PROMOTING EQUITY AND ACCESS: USING CHILDREN'S LITERATURE TO PROVIDE MEANINGFUL CONTEXTS

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GOALS

Identify the necessity for equity and access in mathematics,

Connect multicultural literature to the essential mathematics standards,

Provide sample lesson activities for meaningful mathematics for all students.

PICK A WORD

Fantastic

Awesome

Amazing

Nearly Perfect

Fabulous

Wonderful

Brilliant

Friendly

Clever

Incredible

Extraordinary

Superb

Marvelous

Out of this world

'In my mind, I see a line. And over that line, I see green fields and lovely flowers and beautiful white women with their arms stretched out to me over that line. But I can't seem to get there no how. I can't seem to get over that line.' That was Harriet Tubman in the 1800s. And let me tell you something: The only thing that separates women of color from anyone else is opportunity. You cannot win an Emmy for roles that are simply not there.

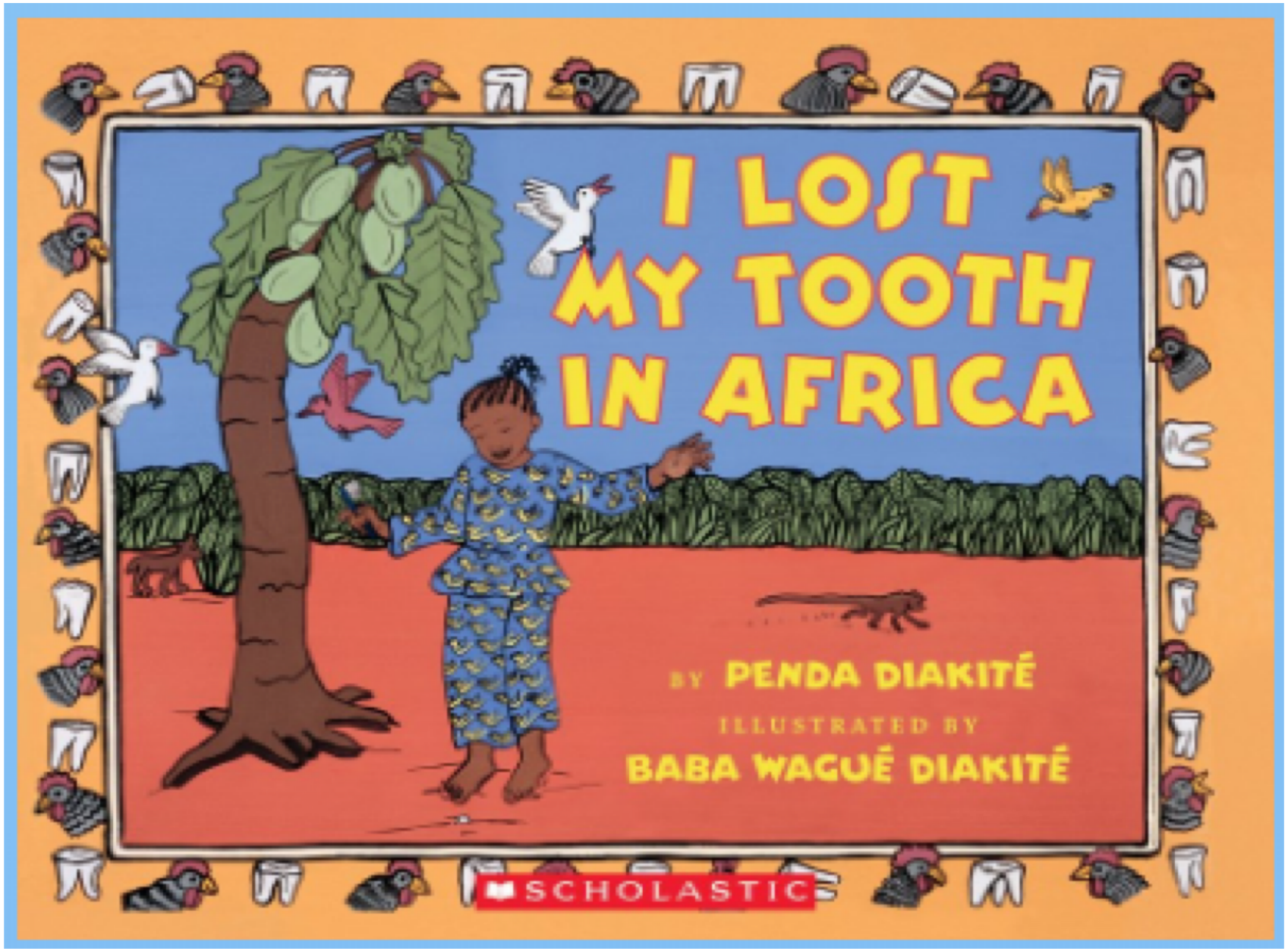
(Viola Davis, Emmy Acceptance Speech, New York Times, 2015)

GLORIA LADSON-BILLINGS

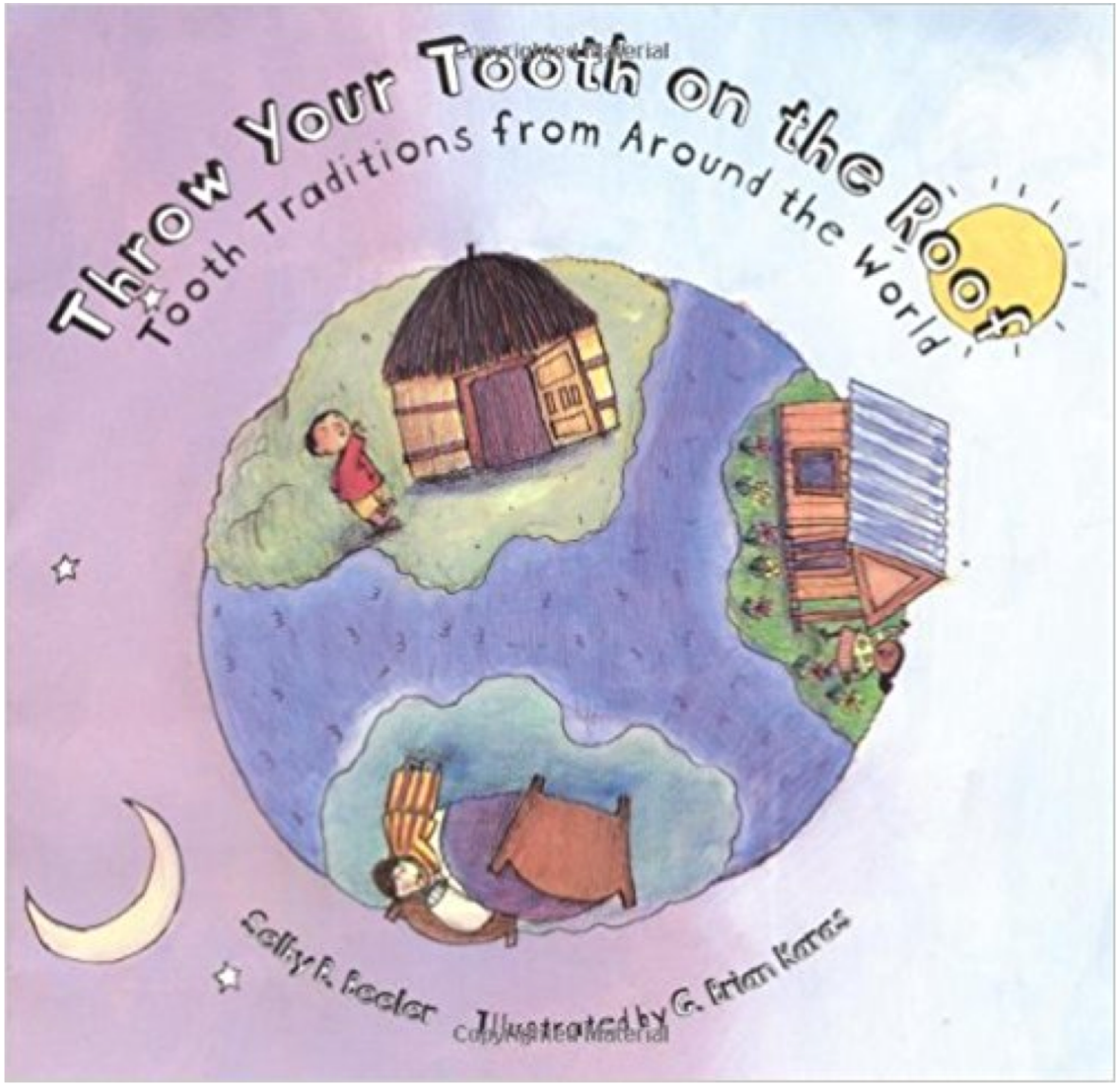
Are we bringing culture into mathematics teaching and learning or bringing the mathematics into the children's culture?

GLORIA LADSON-BILLINGS

- Attention to Context
- Attention to Culture


I LOST MY TOOTH IN AFRICA
BY PENDA DIAKITÉ
ILLUSTRATED BY
BABA WAGUÉ DIAKITÉ
SCHOLASTIC

OTHER TOOTH TRADITIONS:



EXPECTATIONS FROM STANDARDS

Authentic, Real World Tasks

Contexts are important

Conceptual focus

Problem solving

Modeling

Discourse

RELATIONAL THINKING RECAP

Contextual - Set a problem situation – through a real world event or a story /children's literature. Don't start with "naked" numbers!

Concrete- e.g., part-whole models

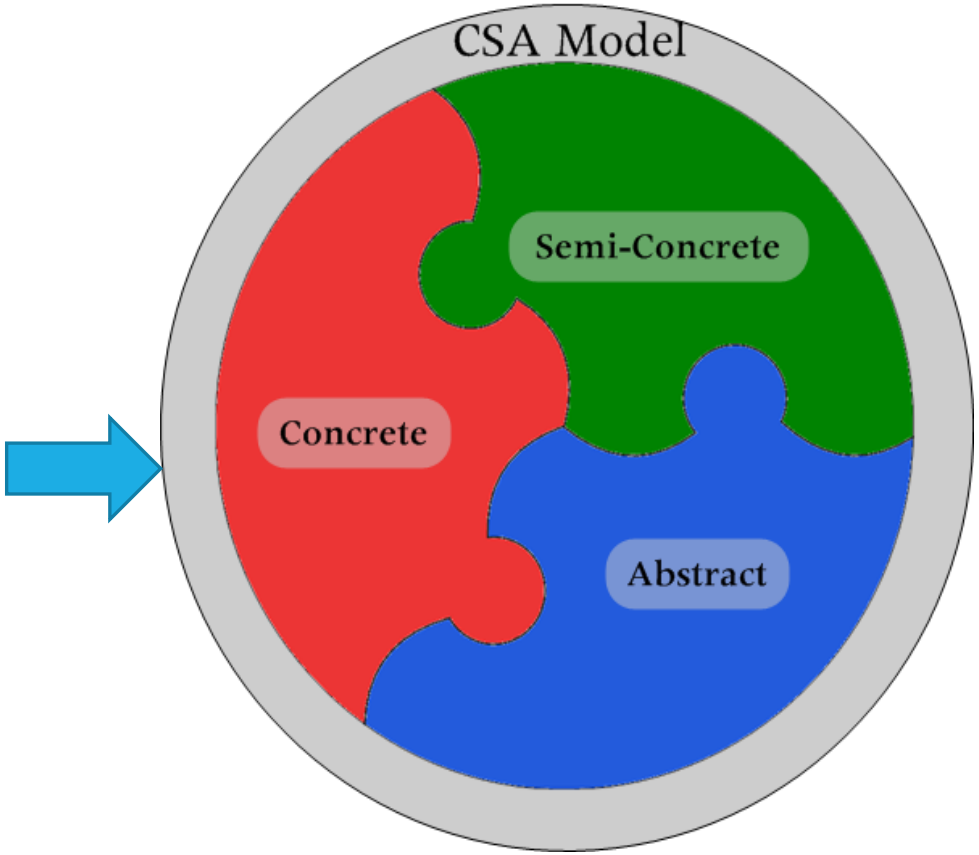
Pictorial- Ties into context and concrete models- to build that visualization of what is happening

Symbolic- numeric/algebraic

Verbal- create the idea, situate it in a context, model it, draw it, talk about it, write it

VAN DE WALLE, J., KARP, K., & BAY WILLIAMS, J. (2010). *ELEMENTARY AND MIDDLE SCHOOL MATHEMATICS: TEACHING DEVELOPMENTALLY.* NEW YORK: PEARSON.

CSA – CONCRETE SEMI-CONCRETE ABSTRACT



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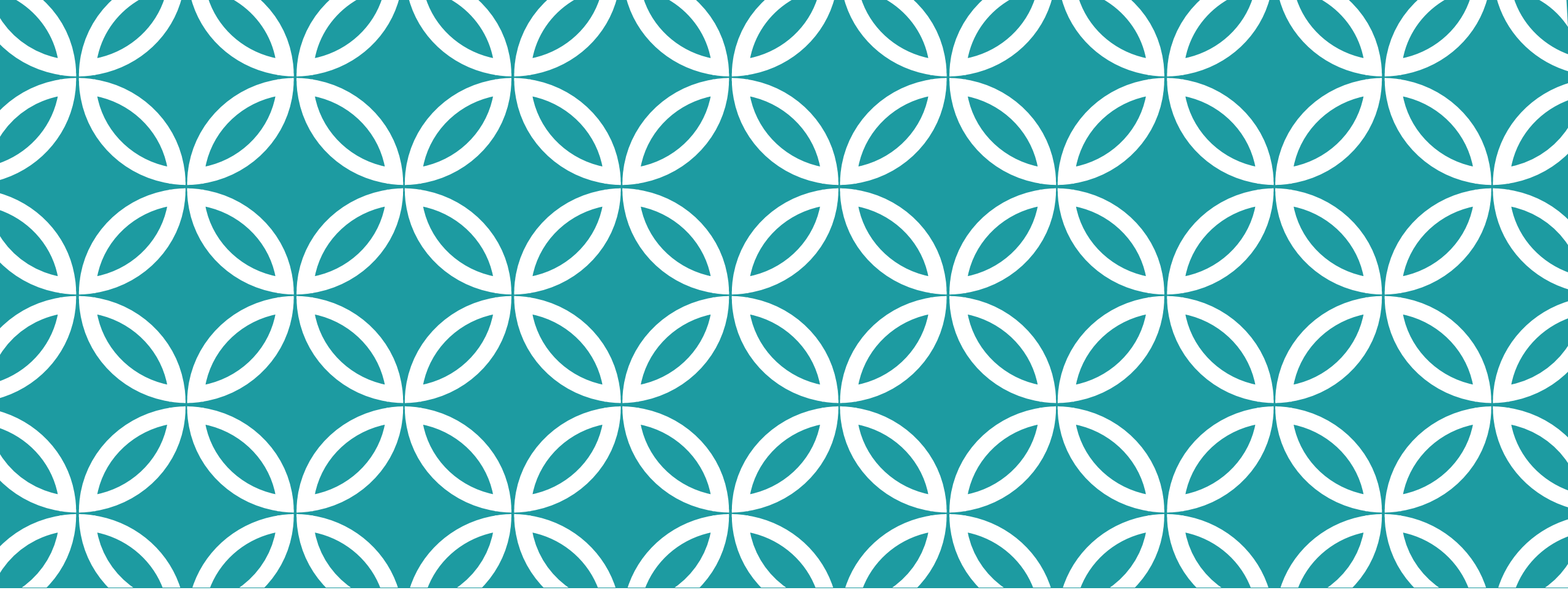
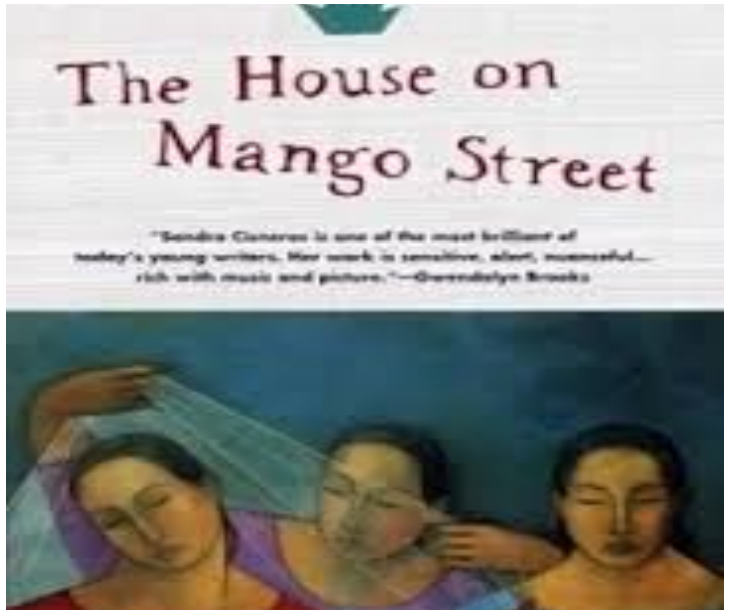


AUTHENTIC TASKS INSTEAD OF NAKED NUMBER PROBLEMS

“If we understand that the multiple contexts in which students live their lives have a variety of effects on the class system, we might begin to create the kinds of mathematics curricula and pedagogy that take full advantage of the adaptive, resilient, complex nature of learners in a classroom. Rather than presume that because of their race, culture, ethnicity, language, or other form of difference students are unable to succeed in mathematics, this lens might force us to ask how the mathematics we are teaching (and how we teach it) is changing the system” (Ladson-Billings 1997, p. 157).

MATHEMATIZING IN OUR COMMUNITY



WHEN WE READ A STORY… EVERYONE SHARES THE CONTEXT

OUR LITERATURE CHOICES SHOULD BE REPRESENTATIVE OF OUR SOCIETY, AND THUS THE STUDENT BODY.

HOUSE ON MANGO STREET

“We didn't always live on Mango Street. Before that we lived on Loomis on the third floor, and before that we lived on Keeler. Before Keeler it was Paulina, and before that I can't remember. But what I remember most is moving a lot. Each time it seemed there'd be one more of us. By the time we got to Mango Street we were six—Mama, Papa, Carlos, Kiki, my sister Nenny and me”

(Cisneros 1991, p. 3).

WE NEED TO SPEND TIME GETTING TO KNOW OUR STUDENTS

Take a license plate.
It should be horizontal.

The color represents where you are from:

Yellow: this state (California)

Orange: Other US States

Pink: Canada

Green: out of the country

To create a border along the edge of the license plate – draw the appropriate shapes that represents the number of siblings you have:

0: sun

1: leaf

2: hearts

3: triangles

4: squares

>4: stars

To create the number in the middle of your plate:

First letter of your last name

First letter of your birth month

First letter of city where you live

Number of people living in your home

Number of pets you have

Day you were born

GLYPHS

Set of data instead of just one data point

Pictorial or symbolic representations

What can we do with these data?

SAMPLE CHILDREN'S LITERATURE & TASKS

Gone Crazy in Alabama by Rita Williams-Garcia

The Princess In Black by Shannon Hale

El Deafo by Cece Bell

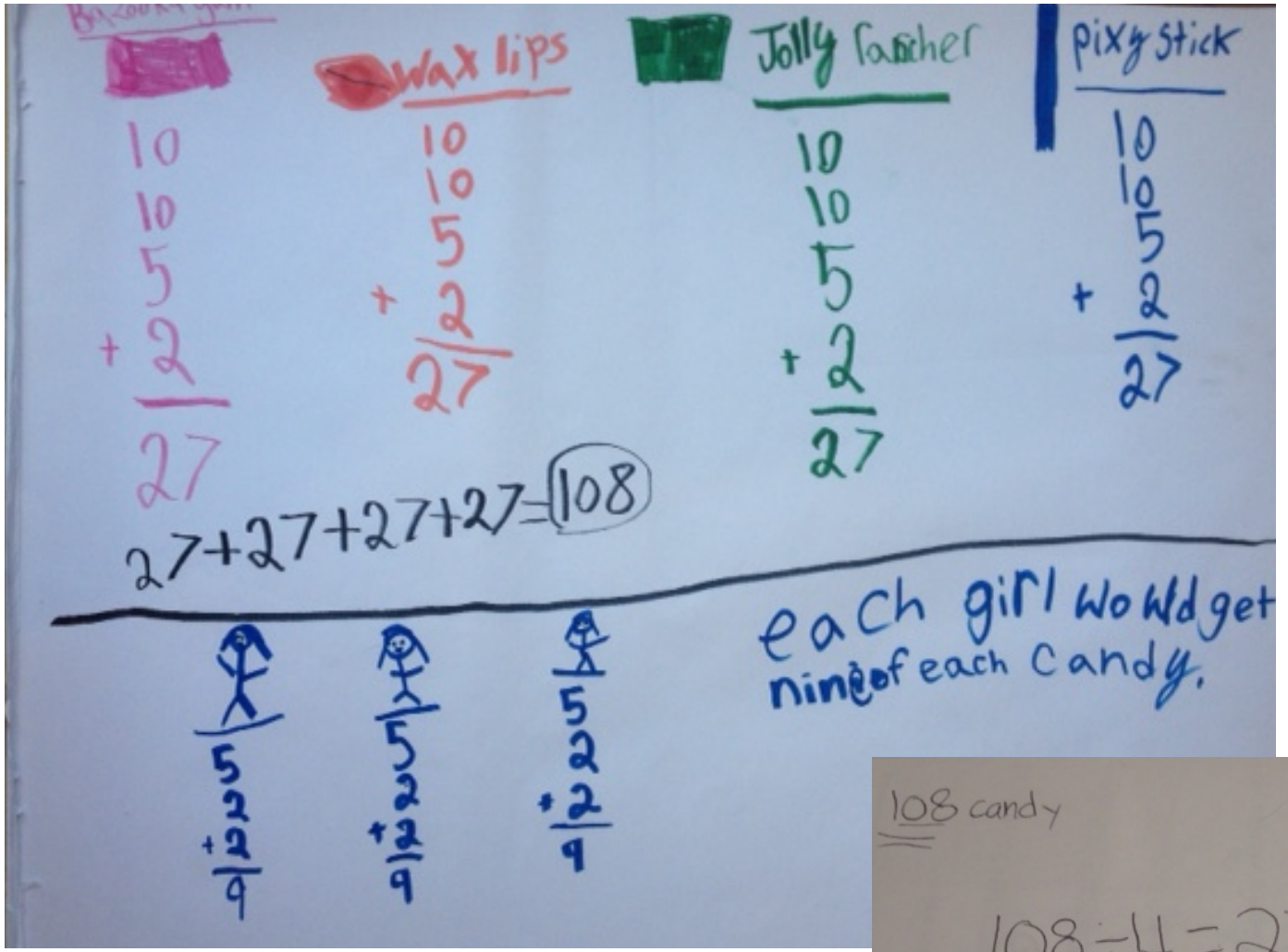
GONE CRAZY IN ALABAMA

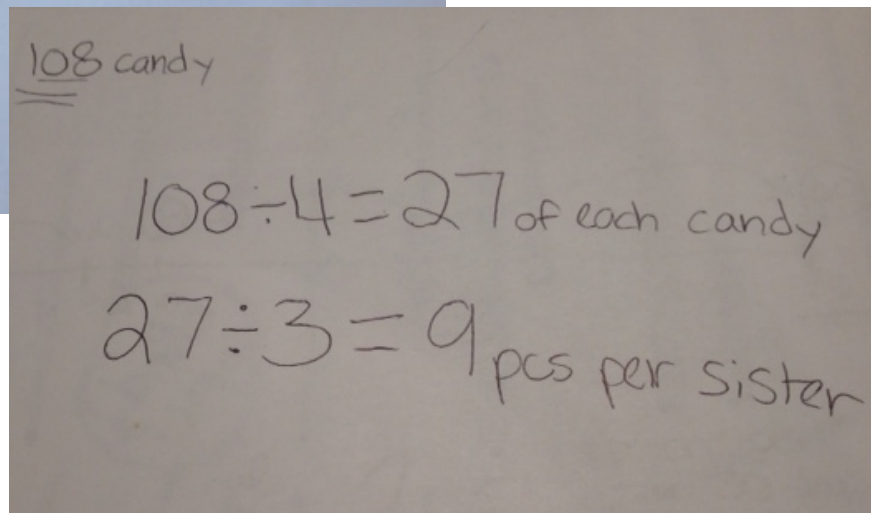
Buying and Rationing Candy

There are 3 girls and 108 pieces of candy.

Create a plan that shows the fair shares of each candy type each girl will have for the trip…

Standard: Solve multistep word problems using the four operations, including problems in which remainders must be interpreted.


wax lips
Jolly Rancher
pixy stick
10
10
5
+ 2
27
27+27+27+27=108
each girl would get
nine of each candy.


108 candy
108÷4=27 of each candy
27÷3=9 pcs per sister

GONE CRAZY IN ALABAMA

Buying and Rationing Candy

There are 3 girls and 108 pieces of candy. Create a plan that shows the fair shares of each candy type each girl will have for the trip **and also decide how many pieces the girls plan to eat in each of the 7 states: New York, Pennsylvania, West Virginia, Kentucky, Tennessee, Georgia, and Alabama.**

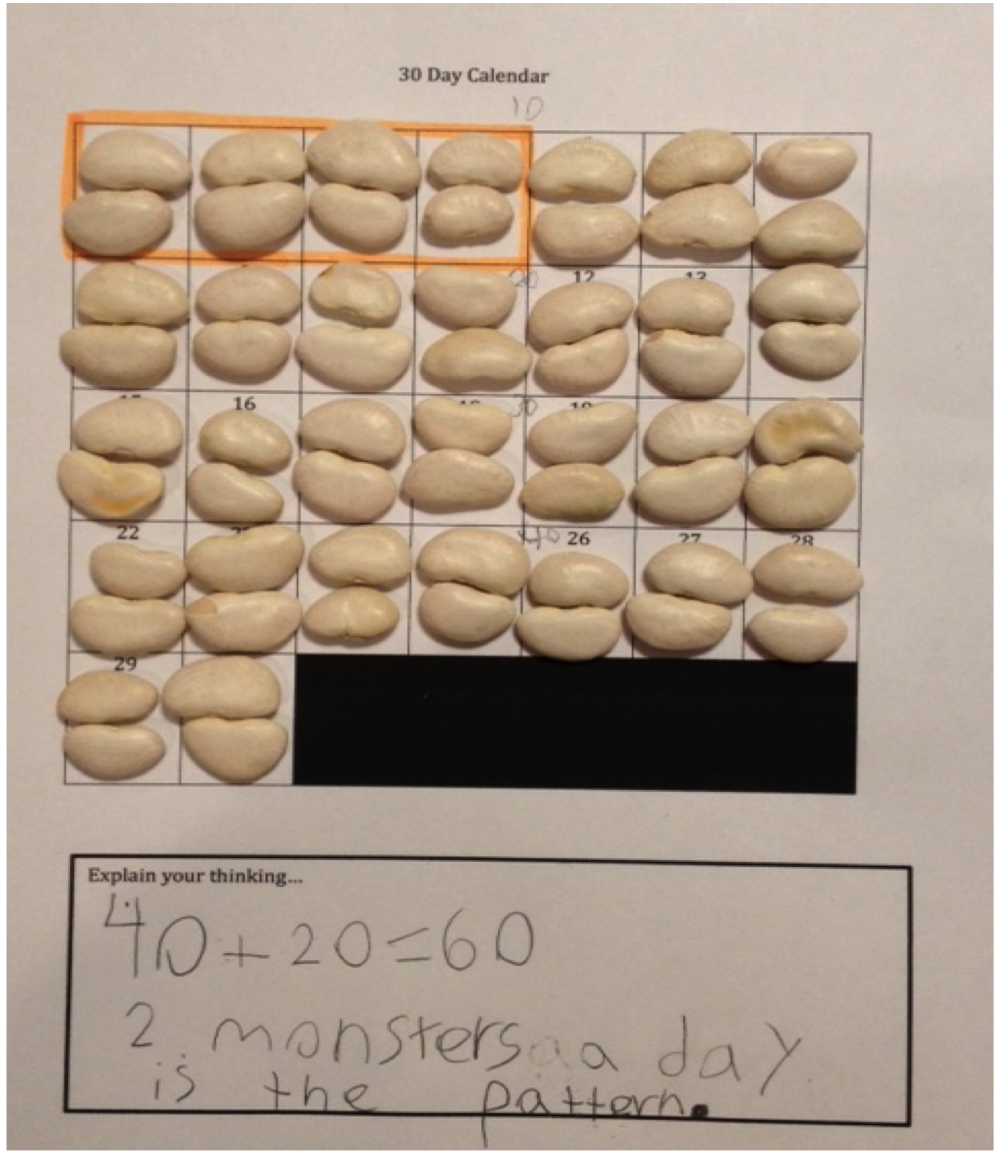
Standard: Solve multistep word problems using the four operations, including problems in which remainders must be interpreted.

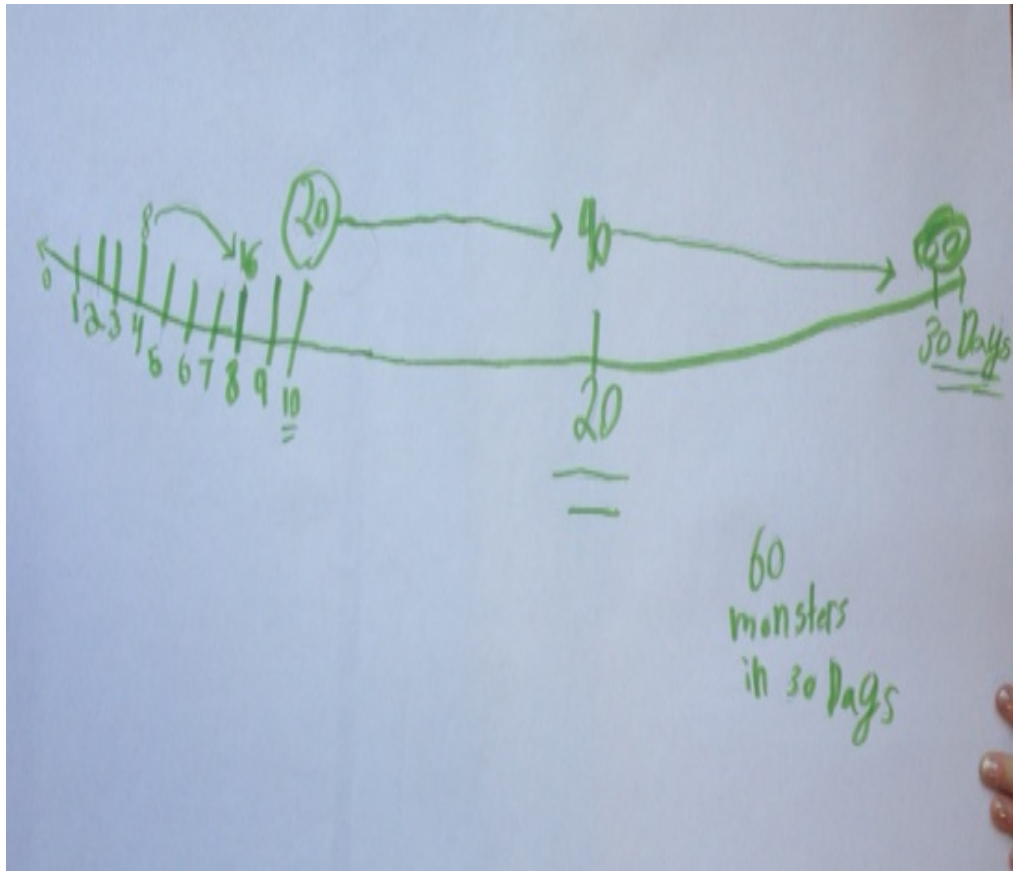
THE PRINCESS IN BLACK

Defeating Monsters

The Princess in Black is home relaxing when her monster alarm goes off! It seems to be going off every day now, as in the past 4 days she has defeated 8 monsters. The Princess in Black is on her way to deal with 2 monsters that are destroying the forest in a neighboring town. If this pattern continues, how many monsters will she defeat in a month (30 days)?

Standard: fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.





First Graders' Solutions & Reasoning


ARE YOU SURE YOU DON'T LIKE HIM? 'CAUSE I THINK YOU DO!
RATS! WE SHOULDA ASKED HIM TO JUMP WITH US!
OH, I'M SURE!
TOTALLY SURE.

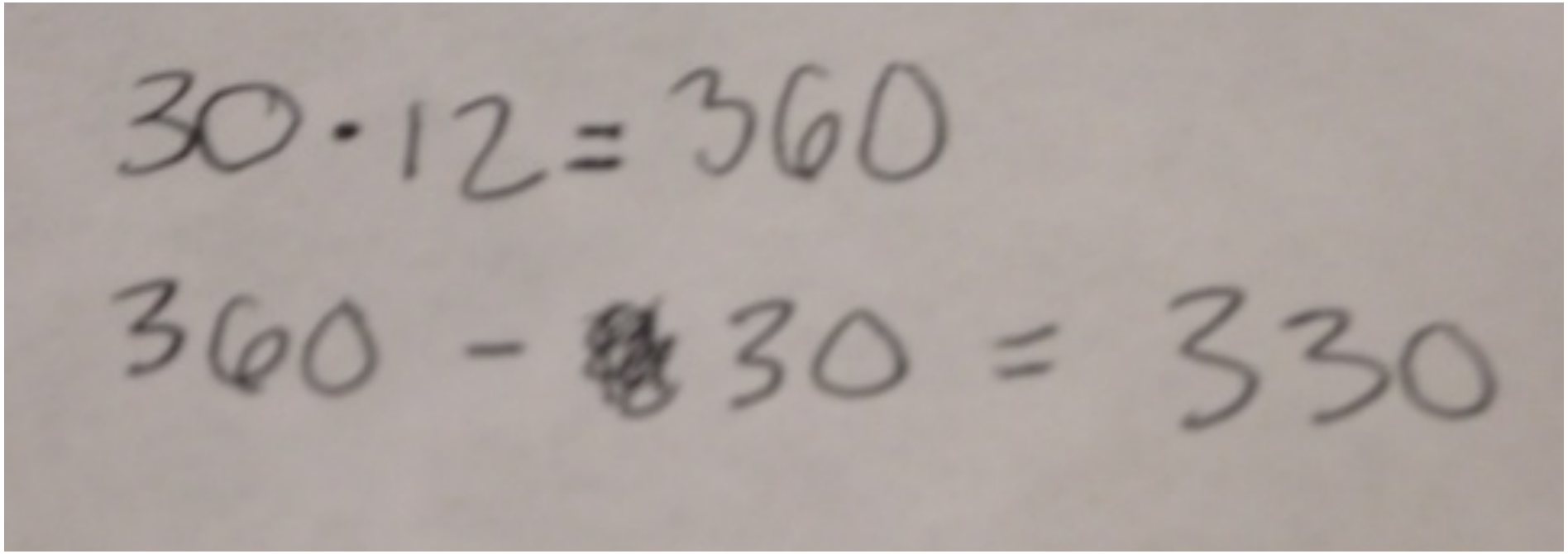
EL DEAFO

EL DEAFO

Height Jumping Alone

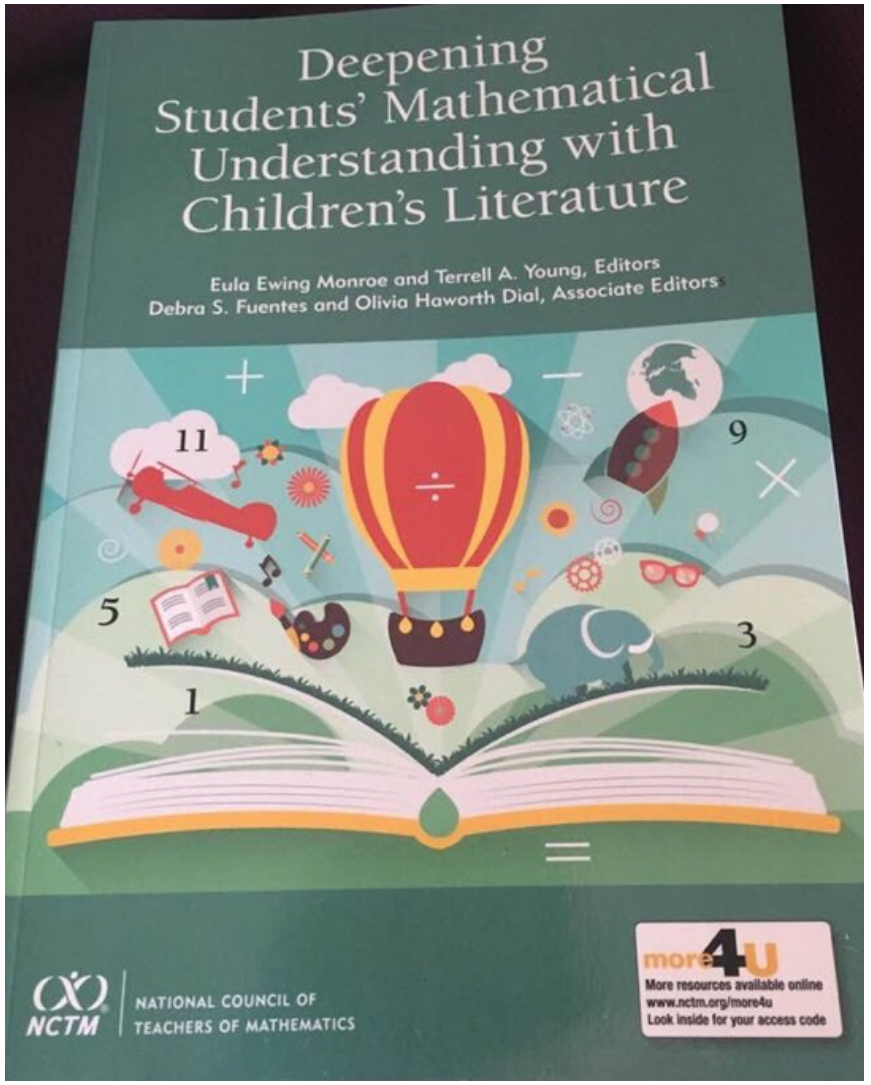
Cece's minimum height is 3 feet above the ground (standing still on the trampoline in picture one). Her maximum jumping height is 9 feet above her minimum when she jumps (the last picture).

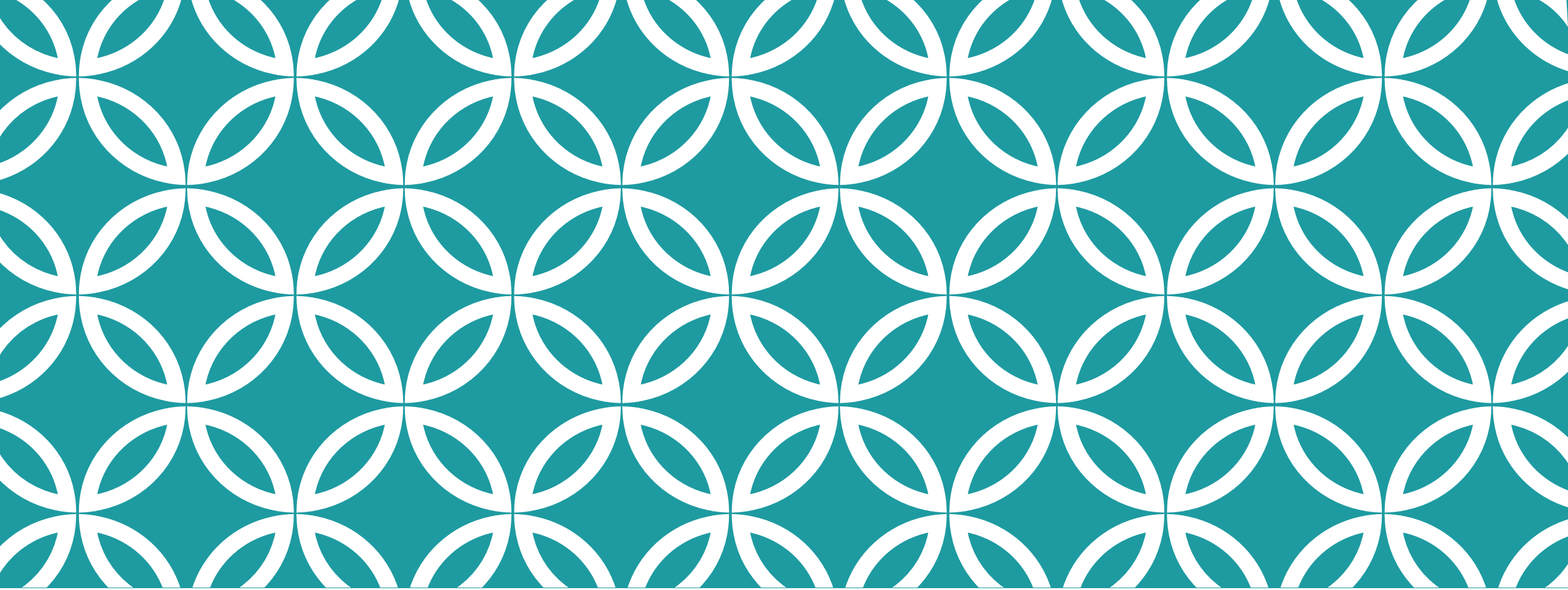
It takes her one-minute to build momentum to reach her maximum height. She reaches her maximum height every 2 seconds after the first minute. Within 12 minutes, how often does Cece reach her maximum height? Write an expression to represent this problem.


30 · 12 = 360
360 - 30 = 330

IF YOU WANT MORE…

Livers, S.D., & Karp, K.S. (2018). The power of context: Promoting equity and access in mathematics learning using children's literature. In E.E. Monroe, & T. Young (Eds.), *Deepening Children's Mathematical Understanding with Children's Literature.* Reston: VA. NCTM.





THANK YOU!