

Subitizing

Little STEAMers Focus Activity #1

April 6, 2020

Lindsey Herlehy

We will begin momentarily.



Housekeeping Issues

- All participants are muted and video is turned off – if you would like to participate using video, feel free to start your camera.
- Please type comments and questions in the chat box and they will be answered following the presentation.
- This webinar is being recorded and will be uploaded into the Moodle (for Little STEAMers teachers) and onto Digital Commons



Your Webinar Presenters



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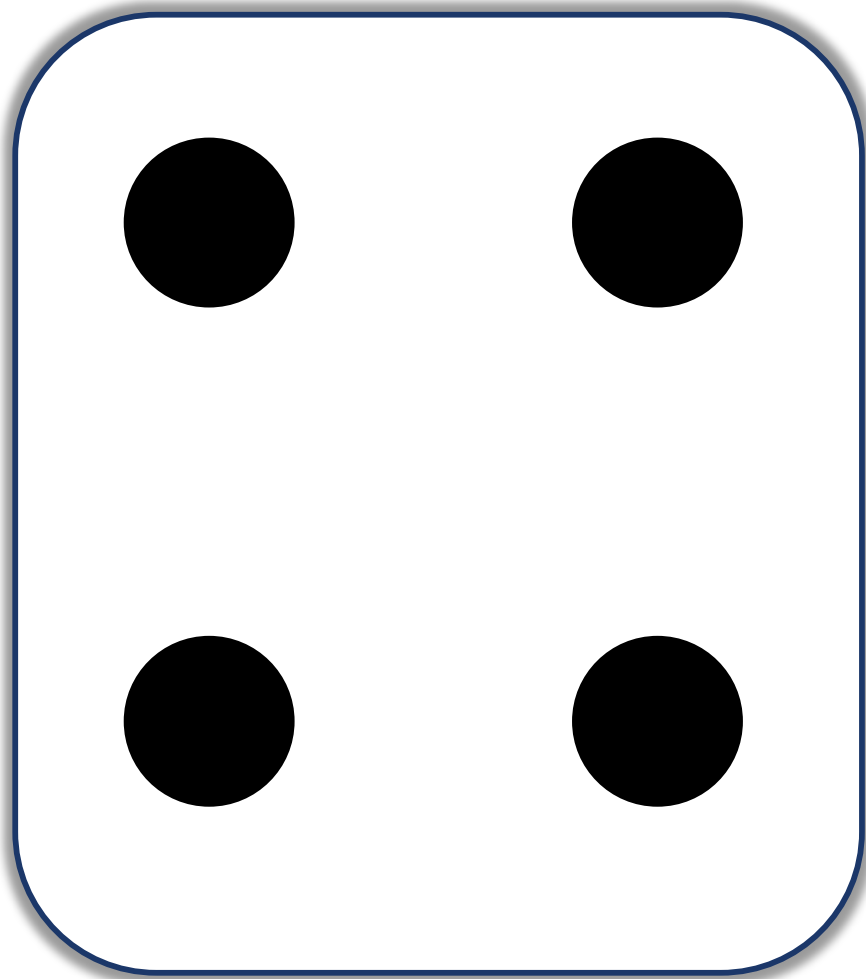
Webinar Objectives:

-  Define *subitizing* and identify how the two stages of subitizing are linked to counting and numeracy.
-  Describe how subitizing in early childhood lays the foundation for later success in mathematics.
-  Identify simple ways to incorporate subitizing exercises into the early childhood classroom.
-  Explore several activities that incorporate subitizing with kindergarten readiness mathematics and STEAM learning.



What is *subitizing*?

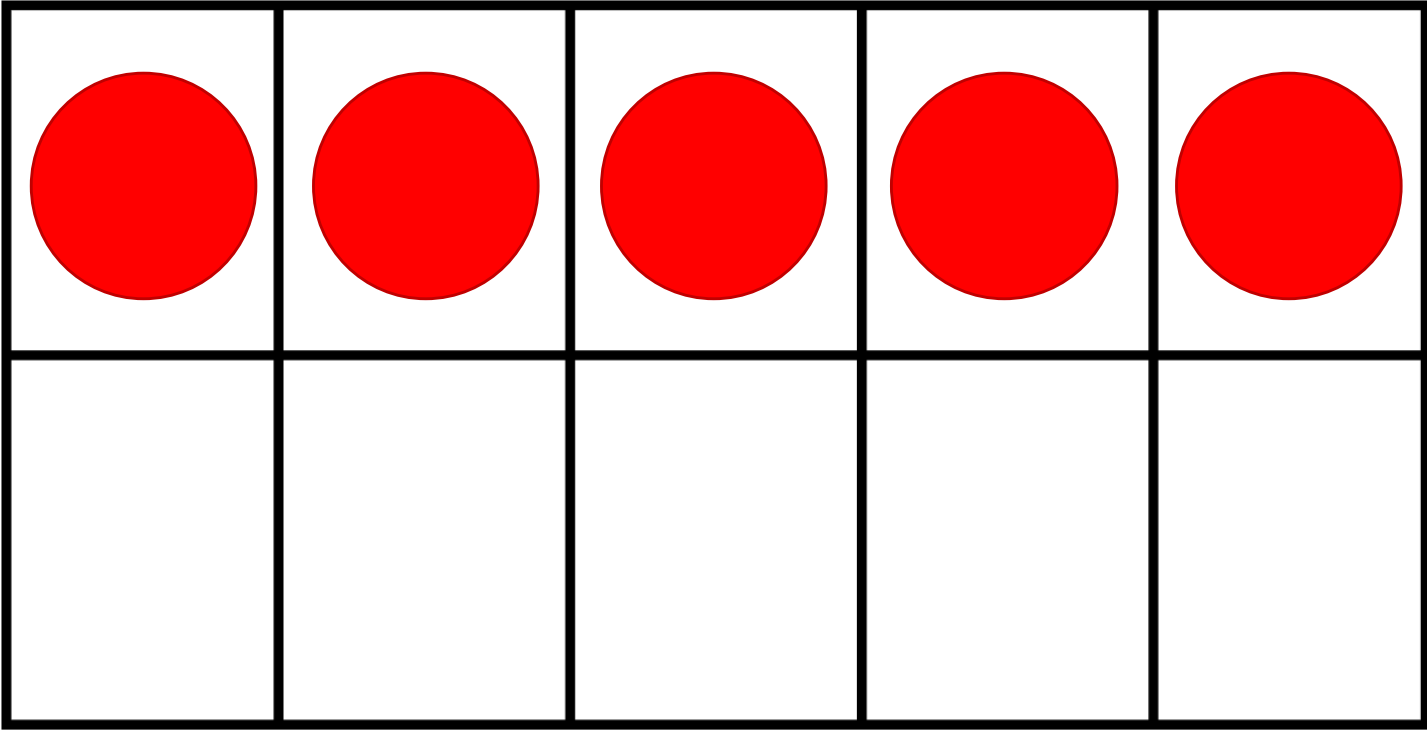
















How did you know how many?

Share your thoughts with the group using the Chat feature on your Zoom toolbar.

Subitizing:



Coined in 1949 by E.L. Kaufman and supported by the work of theorist Jean Piaget



From the Latin adjective *subitus* meaning “sudden”



Defined as “instantly seeing how many”

Source: Wikipedia, Clements 1999



The History of Subitizing:

The in the first half of the century...	In the second half of the century...
<p>...researchers believed that counting did not imply a true understanding of number, but that subitizing did.</p> <p>...many say the role of subitizing as a developmental prerequisite to counting.</p> <p>...it was suggested that whereas measurement focused on the whole and counting focused on the unit, subitizing focused on the whole and the unit; therefore, subitizing underlay number ideas.</p>	<p>...educators began developing models of subitizing and counting.</p> <p>...researchers found that young children could subitize sets of one or two but were not able to count them.</p> <p>...counter arguments were developed.</p>



Source: Clements 1999

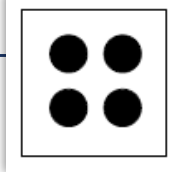


Types of Subitizing:

Perceptual Subitizing

Recognizing a number without using other mathematical processes.

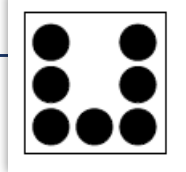
Many children will instantly recognize and verbally label sets of items made of five or fewer before leaving preschool.



Conceptual Subitizing

Recognizing a number pattern as a composite of parts of a whole.

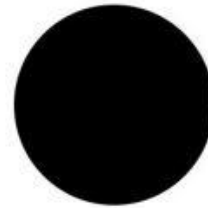
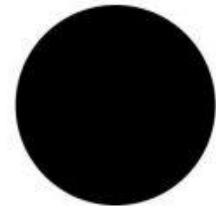
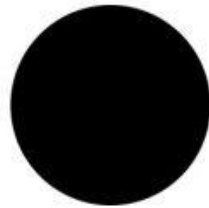
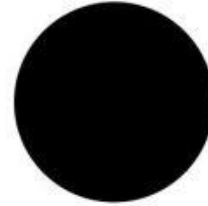
Some children will be able to verbally label two sets of subgroups up to six and then one more subgroup when subitizing up to ten items.



What do you see?

Share your thoughts with the group using the Chat feature on your Zoom toolbar.





Maria (4 years, 4 months)

Me: "What did you see?"

Maria: "I saw 5."

Me: "How did you see it?"

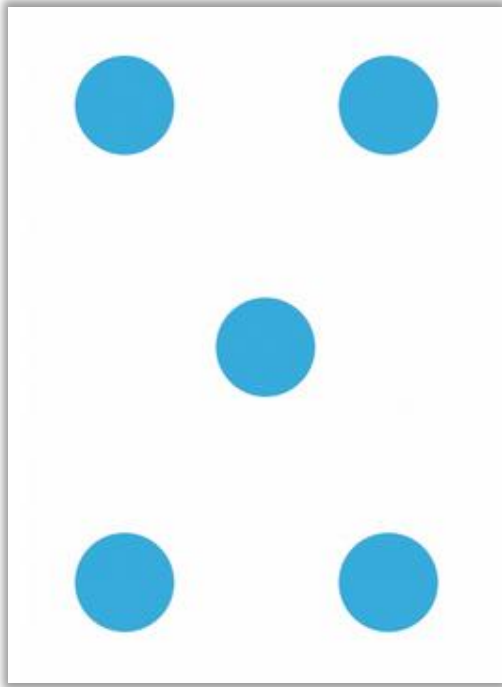
Maria: "I saw two, two, and one."

Me: "I also saw five, but in a different way. Do you want to look at it again?"

Maria: "Ok..." I proceeded to show the card again and again she said, "I saw 5."

Me: "How did you see it?"

Maria: "I saw two, two, and one."



Source: AIMS Center

Omar (just turned 4)

Me: "What did you see?"

Omar: "I saw a square with a dot in the middle."

Me: "How many dots did you see?"

Omar: "Five. I saw four and one in the inside."

Me: "I see how you saw that."

Omar: "Hey, I see two on the top, one in the middle, and two on the bottom, too."

Me: "Yeah, I can see it that way too."



Why Should My Students Be Doing This?



The development of pattern recognition.



The understanding of numbers and number sense.



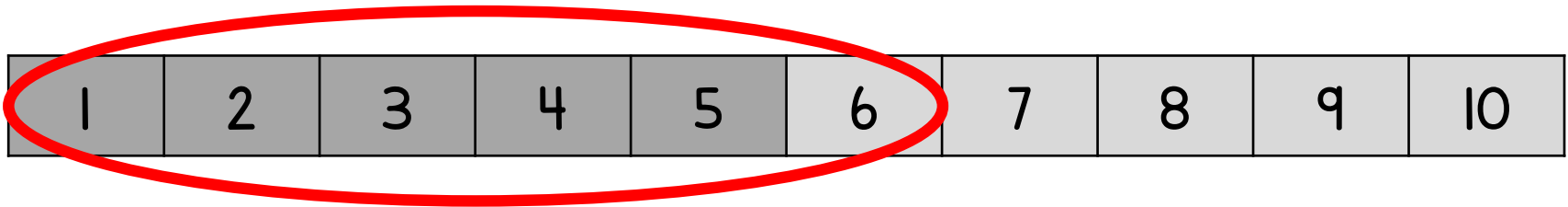
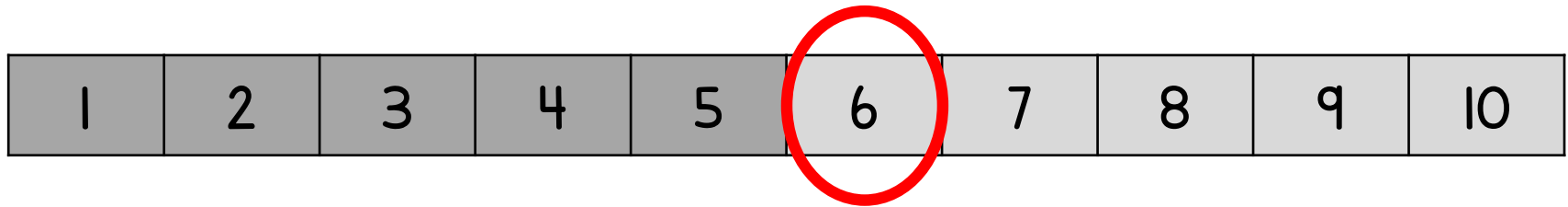
Building a foundation for algebraic thinking.



It is **efficient**.



But Shouldn't They Be Counting?



$$6 + 5$$

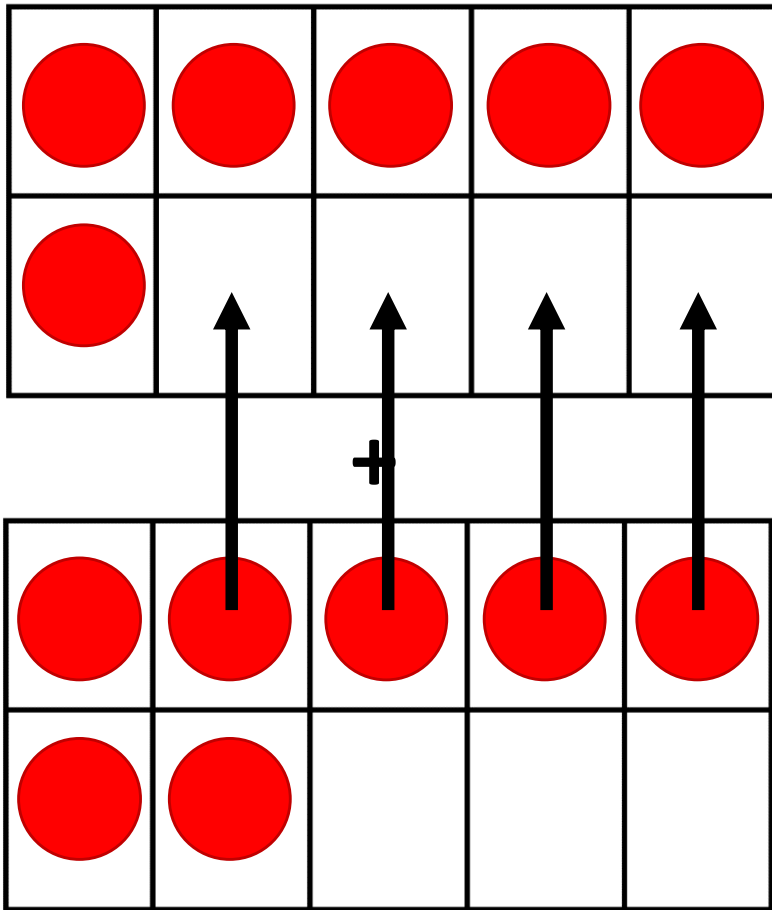


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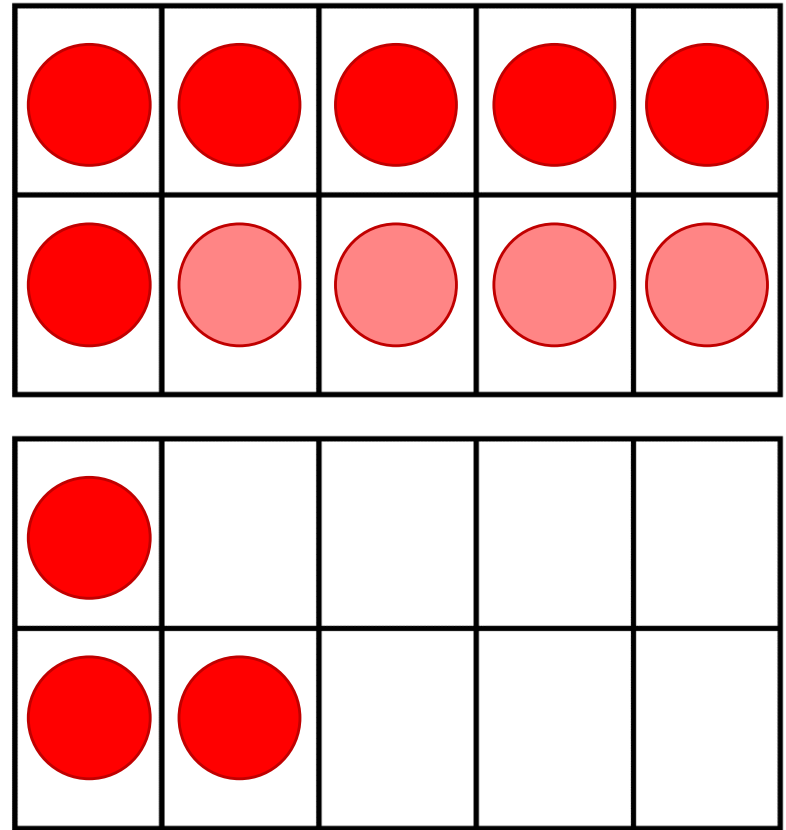


Source: Building Math Minds

$$6 + 7 = 13$$



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Source: Building Math Minds

How Do I Get Started?

Through Play.



Center Explorations and Daily Activities









-  Include subitizing cards in centers – especially blocks and dramatic play
-  Attention Getters – “Show me four!”
-  Literacy – *How Many?* by Christopher Danielson
-  Auditory Learning – select the dot card that corresponds to the number of chimes played
-  Transitions ([Erikson Institute](https://www.eriksoninstitute.org/))



Transitions (Erikson Institute)



Games and Activities

-  Board Games, Card Games and Dominoes
-  Match Them All ([Erikson Institute](#))
-  Make A Match Game ([Erikson Institute](#))
-  Which One Doesn't Belong?
-  Race to Ten ([Erikson Institute](#))
-  Capture ([Erikson Institute](#))
-  Flash It
-  Can You Find It? ([Richardson](#))



Subitizing and STEAM

How Many Do You See?

(from *Developing Math Concepts in Pre-kindergarten* by Kathy Richardson)

Display a subitizing card. Have the children take the number of counters that correspond to the amount on the card.

Ask them to build that number.

Stack and Subitize

(from www.thekindergartensmorqasboard.com)



Source: Clements 1999

Resources

Organizations

- Christina Tondevold - [Building Math Minds](#)
- Erikson Institute – [Early Math Collaborative](#)
- [Zeno Math](#)

Articles

- [Mathematics in the Early Grades: Counting & Cardinality](#) by Interactive STEM
- [Subitizing: What Is It? Why Teach It?](#) By Douglas Clements (1999)
- [Subitizing Games: Assessing Preschoolers' Understanding of Number](#) by Macdonald and Shumway

Books

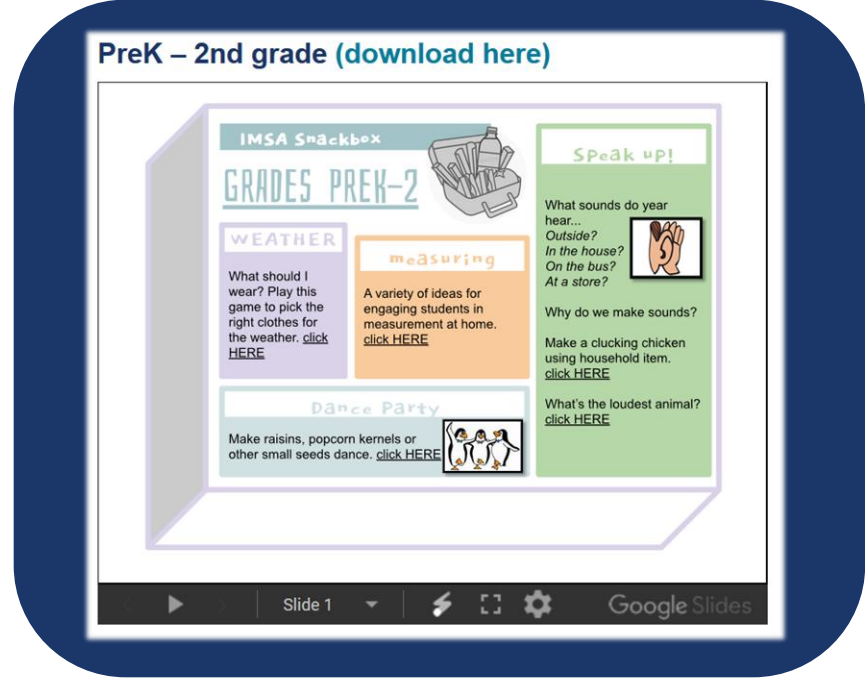
- [How Many?](#) by Christopher Danielson
- [Developing Math Concepts in Pre-kindergarten](#) by Kathy Richardson
- [Ten Black Dots](#) by Donald Crews



IMSA Resources



Ask a Specialist



Snack Boxes



Upcoming Focus Activities

Date	Concept
April 20 th	Sorting
May 4 th	Drawings
May 18 th	Patterns
June 1 st (tentative)	Loose Parts



Questions?





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All articles and suggestions for activities are located in the Focus Activity #1: Subitizing section of the Moodle.

