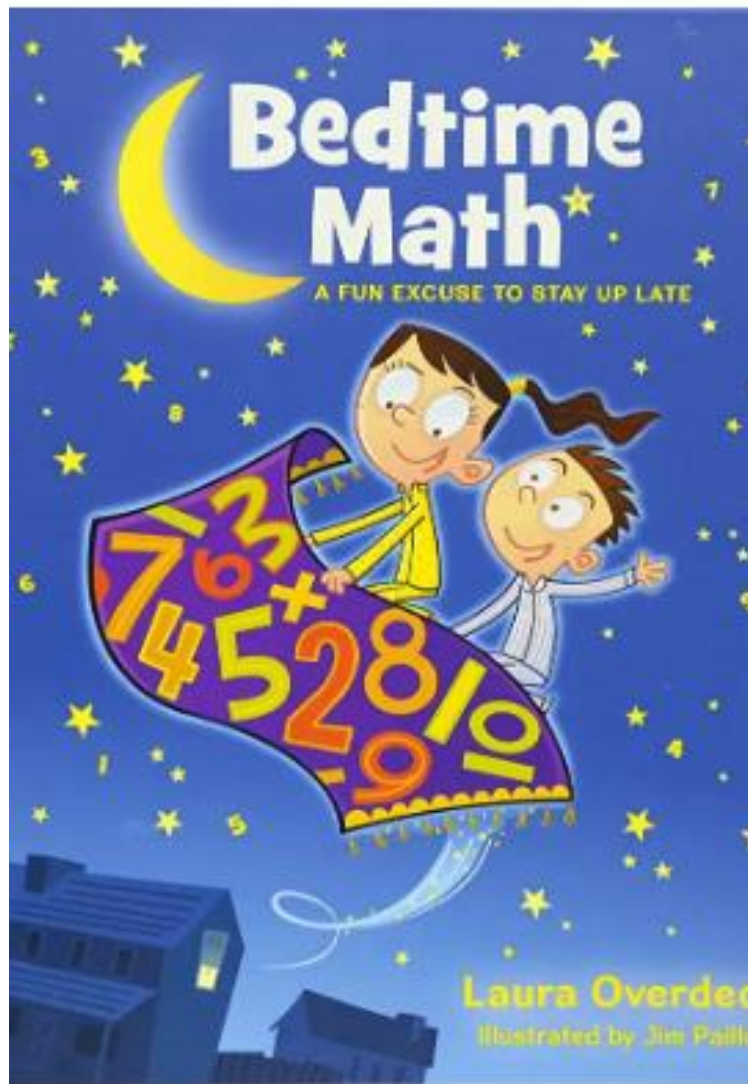
Educator partnerships:



National Council of
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NATIONAL COUNCIL OF
TEACHERS OF MATHEMATICS



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NATIONAL CHOCOLATE CHIP DAY



Photo: Anatheia Utley via flickr.com

May 15, 2020
By [Laura Overdeck](#) | [Daily Math](#), [Food](#), [History](#)

Today we celebrate one of our favorite foods: the chocolate chip. These tiny tasty pieces melt into yummy gooeyness in any warm dessert. So who invented the chocolate chip? Some say that in 1930, baker Ruth Wakefield wanted to make chocolate cookies, where the cookie dough itself is chocolatey brown. She had run out of cocoa powder, so instead mixed tiny chunks of chocolate bar into the batter. She thought the chips would blend into the batter as the cookie baked. The chips did melt, but they stayed in gooey little blobs in a vanilla cookie. Thanks to that mistake, we have the chocolate chip cookie! We now stir and sprinkle chips into cakes, ice creams, and pies. No matter how you do the math, the answer is "Yum."

Wee ones: Which has a smaller number of chocolate chips, a cookie with 4 chips or a cookie with 6 chips?

Little kids: If a cookie has 10 chocolate chips, what numbers are the 3 chips you eat after chip #5?
Bonus: How do you count the chips you eat in your first 5 cookies, if you count by 10s?

Big kids: You can mix melted chocolate chips with whipped egg white and whipped cream to make chocolate moussel if the recipe needs 120 chips and you have 2 bags of 70 chips each, do you have enough chips? *Bonus:* If instead you make chocolate chip cookies, and you need 15 chips in each, how many "good" cookies can you make?

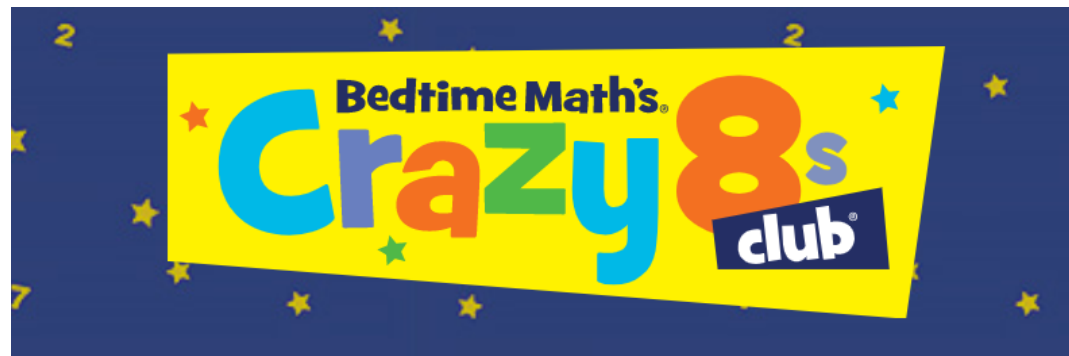
The sky's the limit: If you can use 10 chips per cookie or 15 chips per chocolate mousse, how would you divide 100 chips to make exactly 8 desserts with no leftover chips?

Bedtime Math

Daily stories for families to explore Math

Bedtime Math is a not-for-profit organization. Their mission is to “help kids learn to love numbers so they can handle the math in everyday life!”

Bedtime Stories and Crazy 8's Club



University of Chicago Study – Based on 597 1st graders

Bedtime Math users gained **3 months of math skills** within one school year.

Students of Math Anxious parents gained a **half of a school year**.

A study led by JHU psychologists shows Crazy 8s club **significantly reduces children's feelings of math anxiety** after 8 weeks of participation in the club.

The effect was **more pronounced among younger kids** in the kindergarten through second grade club.

Contact Information:

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Math MileMarkers® Series

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Twitter

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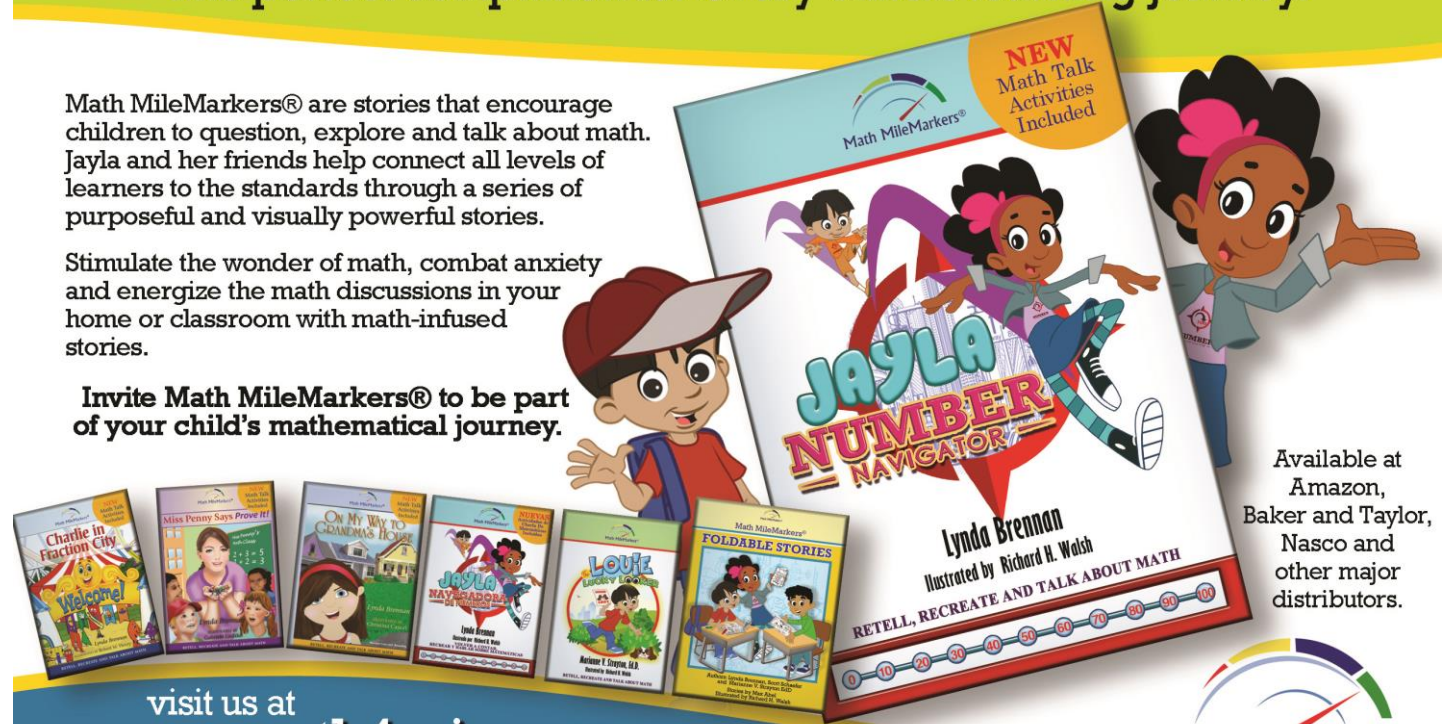
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Standards-Based Stories that Help Students Learn to Love Math!

