

Kindergarten Readiness Numeracy Workshop

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Amy Zappone
Pre-k-12 Math Coordinator
Southington Public Schools





Key Shifts in Common Core Mathematics

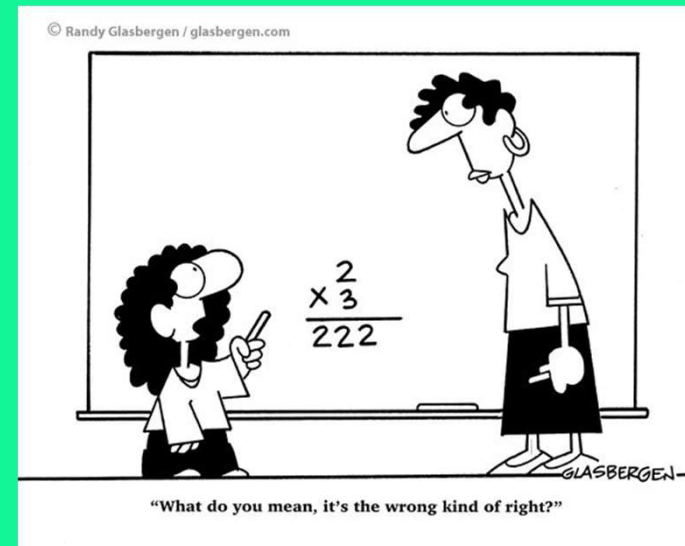
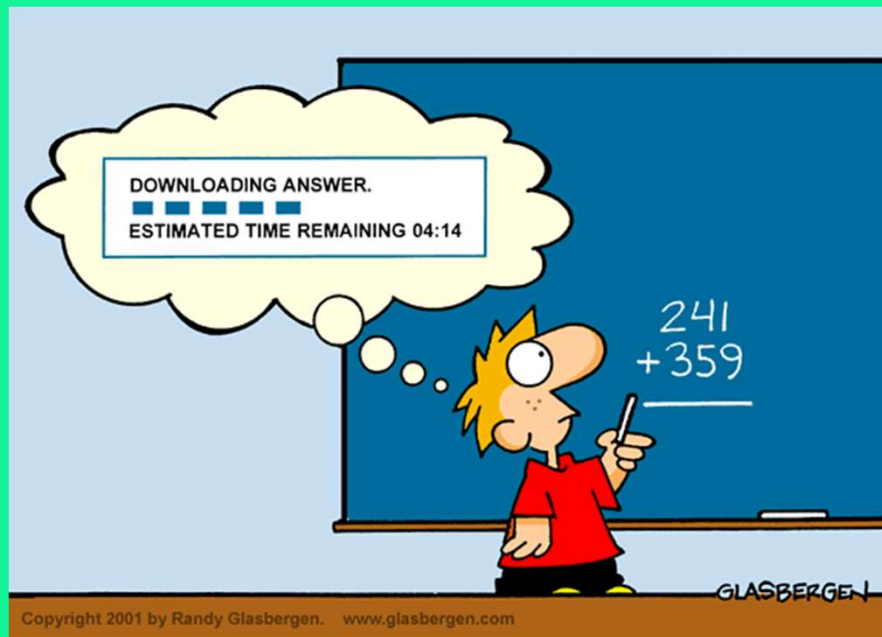


- Focuses on Conceptual understanding (knowing the “why” and “how”)
- Requires students to apply skills in real world problems and situations
- Encourages multiple strategies and approaches for procedural fluency

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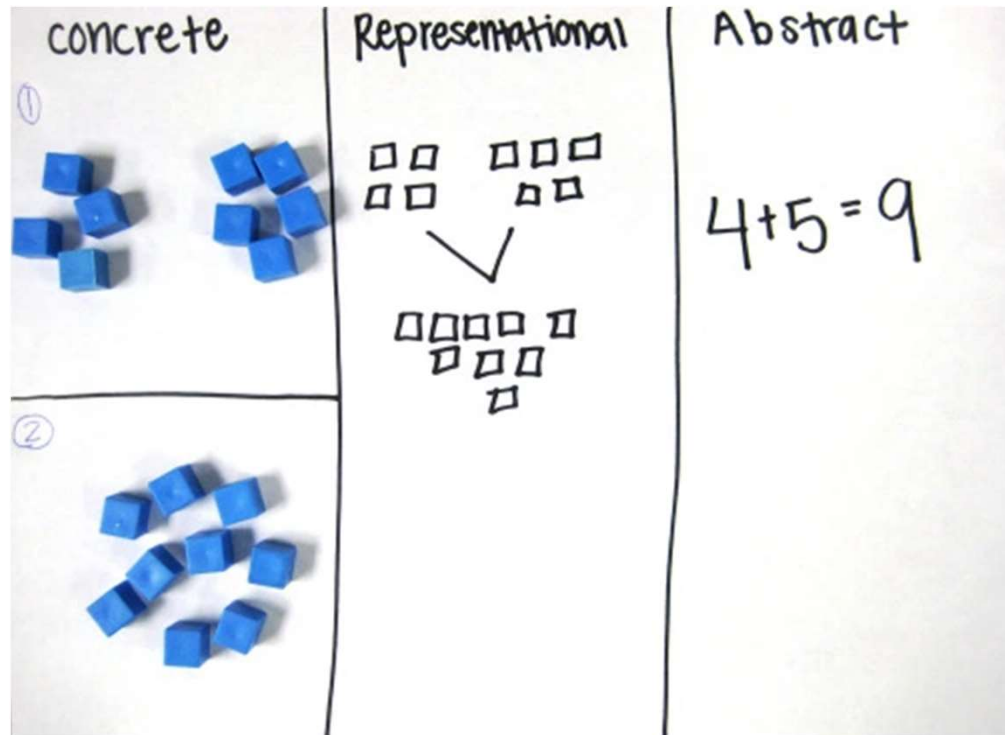
- 1) Greater focus on fewer topics
- 2) Coherence: Linking topics and thinking across grades
- 3) Rigor: Pursue conceptual understanding, procedural skills, fluency and application with equal intensity

Teaching Math in the 21st Century



CRA Learning Model



1. **Concrete:** Objects and materials, "Doing Stage" (chips, beans, cubes)
2. **Representational:** Drawing pictures, "Seeing Stage" (dots, circles, tallies, stamps)
3. **Abstract:** Number, math symbols/notation, "Symbolic Stage" (+, -, =)



Mathematics Learning Progressions

Counting and Cardinality:

Strand A: Early learning experiences will support children to understand counting and cardinality.

3 to 4 year olds	4 to 5 year olds	Activities/Suggestions
Say or sign the number sequence up to at least 10	Say or sign the number sequence up to at least 20	<p>Turn mealtime into counting fun by having your child count objects as he or she sets the table. (Forks, spoons, napkins, etc)</p>  <p>Take a handful of your child's favorite cereal and have them count out sets of 2, 3, 4, and 5...</p> 
Count up to at least 5 objects using one-to-one correspondence, using the number name of the last object counted to represent the total number of objects in a set.	Count up to 10 objects using one-to-one correspondence, regardless of configuration, using the number name of the last object counted to represent the total number of objects in a set.	
Count out a set objects up to four.	Count out a set objects up to five.	



Counting and Cardinality Continued

Strand A: Early learning experiences will support children to understand counting and cardinality.

3 to 4 year olds	4 to 5 year olds	Activities/Suggestions
Recognize written numerals up to at least five.	Recognize written numerals up to at least 10.	<p>Play "I Spy" with a magazine. Have children locate numbers 1-10 in a magazine and cut them out. Have children sort them into piles of 1's, 2's, 3's etc.</p> <div data-bbox="1394 764 1520 924" data-label="Image"> </div> <div data-bbox="1583 774 1703 904" data-label="Image"> </div> <p>Use a deck of card (numbers 1-9, Jack as 10) and lay them out a few at a time. Have your child count out objects (cubes, chips, cheerios,) and lay them on top of the card to match the number. Have them compare using vocabulary.</p> <div data-bbox="1577 1122 1782 1284" data-label="Image"> </div>
Recognize and name, without counting, the number of objects in small groups or at least 3 or 4 objects.	Quickly recognize and name, without counting, the number of objects in collections of up to at least five items.	
Compare sets of 1 to 5 objects using a visual matching or counting strategy and describing the comparison as more, less than or the same.	Compare sets of up to 10 objects using a visual matching or counting strategy and describing the comparison as more, less than or the same.	

Operations and Algebraic Thinking

Strand B: Understand and describe relationships to solve problems.

3 to 4 year olds	4 to 5 year olds	Kindergarten CCSS
Understand that adding to(or taking away) one or more objects from a group will increase or decrease the objects in the group.	<p>Use real-world situations and concrete objects to model and solve addition and subtraction problems up to five.</p> <p>Recognize and describe parts contained in larger numbers by composing number combination up to at least 5.</p>	<p>Use a box of crayons to model adding and subtraction. Create a story problem where your child is handing out crayons to his/her stuffed animals. Practice adding to and taking from.</p> <div></div>

Measurement and Data


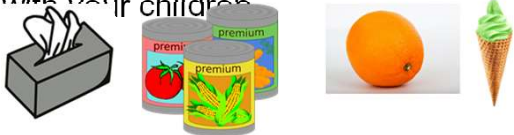
Strand C: Understand the attributes and relative properties of objects.

3 to 4 year olds	4 to 5 year olds	Activities/Suggestions
Recognize measurable attributes of an object such as length, weight or capacity.	<p>Compare the measurable attributes of two or more objects (e.g., length, weight and capacity) and describe the comparison using appropriate vocabulary (e.g., longer, shorter, same weight, holds more, holds less, holds the same amount)</p> <p>Begin to use strategies to determine measurable attributes (e.g., length or capacity of objects). May use comparison, standard or non-standard measurement tools.</p>	<p>Collect objects from home or outdoors and sort & classify them into groups based on size, shape, color, pattern, type</p> <p>Items: Leaves, shells, rocks, books, toys, clothes, etc.</p>
Sort objects into two groups, count, and compare the quantity of the groups formed (e.g., indicate which is more)	Represent data using a concrete object or picture graph according to one attribute.	<p>*You can place some nature items in a brown bag and have them reach in and grab one (surprise grab game)</p>
Sort and classify objects by one attribute into two or more groups (e.g., color, size, shape).	Sort and classify a set of objects on the basis of one attribute independently and describe the sorting rule. Can re-sort and classify the same set of objects based on a different attribute.	



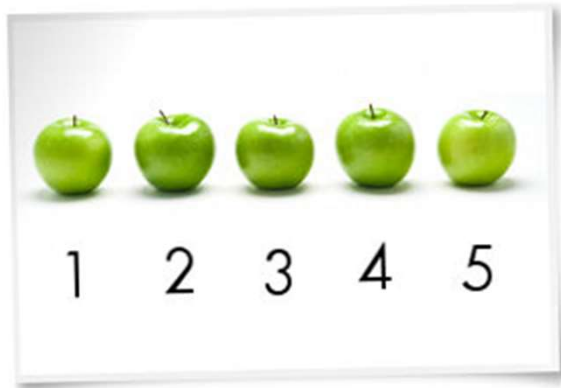
Geometry and Spatial Sense

Strand D: Understand shapes and spatial relationships.

3 to 4 year olds	4 to 5 year olds	Activities/Suggestions
Use positional vocabulary (e.g., up/down, in/out, on/off, under) to identify and describe the location of an object.	Use related vocabulary of proximity (e.g., beside, next to, between, above, below, over and under) to identify and describe the location of an object.	Provide opportunities for children to take apart, put together and build with blocks: Legos, Tinker Toys, K'nex, etc. 
Identify 2-dimensional shapes (starting with familiar shapes such as circle and triangle) in different orientations and sizes).	Identify and describe a variety of 2-dimensional and 3-dimensional shapes with mathematical names (e.g., ball/sphere, box/rectangular prism, can/cylinder) regardless of orientation and size.	Gather a tissue box, an ice cream cone, a can of vegetables, an orange. Discuss the shapes and dimensions with your children. 
Combine two or more shapes to create a new shape or to represent an object in the environment.	Complete a shape puzzle or a new figure by putting multiple shapes together with purpose.	

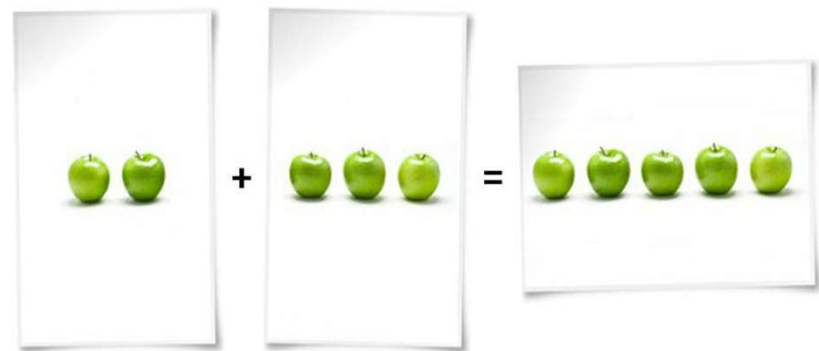
Key Math Terms to Know and Understand

One-to-one Correspondence:



*Matching an object with a numerical (pointing, placing) value and understanding that each object being counted represents "one more."

Counting On:

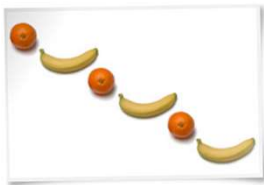


*Continue counting objects added to a previously counted group without recounting the entire group

Key Math Terms to Know and Understand

Patterns:

0	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29



ABA



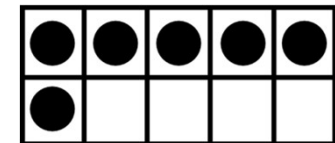
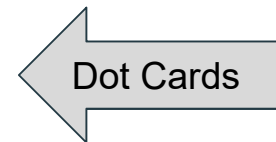
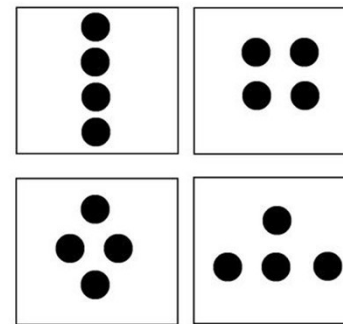
AAB



ABC

*A pattern is defined as any sequence that repeats at least twice

Subitizing:



*Subitizing is the ability to 'see' a small amount of objects and know how many there are without counting

Integrating Reading and Numeracy

Reading with your children or students!

- *Look for numbers on pages
- *Identify numbers in text and in pictures
- *Look for and talk about patterns and shapes
- *Classify objects in pictures by size, shape, color, category
- *Develop mathematical language

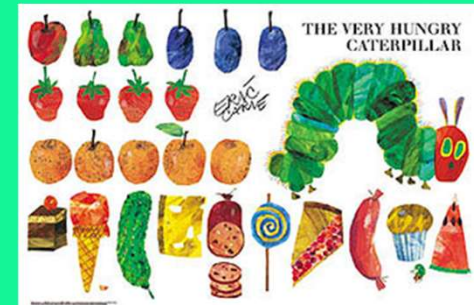
Picture Books to Explore:

The Very Hungry Caterpillar, Eric Carle

Who Stole the Cookie from the Cookie Jar, Margaret Wang

Can't You Sleep Little Bear?, Martin Waddle

The Mittten, Jan Brett



Everyday Math

Playdo

- Roll play-do into snakes, shape into numbers
- Use a toothpick or straw to poke numbers into play-do



Clothing

- Matching socks into pairs
- Sorting shirts by: short sleeves, long sleeves, tank tops



Toys

- Make a pattern with beads, marbles, game pieces
- Practice adding/subtracting with play money



Nature Items

- Rocks, sticks, leaves:
 - Count into piles
 - Order by size
- Find geometric shapes within nature



Food

- Counting Fun: cheerios, goldfish, small snacks
- Sorting by: color, shape, size
- Fractions: half, whole, quarter, thirds (use pizza, fruit, cake, etc.)

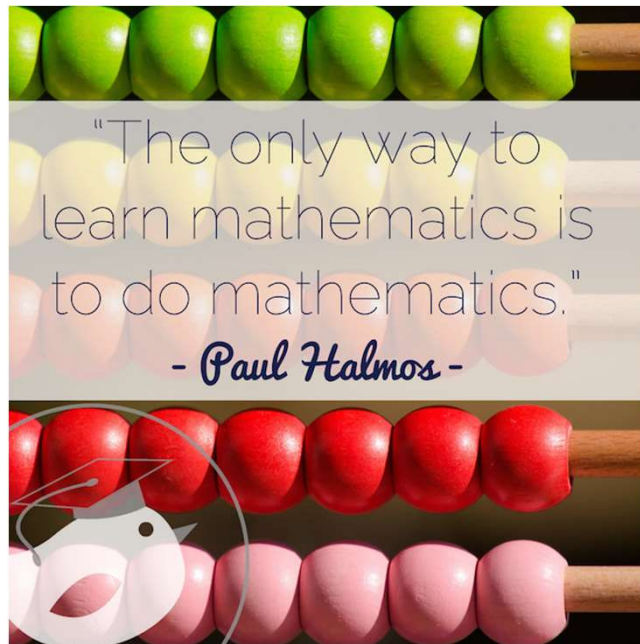


Car/Driving:

- Count street signs
- Identify shapes of street signs
- Use positional words (above, below, next to, on top of, first, second, etc.) to describe cars/trucks/homes/trees



Final Thoughts



- Math is anywhere and everywhere
- Talk about math regularly with children by pointing out the numbers, patterns, shapes and measurements we see in the world around us
- Encourage your children and students to be curious and take risks in their learning
- Let children be "problem solvers" by providing them with authentic opportunities to engage in math
- Let them "Do Math" and learn with them!