MATHEMATICS + LITERACY
+ THE COMMON CORE

JENNIFER L. ALTIERI
GETTING STARTED
MAKING THE MATHEMATICS AND LITERACY CONNECTION

Enhances Instructional Feasibility
Facilitates Student Collaboration
Prepares for the Reality of Standardized Testing
Provides Authentic Learning Experiences
Reaches the Culturally and Linguistically Diverse
Supports Various Styles of Learning
KEY FEATURES OF THE ELA CCSS WHICH CONNECT WELL WITH THE MATH CCSS

Shift from Literature to Informational Text
Use of Multiple Texts
Writing
Disciplinary Literacy
Technology
Integrated Model of Literacy
Vocabulary
# TEXTS FOR BUILDING THE LITERACY-MATHEMATICS CONNECTION

<table>
<thead>
<tr>
<th>Books</th>
<th>Graphs</th>
<th>Recipes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calendars</td>
<td>Magazines</td>
<td>Time lines</td>
</tr>
<tr>
<td>Charts</td>
<td>Maps</td>
<td>Travel brochures</td>
</tr>
<tr>
<td>Diagrams</td>
<td>Newspapers</td>
<td>Wall charts</td>
</tr>
<tr>
<td>Games</td>
<td>Number lines</td>
<td>Word walls</td>
</tr>
</tbody>
</table>
GUIDELINES FOR THE USE OF LOCAL TEXTS

Read your room and read other rooms

Think locally

Think relationally

Think across the curriculum

Think dynamically

Create space and design

## Content Area Trade Book Evaluation

**Scoring:** 1 = does not meet expectations; 3 = meets expectations; 5 = exceeds expectations.

<table>
<thead>
<tr>
<th>Book/Author</th>
<th>Accuracy of Content</th>
<th>Cohesion of Ideas</th>
<th>Organization and Layout</th>
<th>Specialized Vocabulary</th>
<th>Student Considerations</th>
<th>Teacher Goals</th>
</tr>
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<tbody>
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<td><strong>Outstanding Features:</strong></td>
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</table>
MATH DISCIPLINARY LITERACY SKILLS

• Close reading and rereading

• Understanding very specialized words

• Writing to learn

• Visually representing and viewing information
Content COUNTS!
Developing Disciplinary Literacy Skills, K-6

Jennifer L. Altieri
Literacy + Math = Creative Connections in the Elementary Classroom

Jennifer L. Altieri

The curricular barrier that has long separated math and literacy instruction is an artificial one.
WORD PROBLEMS
On my way to get ice cream I saw 3 boys.
Each boy had 1 ice cream cone.
Each cone had 2 scoops.
How many scoops of ice cream did each boy have?
REINFORCING MATHEMATICAL VOCABULARY
ABC BOOKS

1. Students create the cover. They can call them a “Math Dictionary,” “ABC Book,” or another title.

2. As new terms are introduced, students add them to their books. Then they can include an example for each of their new terms. It could be a math example or sentence.
Circumference  
Complementary angles  
Cylinder  
Diameter  
Factor  
Line  
Perimeter  
Pi  
Prism  
Proportion  

Radius  
Rate  
Rotational  
Scale  
Similar shapes  
Supplementary angles  
Surface area  
Symmetry  
Unit
LABELING IN THE CLASSROOM

Right angles (placed in the corner)
Straight angles (on bricks to model 90 degrees)
Supplementary angles (drawn on the wall with masking tape)
Complementary angles (drawn on the wall with masking tape)
Center of rotation (modeled on the clock and pencil sharpener)
Estimate

In class I had to estimate what is in the jar.

Make your best guess.
### Figure 6

Rating sheets encourage students to think about their knowledge.

<table>
<thead>
<tr>
<th>Knowledge Rating</th>
<th>Name Briana</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Term Length</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yard</td>
<td>![Checkmark]</td>
<td>![Checkmark]</td>
</tr>
<tr>
<td>Inch</td>
<td>![Checkmark]</td>
<td>![Checkmark]</td>
</tr>
<tr>
<td>Capacity</td>
<td>![Checkmark]</td>
<td>![Checkmark]</td>
</tr>
<tr>
<td>Weight</td>
<td>![Checkmark]</td>
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<td>![Checkmark]</td>
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<td>Volume</td>
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<tr>
<td>Area</td>
<td>![Checkmark]</td>
<td>![Checkmark]</td>
</tr>
<tr>
<td>Balance</td>
<td>![Checkmark]</td>
<td>![Checkmark]</td>
</tr>
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FROM STRENGTHENING CONNECTIONS BETWEEN ELEMENTARY CLASSROOM MATHEMATICS AND LITERACY (P. 346-351) BY JENNIFER L. ALTIERI IN TEACHING CHILDREN MATHEMATICS (FEBRUARY 2009).
## Tell Us What You Know!

<table>
<thead>
<tr>
<th>Shape</th>
<th>I remember hearing this word!</th>
<th>I think that I can explain it!</th>
<th>I can draw a picture of it!</th>
<th>This shape looks like a/an</th>
</tr>
</thead>
</table>
| 1. Triangle | ![Triangle drawing] | ![Explain triangle] | ![Draw triangle] | pet
| 2. Square    | ![Square drawing] | ![Explain square] | ![Draw square] | Box


<table>
<thead>
<tr>
<th></th>
<th>Trapezoid</th>
<th></th>
<th>Diamond</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td><img src="image1.png" alt="Trapezoid" /></td>
<td></td>
<td><img src="image2.png" alt="Diamond" /></td>
</tr>
<tr>
<td>4</td>
<td><img src="image3.png" alt="Hexagon" /></td>
<td></td>
<td><img src="image4.png" alt="Hexagon" /></td>
</tr>
<tr>
<td>5</td>
<td><img src="image5.png" alt="Trapezoid" /></td>
<td></td>
<td><img src="image6.png" alt="Diamond" /></td>
</tr>
</tbody>
</table>

FROM LITERACY + MATH = CREATIVE CONNECTIONS IN THE ELEMENTARY CLASSROOM (P. 108-111) BY JENNIFER L. ALTIERI. © 2010 INTERNATIONAL READING ASSOCIATION.
“IS...” POEM
Math Is...

when you study numbers
making patterns
counting to 100
learning to tell time
sorting by color, shape and size
counting by 2’s, 5’s and 10’s
being able to count pennies, nickels and dimes
knowing that four quarters equals a dollar
graphing the weather
ANGLES ARE

Angles are the squares on the carpet.
Angles are the tiles on the ceiling.
Angles are acute on pieces of cake.
Angles are right angles when I put my glasses on.
Angles are my legs when I bend them.
DIVISION IS

Division is when I have six cookies, but two of my friends want to share them with me.

Division is when we have twenty kids in the classroom, but the teacher wants us to make two equal lines to go down the hall.

Division is when we have only one pizza for dinner, but it has to feed my three sisters and myself.

FROM CREATING POETRY: REINFORCING MATHEMATICAL CONCEPTS (P. 18-23) BY JENNIFER L. ALTIERI IN TEACHING CHILDREN MATHEMATICS (AUGUST 2005).
LIST POETRY
SMALLER THAN

Isaiah is smaller than the teacher.
Maco’s foot is smaller than Tiffany’s foot.
The Oreo we have for snack time is smaller than the graham cracker.
The distance Maria can jump is smaller than the distance Greg can jump.
PREPOSITION POEM
Along the path in the woods
on the lines of the big red crate
Toward the middle of the calendar
within the long and tall bookshelf
Through the letter "T"
Above a church is a big cross.
CREATING RIDDLES WITH CHILDREN
ABC MATH Riddles

Jannelle Martin
illustrated by
Freddie Levin

An ABC Riddles book from
Pool Productions
Geometry Riddles

My name begins with P.
And the middle is L.
My lines never cross.
Or intersect as well.
I never curve, swerve, or bend.
I don’t have sides just lines.
Can you guess what I am?
I hope you can.
Who Am I?

1, 2, 3, ...

I start with a letter next to N in the alphabet,
But that's not enough you don't know me yet!

I tell you to stop so you better obey.
Me, an ? in, and never a ray.
My sides are between 0 and 7.
Still don't know me, well it's not 11.
Sometimes I'm next to the street but you wouldn't walk on me,
not with your feet!

Now you should know me, do you or not?
Who am I? Give it a thought.

STOP!
You do not cawn't
me when you cawn't
by twos. I have two
digits. My last
digit is nine. When
you add my two number
the sum is eighteen.
The Mode Rap

The mode is the number in the data that has the most load.

The way you find the mode is you gotta find the number that occurs the most.

When you find that number it will be your host.
CREATIVE STORIES

Three
is a magic number.
Cubed: Three is a Magic Number

There once was a cubed symbol who was stubborn, stubborn, stubborn. Then he met a Genie that gave him three, three, three wishes. He wished to have a friend to understand, stand, stand him. He wished he was the most important symbol of all, all, all. His last wish was to live a happy life forever, ever, ever.

Cubed - The product in which a number is a factor three times.
REINFORCING MATHEMATICAL LEARNING
I USED TO THINK... BUT NOW I KNOW
I used to multiply but now I divide.
I used to read digital clocks but now
I read analog.
I used to count by 2s but now I count
by tens.
I used to measure in inches but now
I measure in centimeters.
I used to guess but now I estimate.
ABC POEM
Multiplication is the opposite of division.
November is the 11th month.
October is one of the months with 31 days.
Perimeter is around a shape.
Quarters are made of silver and worth 25 cents.
Rectangles are a prism.
Square pattern blocks are orange.
Triangles have 3 sides.
U is in the month of June and July, the sixth and seventh months.
Vertex is where lines come together.
Cubic measure. Cubic foot, cubic inch, cubic yard. Why so many measurements.

Division, the hard kind. Full of long, tedious steps. Why must there be a remainder?

Estimate. No thanks! It's not the real answer. Why is that okay?

Fractions. Equal, mixed, improper fractions. Decimals are the hardest!

Graphs. Line, bar, pie, and picture. Many different shapes, ways, and colors.
POEMS FOR MULTIPLE VOICES

FROM LITERACY + MATH = CREATIVE CONNECTIONS IN THE ELEMENTARY CLASSROOM (P. 87-92) BY JENNIFER L. ALTIERI. © 2010 INTERNATIONAL READING ASSOCIATION.
SIMILARITIES

They both are money.

They both have presidents on them.

You save them in your piggy bank.

You can buy things with them.
DOLLAR
100 cents
George Washington
More

PENNY
1 cent
Abraham Lincoln
Less
Money

Dollar  Penny

100 cents  1 cent

They both are money.

George Washington  Abraham Lincoln

They both have presidents on them.

More  Less

You save them in your piggy bank.
You can buy things with them.

Money
Measurement

Measuring Liquids

Tablespoons, Teaspoons, Cups
We measure liquids to bake cookies.

Pints, Quarts, Gallons
We measure liquids to make sweet tea.

Measuring Distance

Inches, Feet, Yards
We measure distance to see how much we’ve grown.

Miles
We measure distance to see how far we’ve traveled.

You use it EVERY day!
CUBING

Describe it
Associate it
Compare it
Analyze it
Apply it
Argue for or against it
TELLING TIME

Describe it - minutes, hours, seconds

Associate it - watches, alarm clocks, ovens, timers

Compare it - analog to digital

Analyze it - 60 seconds in a minute, 60 minutes in an hour

Apply it - getting to school on time, baking cookies, knowing when a television show comes on

Argue for or against it - food doesn’t get burned, Mom doesn’t get mad
Clocks are important because if there weren't clocks, we would be late for school work, so. And if we didn't have clocks we wouldn't know when our food is ready and the house would catch on fire and go ka-boom!
ADDITIONAL IDEAS