

Parent Partnerships: Collaborative Efforts to Promote Students' Mathematical Thinking



Parents and CGI at your Site

- What have you tried? Formal and informal
- What makes the most sense for your school?

Parent Involvement to Parent Engagement

Involvement: What can the parent do for you?

Engagement: What can I share with parents?

Partnership: What can I learn from parents?

Parent Involvement

- ***Assisting***: Focus solely on the students
- ***What might it look like:***
 - Volunteer opportunities to assist schools (ex: copy homework packets, supervise student drop off, chaperoning field trips)
 - Curriculum is pre-determined and taught by school staff
- ***Implicit messages and outcomes:***
 - One way communication
 - Focus centered on improvement

Parent Engagement: Supporting

- ***Supporting***: Focus on supporting parent learning for the purpose of helping student learning
- ***What might it look like***:
 - Workshops offered to help parents understand math efforts (ex: Family Math Nights, Common Core)
 - Curriculum might be co-planned, but is often delivered by school staff
- ***Implicit messages and outcomes***:
 - Teachers and parents engage in dialogue about common goals
 - Collaboration, yet information & knowledge flows from the school to home

Engagement: Mutual Learning

- ***Mutual Learning:*** Students, parents and schools/teachers are learning. What can we learn from parents and how can that inform my practice?
- ***What might it look like:***
 - Schools include parents in decision making and build on out of classroom experiences
 - Focus shifts from a singular focus on what the school can do for the family to what the school can learn from families to enhance student learning opportunities
 - Sessions could be co-led by school, parents, and community
- ***Implicit messages and outcomes:***
 - Multi-directional learning
 - Dynamics and linear power differentials between school and families are disrupted

How do we do it?

What do you notice about these slides?



Counting Collections

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When, where, and how do you engage in
counting
in your daily lives and with your young people?

When shopping?

When cooking?

When playing?

When driving, walking, or taking the bus?

When else?

Let's count

Adults count a collection (your child watches and asks you questions about your thinking or counts along)

Once you have counted. Try it again – a new way.

Can you show your count on a piece of paper?

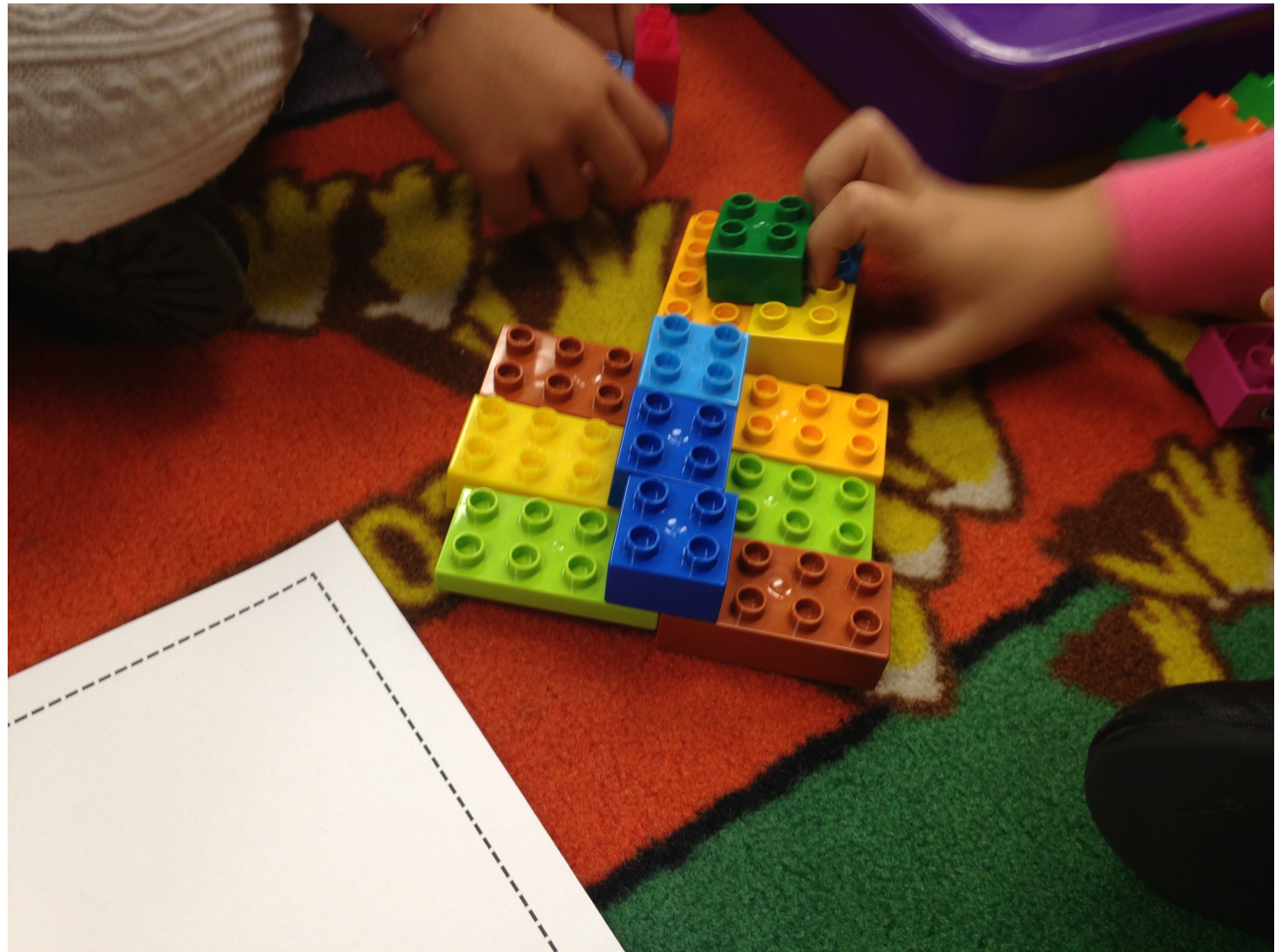
Share with those at your table. What do you notice about the different ways folks counted?



What do you notice? How might students count?



What do you notice? How might students count?





What math are the students working on?

Name: Salma Date: 9/12/14

Counting Collections

Names: Salma & Catherine

We counted crayons

We counted 76 items altogether.

This is how they look:

$76 = 7 \times 10 + 6 \times 1$

What math are the students working on?

Estimate: 20 (Estimate) 20 (Collection)

We had 59 items in our collection.

This is how we counted our collection:

(10) (10) (10) (10) (10)
↑ 50

||||| 49 + 10 = 59
↑ 9

$10 + 10 + 10 + 10 + 10 + 9 = 59$

(10) (10) (10) (10) (10)
↑ 50

① ① ① ① ① ① ① ① ① ①
↑ 9

30 + 29 = 59

What do you notice? How might students count?

Counting Collections

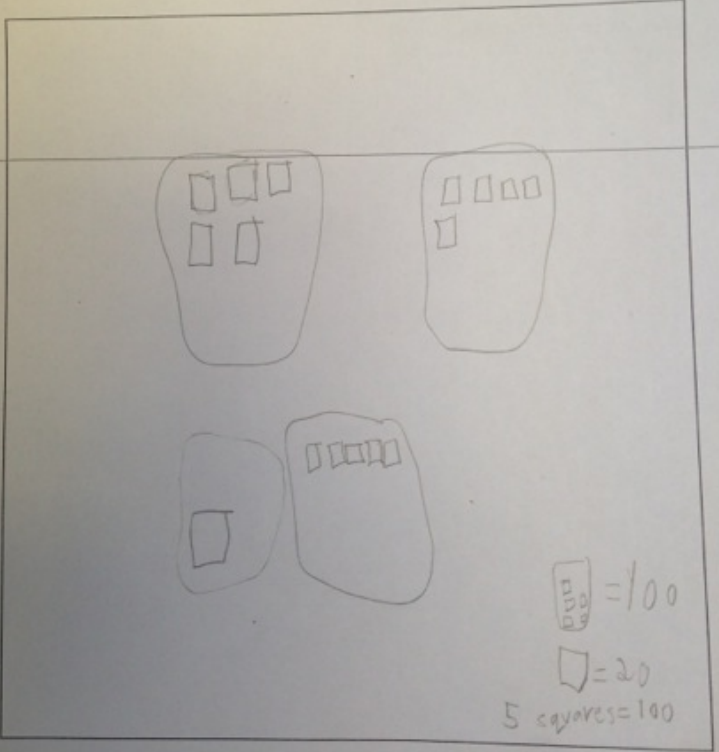
Name: _____

Names: Jamie Padilla & _____

We counted four squares

We counted 320 items altogether.

This is how they look:



$\begin{array}{|c|} \hline \square \\ \hline \square \\ \hline \end{array} = 100$

$\square = 20$

5 squares = 100

Why work on counting in and outside of school?



Focus on a single activity

Supports parents to understand what is happening in classrooms

Creates connections between home and school

Engages adults in the mathematical work themselves and supports them to see what different ideas means and why it matters.

Supports parents and students to work together and enables parents to see and share student strengths.

CGI Overarching Goals and Principles


CGI Guiding Principle:

- All children bring intuitive knowledge of mathematics to problem solving situations

CGI Teaching Approach:

- Elicit children's mathematical thinking and use it as the basis for instructional decisions
- Build from what students already know and support them to make sense of mathematics

Overarching Goal:

- Develop mathematical skills and understanding so that children can communicate this understanding with others
 - Foster children's identities as problem solvers and “doers” of mathematics
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We believe...

all children can learn mathematics

in the importance of conceptual understanding in mathematics

in solving problems in many ways

In articulating mathematical ideas to develop greater understanding

in collaborating and engaging with each other's ideas

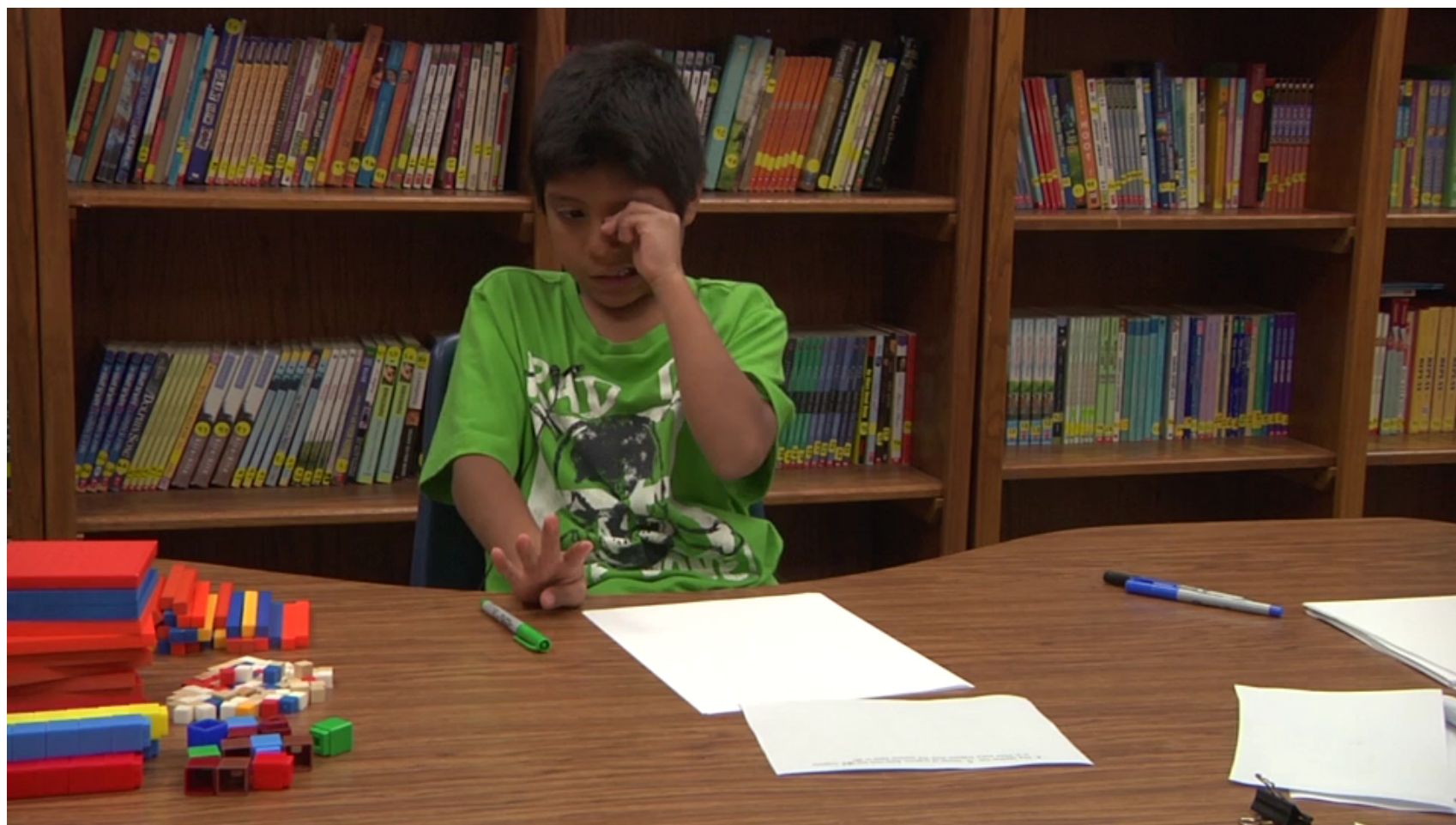


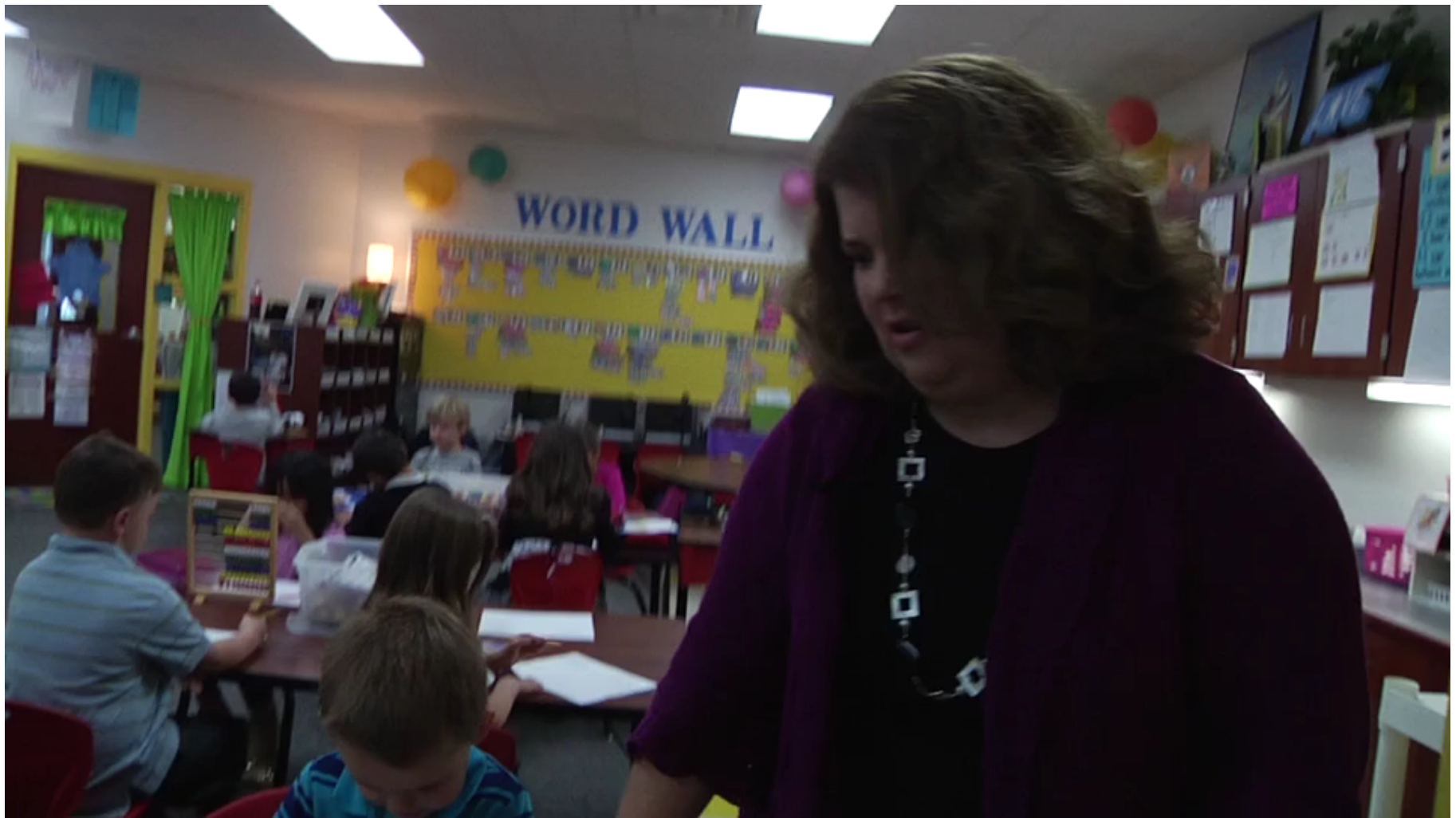
Story Problem

Ms. Hollis bought 5 packages of gum. There are 18 pieces of gum in each package. How many pieces of gum does Ms. Hollis have?

Grandma has 5 plates with 27 cookies on every plate. How many cookies does Grandma have?









Mathematics at our school


is...	is NOT...
<ul style="list-style-type: none">● flexible● focused on conceptual understanding● making sense of problems using a variety of student-generated strategies● using student thinking to inform teaching● fun, meaningful, and social	<ul style="list-style-type: none">● just memorizing facts and formulas● associated with speed● only 1 way to solve a problem● teacher models, then students must follow the teacher's model● rigid, irrelevant, and done in isolation

What does math sound like?

Children discussing their ideas
Teachers in conversation

- “I solved it by..”
- “I could try...”
- “I did something similar...”
- “I agree/I disagree... because”

Why multiple strategies?

- To provide opportunities for deeper understanding
 - To try more challenging numbers
 - To make connections
 - To check for accuracy
 - To improve efficiency
 - To validate each mathematicians ideas and identity
- 

CCSS Mathematical Practices

OVERARCHING HABITS OF MIND

1. Make sense of problems and persevere in solving them
6. Attend to precision

REASONING AND EXPLAINING

2. Reason abstractly and quantitatively
3. Construct viable arguments and critique the reasoning of others

MODELING AND USING TOOLS

4. Model with mathematics
5. Use appropriate tools strategically

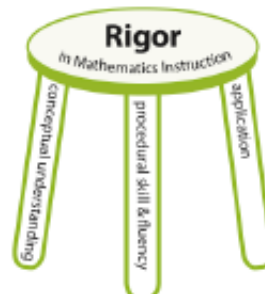
SEEING STRUCTURE AND GENERALIZING

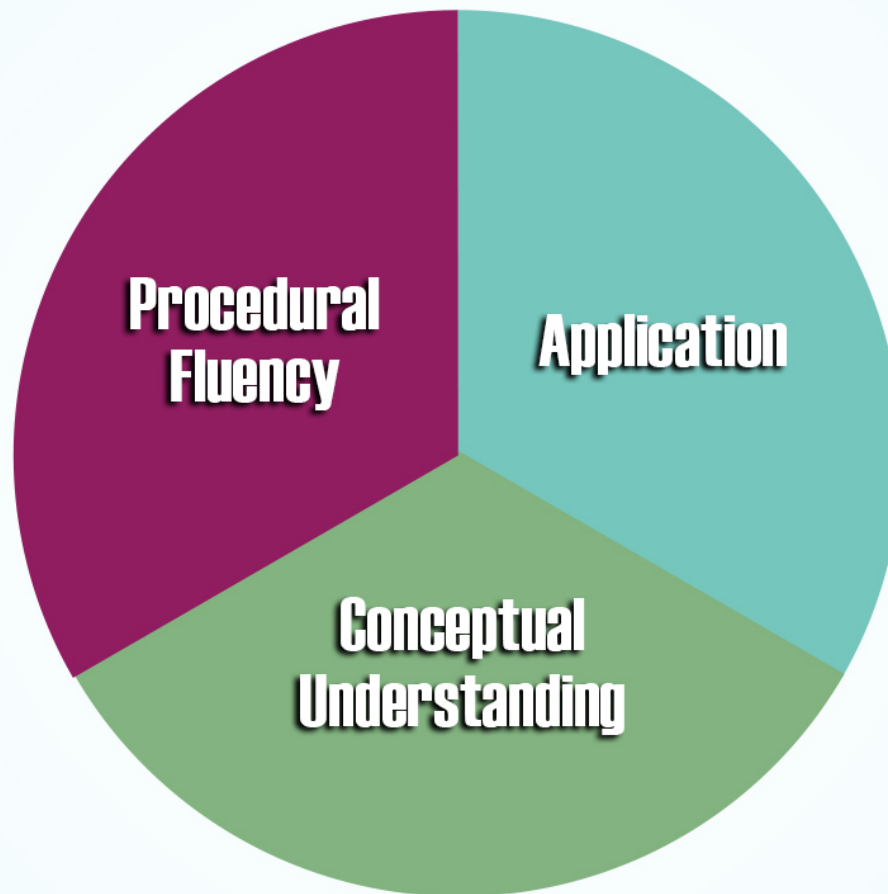
7. Look for and make use of structure
8. Look for and express regularity in repeated reasoning

Rigor



- The CCSSM require a balance of:
 - Solid conceptual understanding
 - Procedural skill and fluency
 - Application of skills in problem solving situations





Questions:

While children are solving problems:

Can you talk a little about what the problem is about?

What are you trying to figure out?

What do you know? What do you think you can do first?

What are some strategies that you've used before?

Is there another strategy you can use?




Questions:

After children are done solving problems:

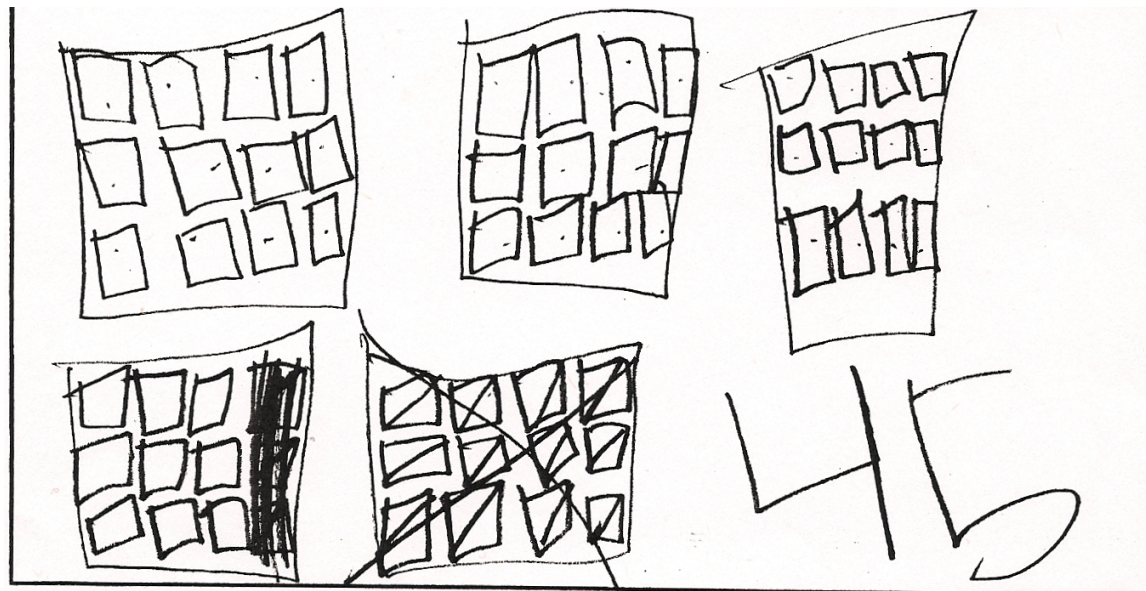
Can you tell me what you did?

Can tell me about this part? (*point to a specific part of
their work*)

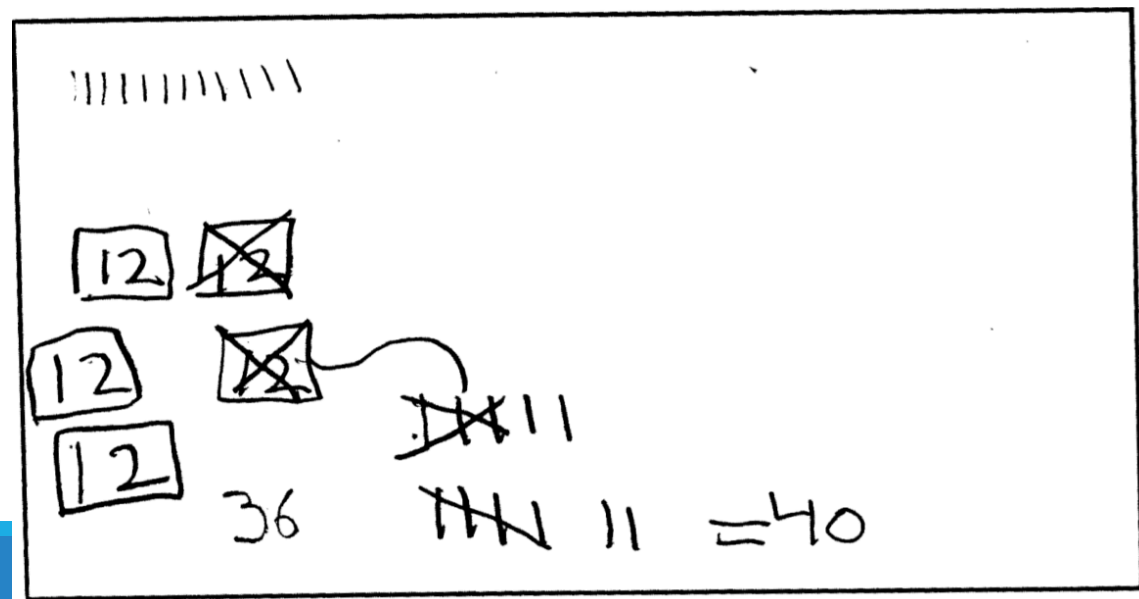
What is your favorite part?



Let's Try it Out



Jada had 5 packages of cupcakes. There were 12 cupcakes in each package. Then she ate 15 cupcakes. How many cupcakes were left?



Focus on what is CGI?

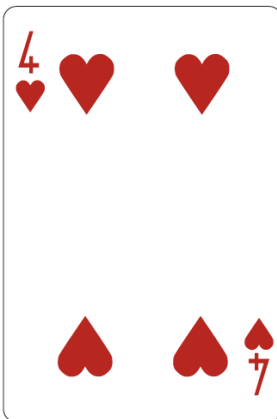
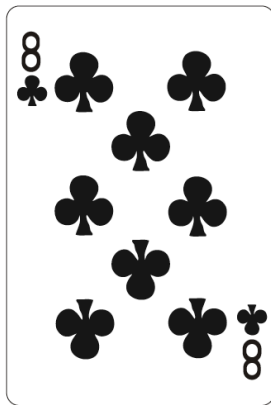
What is CGI and how is it connected to the standards?

Why are we doing it?

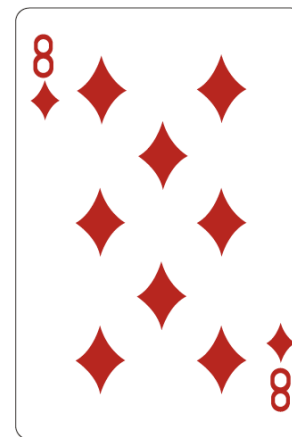
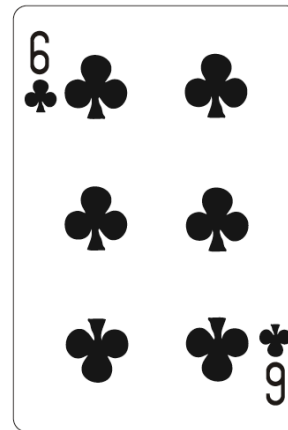
What questions do you have about it?

Double Compare

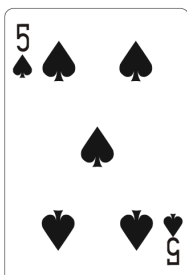
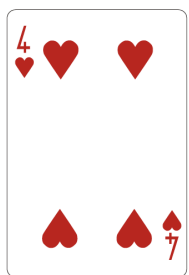
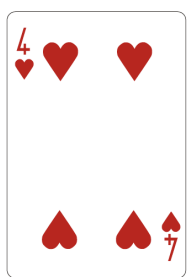
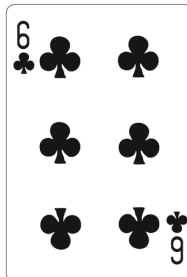
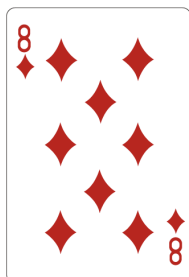
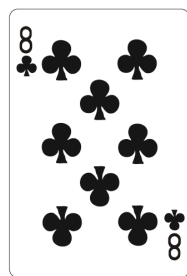
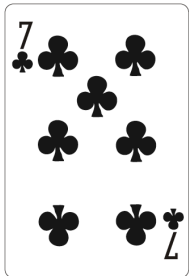
Student A



Student B



Make 10



Make 10



Objective:

- During this game, players create number combinations of numbers totaling 10. Once all cards from the deck have been played, the player with the largest quantity of cards is the winner.

Materials:

- 1 deck of standard playing cards, face cards removed for play.

Direction for Play:

- Players take turns dealing/managing cards.
- 9 cards are dealt face up in a 3 x 3 array.
- Beginning with the youngest player, the players take turns finding different combinations that add up to 10. Once a combination is found, the player picks up those cards and places them on the table next to her.
- The next player takes her turn trying to find another combination that adds up to 10 and places the cards next to her on the table.
- When all possibilities are exhausted, more cards are dealt to fill in the blanks of the array of 9 cards.
- Once the deck is completely dealt, and there are no other combinations of 10 to make, play ends.
- The player with the largest number of cards in their pile is the winner.

When, where, and how do you engage in math in your daily lives and with your kids?

Activity	What's the Math?*
When shopping:	
How much do you think our groceries will cost?	Estimation, addition
How much money will we save if we use these coupons?	Addition, subtraction
How much change will we get if we give the clerk \$20.00?	Addition, subtraction
How much money will we get for recycling a certain number of cans?	Multiplication
How many cans were recycled if I got back \$.65?	Division
How much do you think this bag of [apples, potatoes] weighs? (Then weigh to find out.)	Estimating, measuring weight

When driving, taking the bus, or walking:

About how many blocks until we get to a certain place? (Then count and find out.)

Estimating, measuring distances, counting

About how long will it take to get to a certain place? (Then time it to find out.)

Estimating, measuring time

How many dogs, stop signs or traffic lights do you think we will see along the way?

Predicting, collecting data, counting

If we take the bus [5] times today, how much will we spend on bus fare? How much will be left on our bus card?

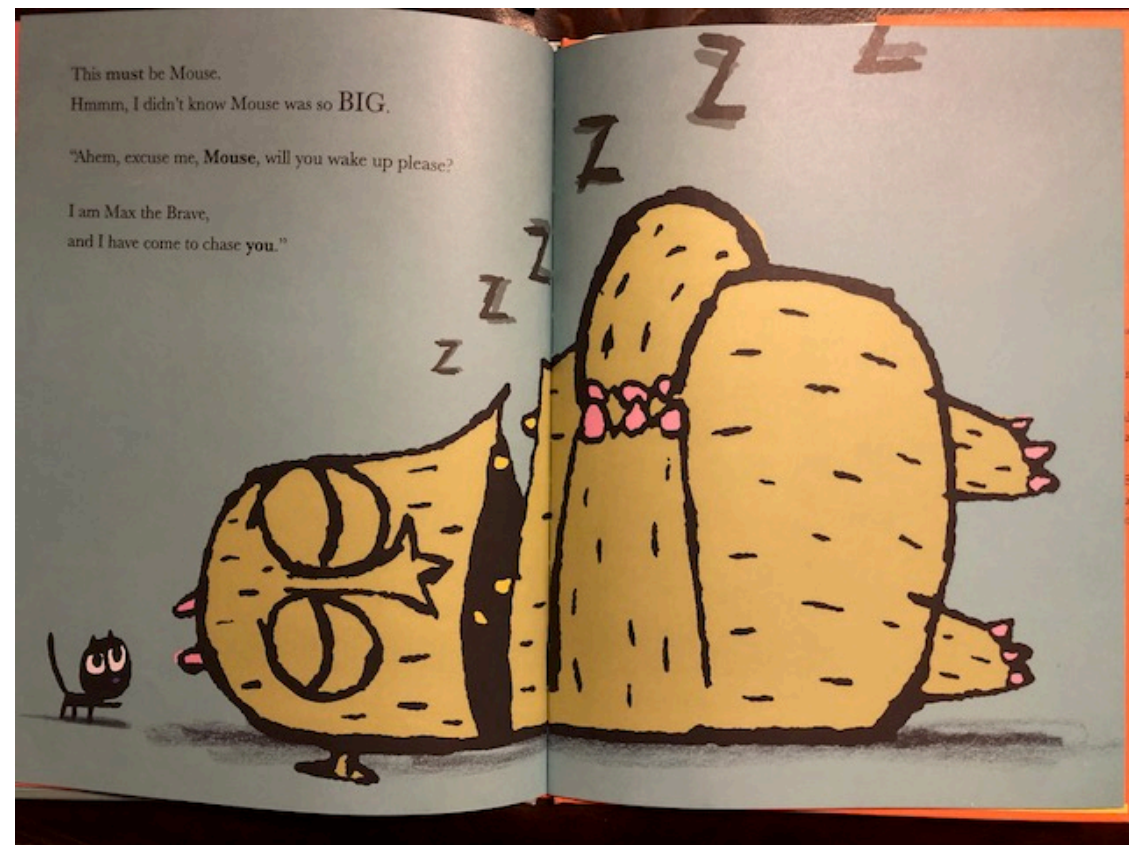
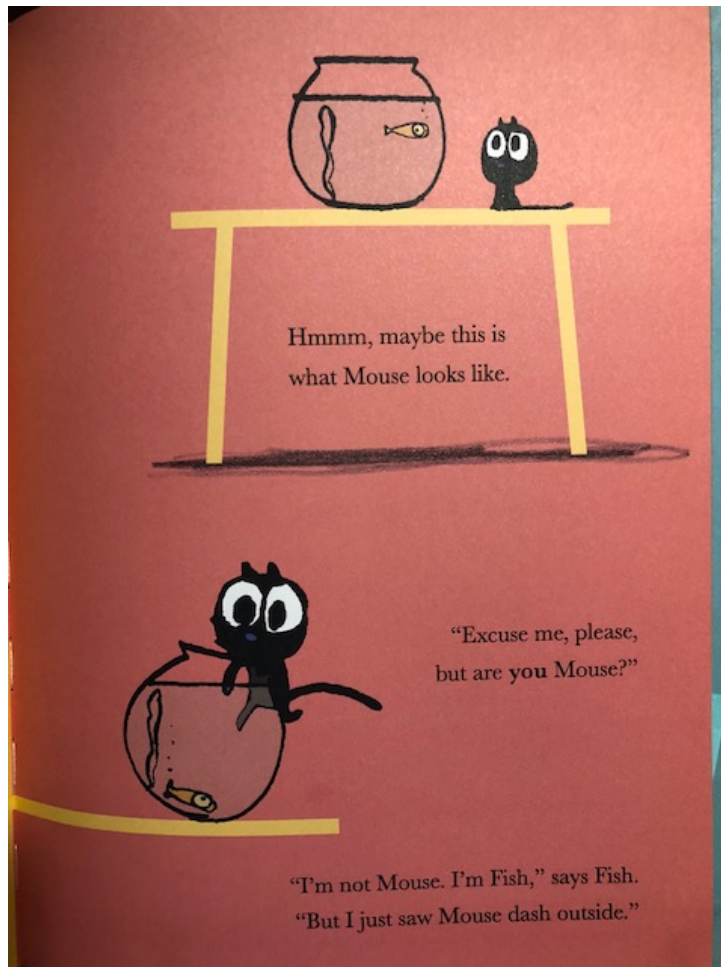
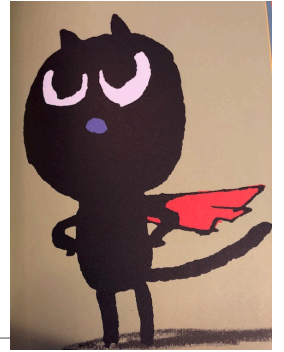
Addition, multiplication, subtraction

If gas costs [\$3.15] per gallon, about how much will it cost to fill our [12] gallon tank? If we can drive approximately [25] miles for each gallon of gas, how far can we drive on that tank of gas?

Estimation, addition, multiplication


When cooking dinner:	
How many [plates, napkins, spoons] do we need for a certain number of people?	Counting
How much [water] do we need to measure when making [orange juice]?	Measuring, fractions
If this recipe calls for $\frac{3}{4}$ cup of flour and we are doubling the recipe, how much flour do we need?	Adding fractions, measuring
When reading with your child:	
How many objects/pictures do you think are on this page? Let's count.	Estimating, counting
Do you think there are more birds or trees on this page? Why? How do you know?	Counting and comparing quantities
We're on page [27]. We're going to read the next chapter, which ends on page [42]. How many pages will we read? How many pages will we have left to read then?	Subtraction

When reading a book what kinds of questions do you ask your children?



When counting what words do you say?

What are all the ways to say:

- 9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27
 - 101,201,301,401,501,601
 - Can you give me 2 more? Now how many do I have?
 - How many more until I have 25?
- 

Starting with Family Connections

Ask parents what they know about their children, the situations they are in that raise mathematical work, the resources their students might draw on.

Engage them in tasks that draw out what they are already doing and gain insight into what resources students have

Partner with parents around core commitments and approaches.