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EGIL Cohort Spring
Teaching Math through Literature

Educational theorists understand the importance of integrating the arts in subjects like mathematics. Current evidence supports the idea that students are more successful at learning mathematical concepts when the material is present to them in a more meaningful way. When students are able to make connects with math and literature it can be so much more powerful.

If books are recommend for every unit that can be used to link mathematical ideas and concepts to reading and literature the outcome could be great. Counting, measuring, adding, subtracting, weight and place value, fractions, and many more concepts become connected through stories that provide an appropriate model for the mathematical ideas. These literature recommendations also inspire a creative mathematics experience for students by posing interesting problems that relate to real-life situations.

“Integration of literature in mathematics activities suggests improved performance and demonstration of skills in the classroom. If the student can make a connection to mathematics content in a story, the literature can make mathematics more interesting, engaging, and applicable to students’ experiences in the world.”

Teaching Math through Literature:

**more resources for teaching math through literature*

Topic: Counting, Adding - Appropriate for grades K-2

- "Quack and Count," by Keith Baker
- "12 Ways to Get to 11," by Eve Merriam
- "From One to One Hundred" by Teri Sloat

Topic: Skip Counting - Appropriate for grades 1-3

- "Two Ways to Count to Ten" by Ruby Dee.

Topic: Addition - Appropriate for grades K-3

- "Mission Addition," Leedy, L - this story teaches strategies to solve math problems

Topic: Powers of 10 – Appropriate for grades K-3

- "On Beyond a Million" by David M. Schwartz.

Topic: Understanding Large Numbers – Appropriate for grades 1-5

- "How Much is a Million?" by David M. Schwartz

Topic: Counting Backwards– Appropriate for grades K-2

- "Ten Timid Ghosts" by Jennifer O'Connell - This story uses rhyme and repetition to teach counting backwards

Topic: Subtraction – Appropriate for grades 1-3

- "Monster Math" by Grace Maccarone - a story about disappearing monsters, that teaches students about subtraction and number sense
- "The Action of Subtraction" by Brian P. Cleary
- "If You Were a Minus Sign" by Speed Shaskan

Topic: Measurement – Appropriate for grades 1-4

- "Mr. Cookie Baker" by Monica Wellington
- "Measuring Penny" by Loreen Leedy

Topic: Weight and Mass – Appropriate for grades 1-3

- "Just a Little Bit" by Ann Tompert
- "Mr. Cookie Baker" by Monica Wellington

Topic: Money – Appropriate for grades 1-3

- "Bennies Pennies" by Pat Brisson (appropriate for Kindergarten)
- "The Penny Pot" by Stuart Murphy
- "A Dollar, a Penny, How Much and How Many?" by Bria

Topic: Basic Economics – Appropriate for grades 2-5

- "Trouble with Money" by Stan Berenstain, Jan Berenstain
- "Alexander Who Used to Be Rich Last Sunday" by Judith Viorst (could be used for HS economics)

Topic: Multiplication - Appropriate for grades 2-5

- "The Kings Chessboard" by
- "One Grain of Rice" by Demi
- "Anno's Magic Seeds" by Mitsumasa Anno

Topic: Division - Appropriate for grades

- "100 Hungry Ants" by Elinor J Pinczes
- "The Doorbell Rang" by Pat Hutchins

Topic: Fractions, Decimals, and Percents - Appropriate for grades 5-8

- "Fractions, Decimals, and Percents" by David Adler
- "Fractions in Disguise" by Edward Einhorn

Topic: Perimeter, Area and Volume - Appropriate for grades 4-8

- "Perimeter, Area and Volume" by David Adler
- "Spaghetti and Meatballs for All" by Marilyn Burns

Topic: Geometry - Appropriate for grades K-1

- "The Greedy Triangle" by Marilyn Burns
- "Max's Math" by Kate Banks

Topic: Ratios - Appropriate for grades 3-6

- "Pythagoras and the Ratios" by Juile Ellis

Topic: Place Holding - Appropriate for grades 1-3

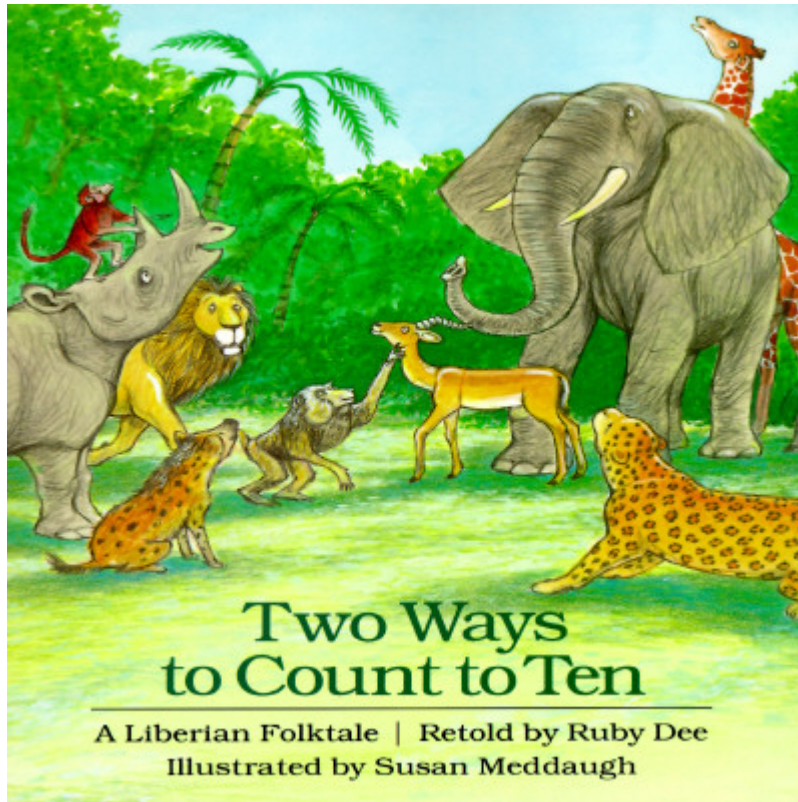
- "Zero the Hero" by Joan Holub

Topic: Graphing - Appropriate for grades 1-3

- "The Great Graph Contest" by Loreen Leedy

Topic: Various - Appropriate for multiply grade levels

- "Pigs will be Pigs Series" by Amy Axelrod (grades 1-3)
- "Sir Cumference Series" by Cindy Neuschwander (grades 4-6)
- "Math Inspectors" by Daniel Kenney and Emily Boever



Topic: Grouping & counting by 2's

Grade Level: K-1

Pre-Lesson Activity / Literacy Link: Previous to the lesson (the day before or the morning of the lesson), read aloud to the class the book "Two Ways to Count to Ten" by Ruby Dee.

Educational Objective: Teaching kindergarten or first grade students, who already know how to count to ten, to group items by 2's and then count by 2's.

Performance Objective: TLW be able to count by 2's to ten.

Materials/Preparation: Two Ways to Count to Ten: A Liberian Folktale retold by Ruby Dee; stuffed or plastic African animals; animal crackers; counting bears or cubes; spear; large numbers, 1-10; pins; tape

Lesson:

Focus: Students are introduced to the lesson by being given animal crackers and each making a line of ten as the class counts together.

Modeling: The teacher selects and lines up ten students and pins a number, 1 to 10, on each student. The teacher teaches the counting song to the children, and then they perform it for the class.

Direct Instruction: Make the literacy link by reviewing the book you read and discussing why the outcome was the best way to count to 10. How can we use a strategy like this when we are counting? If I had 100 pennies, what might be some ways to come them? (Take students answers: by ones, group them by 5's or 10's, count by twos, etc.)

Guided Practice: The teacher will hand out bears or cubes to each student and model grouping them by 2's. The teacher will then explain the concept of each bear or cube having a partner in order for it to be a pair of two. At their seats, the teacher will guide each student to place bears or cubes in groups of two. The class will then count aloud together by 2's.

Independent Practice: Explain to the students that today, they will be working in different stations to explore grouping objects and counting by 2's, 5's, and 10's. Briefly explain what they will be doing in each station and that they will get a chance to visit each station this week during math.

Station 1: Students will be playing the game "Ten Turns" with a partner and recording their rolling and counting on their own recording sheet.

Station 2: Students will be writing an entry for their math journal to answer this prompt: "The antelope was smart to count by 2's to reach the number 10 faster. If you had to count to the number 55, what would be the fastest way to count? (1's, 2's, 5's, 10's) Show an example of how you would count by writing numbers."

Station 3: Students will be drawing numbers from 1-20 out of a bag to decide whether or not they say them when they count by 2's, by 5's, by 10's, or by 1's. Some numbers can fit in more than one category. Record them on your student recording sheet.