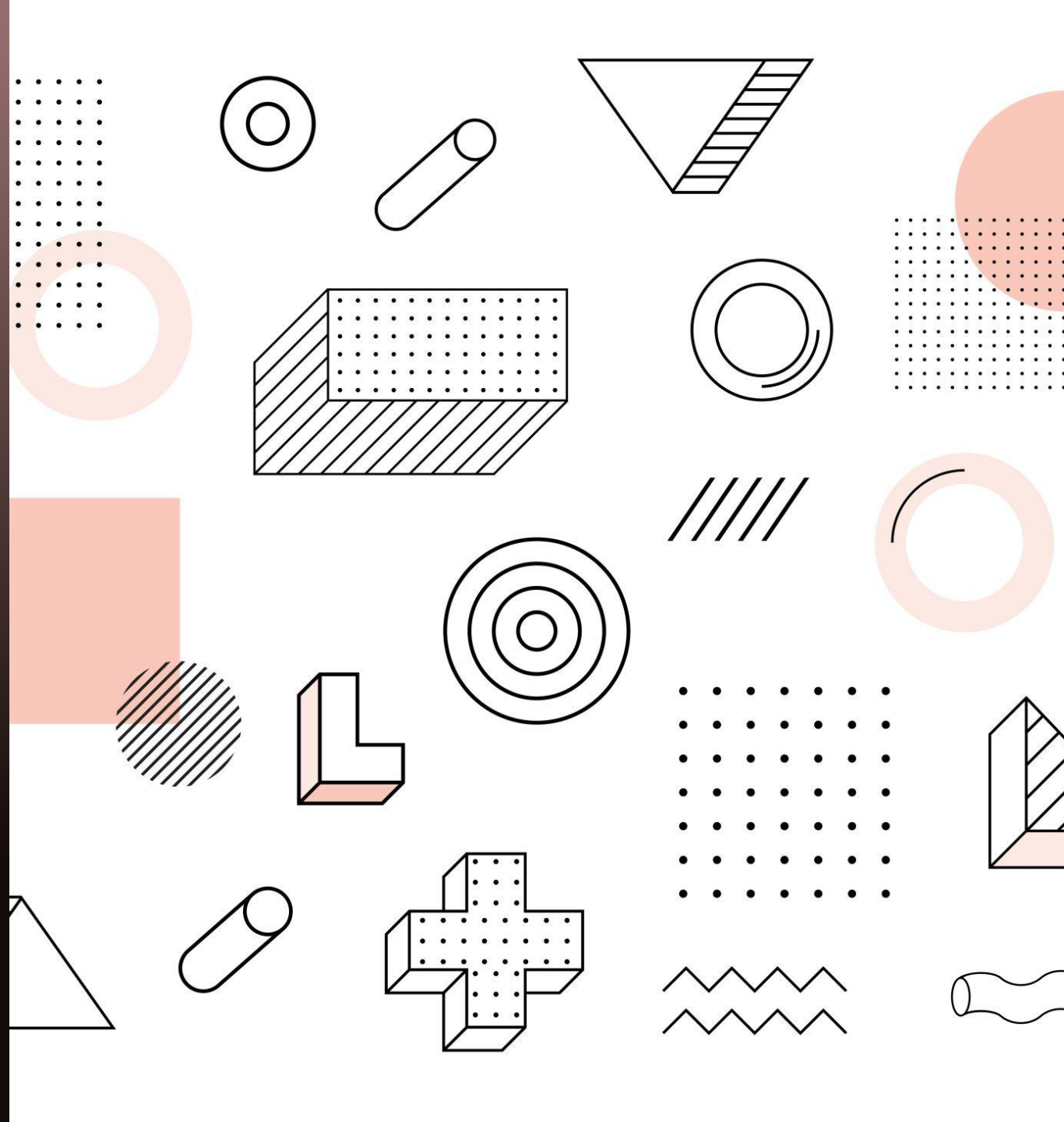


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QUICKLY IDENTIFY A NUMBER OF ITEMS IN A SET FROM 0-10 WITHOUT COUNTING (E.G., DOMINOES, DOT CUBES, TALLY MARKS, TEN-FRAMES)

EMPACTS Project Spring 2022

BY: SYDNEY COOK & HANNAH BOND
Dr. William Hammack, Instructor
Northwest Arkansas Community College
Bentonville, AR 72712



Introduction

Our team researched the topic of subitizing and how best to teach about this specific math concept to K-2 learners.

After doing research and having our interviews, subitizing became a clearer topic and realization that we use subitizing a lot more than we think. Why take time to count when we can knowingly acknowledge the amount of something just by glancing at it. Subitizing makes life easier and is a key essential for all students to know. Teaching how to subitize at a young age is a great idea because the kids can use it from an early age and it will be more beneficial for them. Subitizing may be a difficult concept at first, but will become a great necessity to have while growing up.

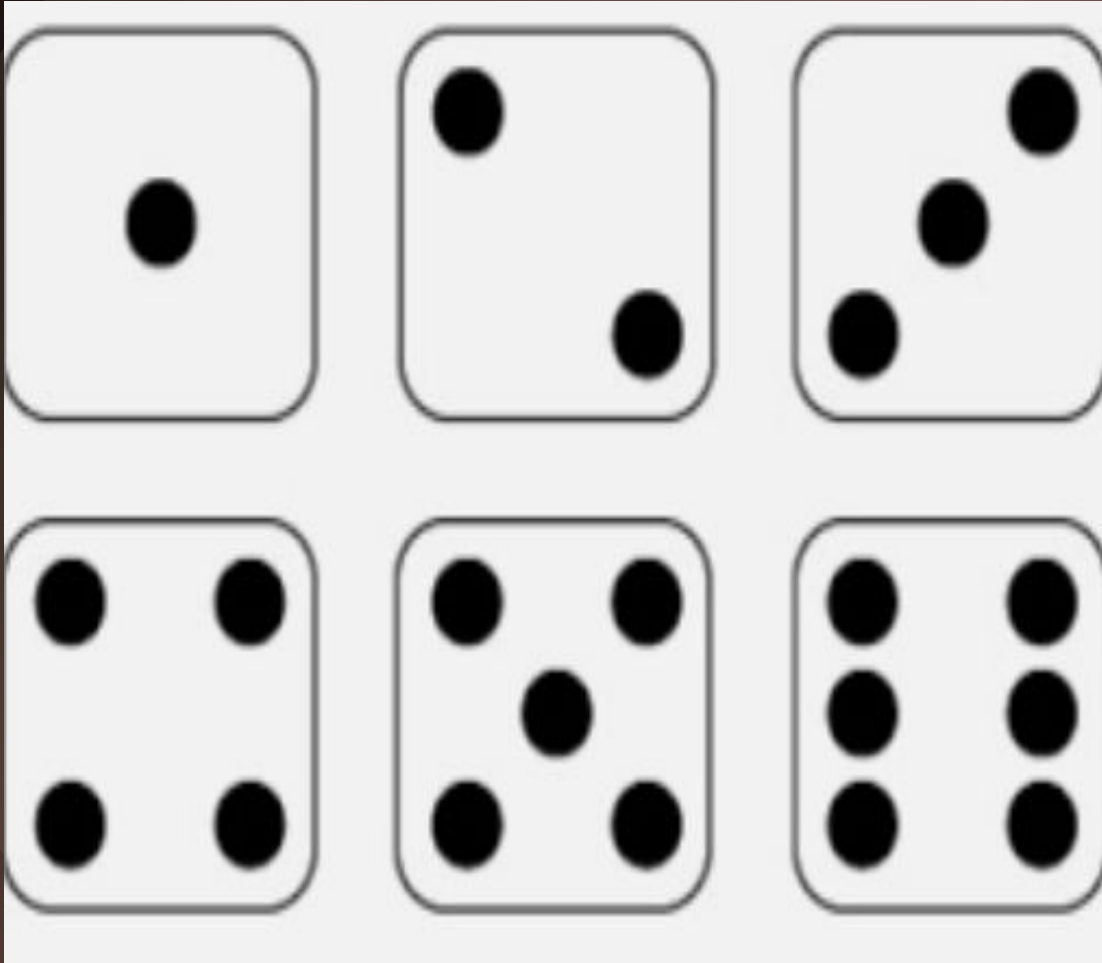
What is Subitizing?

- Recognizing and identifying a number of items in a group without counting
- Shown most effective when you only move to the next quantity (in increments of 1) when the child has mastered the previous quantity.
- Subitize is derived from the Latin culture and means "to arrive suddenly"
- Subitizing is an immediate math subject most teachers want their students to learn

Subitizing Benefits

- Considered a basic component of understanding numbers and math skills
- Saves time
- Precursor to more complex numerical skills
 - e.g. being able to understand $>$, $<$, beginning skills for addition, subtraction, and even multiplication.

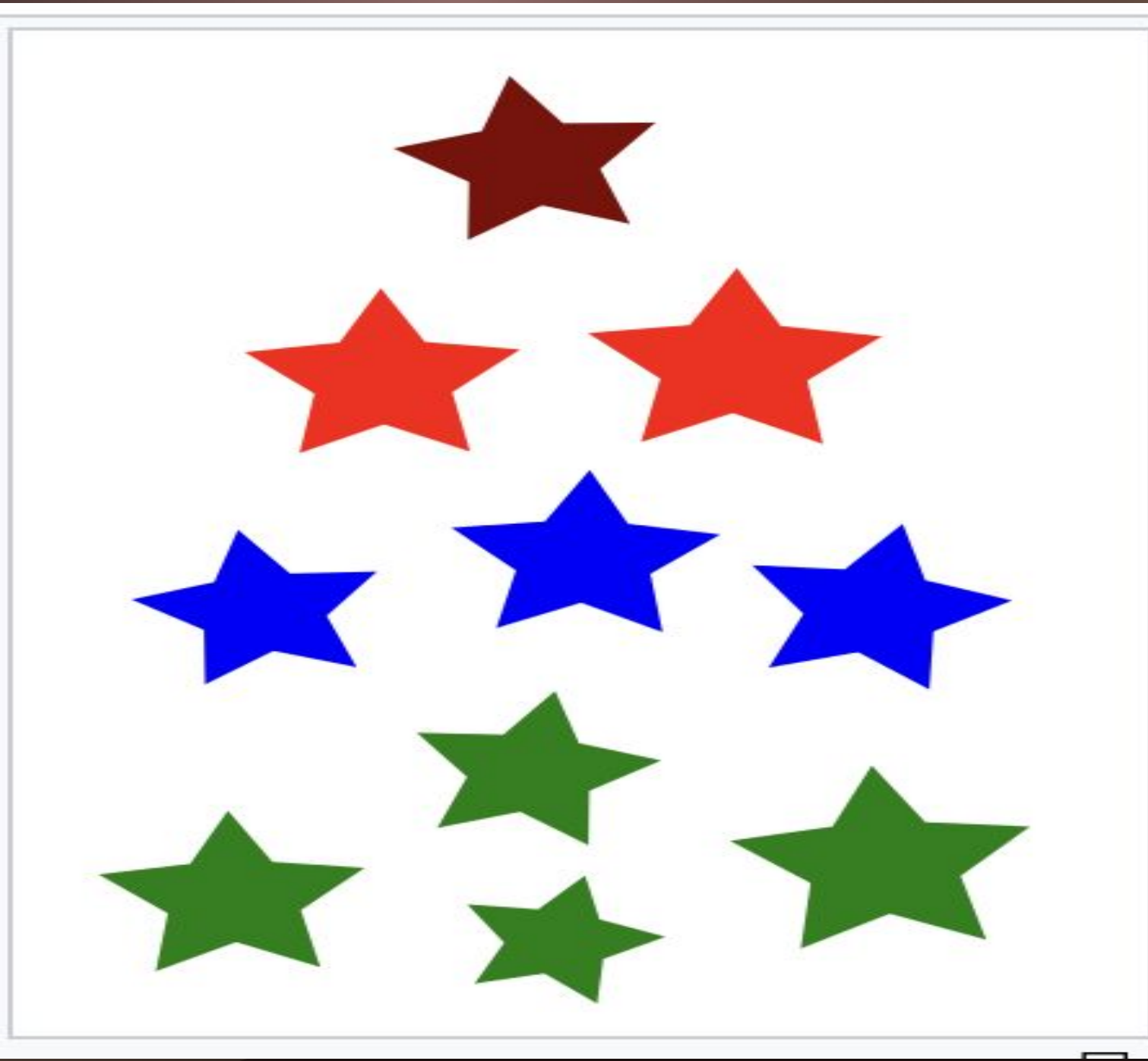
- Dice is also an excellent manipulative to teach your students subitizing because they can practice at home
- Ten frames are also beneficial



What number is represented by each ten frame?

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Perceptual

- Subitizing in which deals with recognizing small numbers by sight alone
- 0-4, possibly 5
- Set patterns for quicker immediate subitizing

Conceptual

- Subitizing larger numbers by splitting them up into smaller parts in their mind
 - e.g. "6" as 2 sets of 3
- First using set patterns, then playing with spatial arrangements

Carlee Tallman

First Year Kindergarten Teacher at Appleglen Elementary

- Flashcards have been the best manipulative
- Quick identification with the flashcards and even objects you are allowing them to use
- Most common mistake would be counting
- Testing them yourself as a teacher regularly, but also there being a testing by ASP four times a year

Brittany Brazell

First Year Teacher at Prairie Grove Elementary School

- Show a variety of methods to show subitizing (e.g. ten-time frames, dice, abacus)
- Choice of manipulatives used should be simplistic to minimize distraction.
 - "less is more"
- After this standard is considered learned, continue to reinforce throughout rest of school year relating how subitizing helps other aspects and areas of math.

Application for Classroom

- Start with perceptual subitizing then conceptual. Moving in 1 value increments
- Based on research done by the University of Kassel, there is evidence for spatial-numerical association in kindergartners. "it has been assumed that smaller numbers are associated with 'left' and larger numbers with 'right' in space at least in Western cultures" (Ebersbach).
 - They additionally did a study which showed that children performed better matching numbers and boxes from left to right, rather than right to left
 - To aid in students' success, set up worksheets with this in mind
- It's easier to recognize quantity of objects when they are orientated in a set pattern
 - Start with these set patterns, then mess around with the orientation

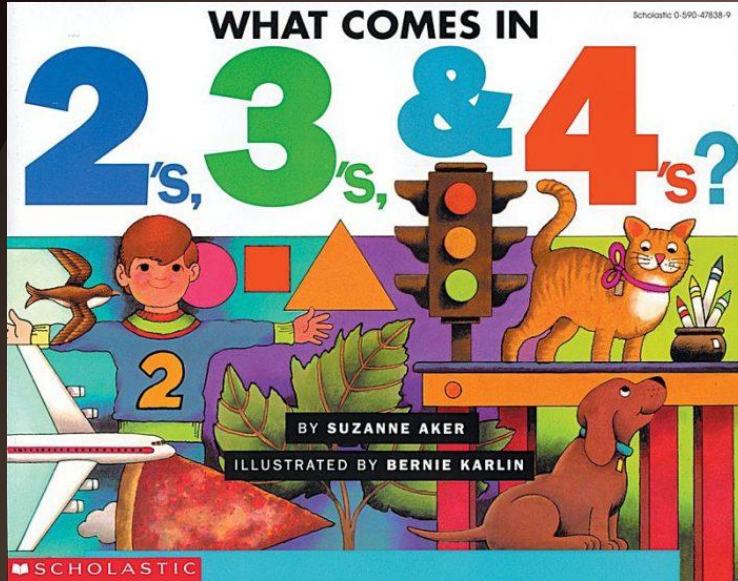
Multi-Sensory Tools

- Using previously shown resources to teach and practice subitizing.
 - E.g. Dominoes, dice, ten-frames, simple pictures (dots and stars)
- Abacus are good manipulatives as well, especially to see groups of 5's (give introduction to basic mathematics)
- In classroom games such as "Squeak under the jar", "How Much Under the Tile?", "Ten Black Dots", and "Laying tiles" (Flanders).
- Videos that practice subitizing (video on next slide), encourage children to practice out loud as the video plays

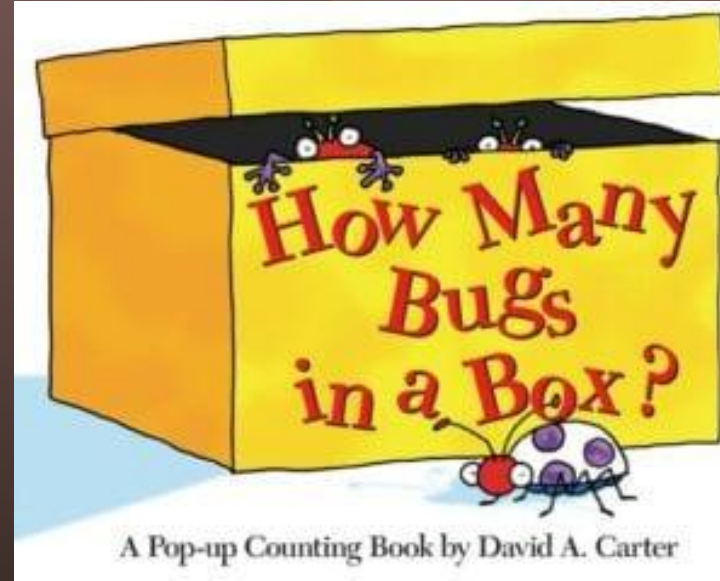
Video Resource Example



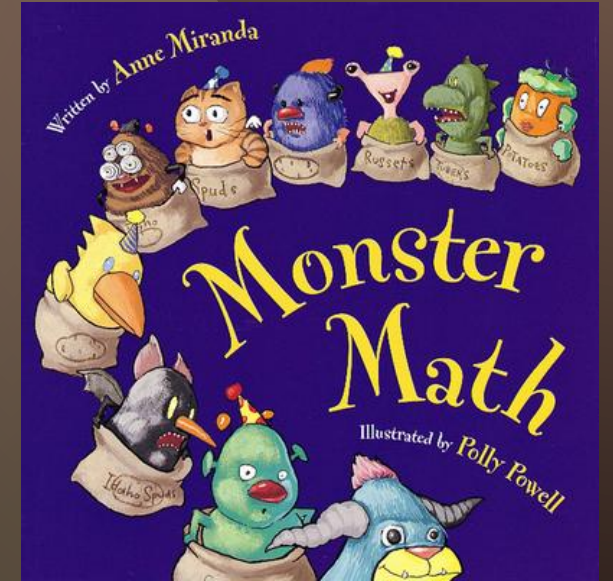
Book Resource Examples



Presents the set number concept of groups of 2's, 3's, & 4's with everyday objects



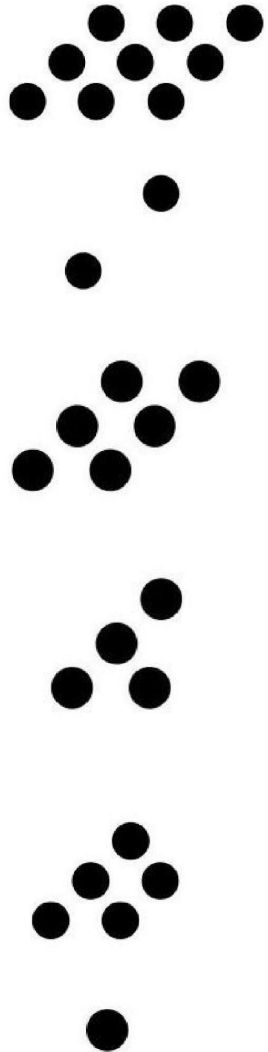
A pop-up counting book, after reading the book you can go to a random page to test the students subitizing abilities.



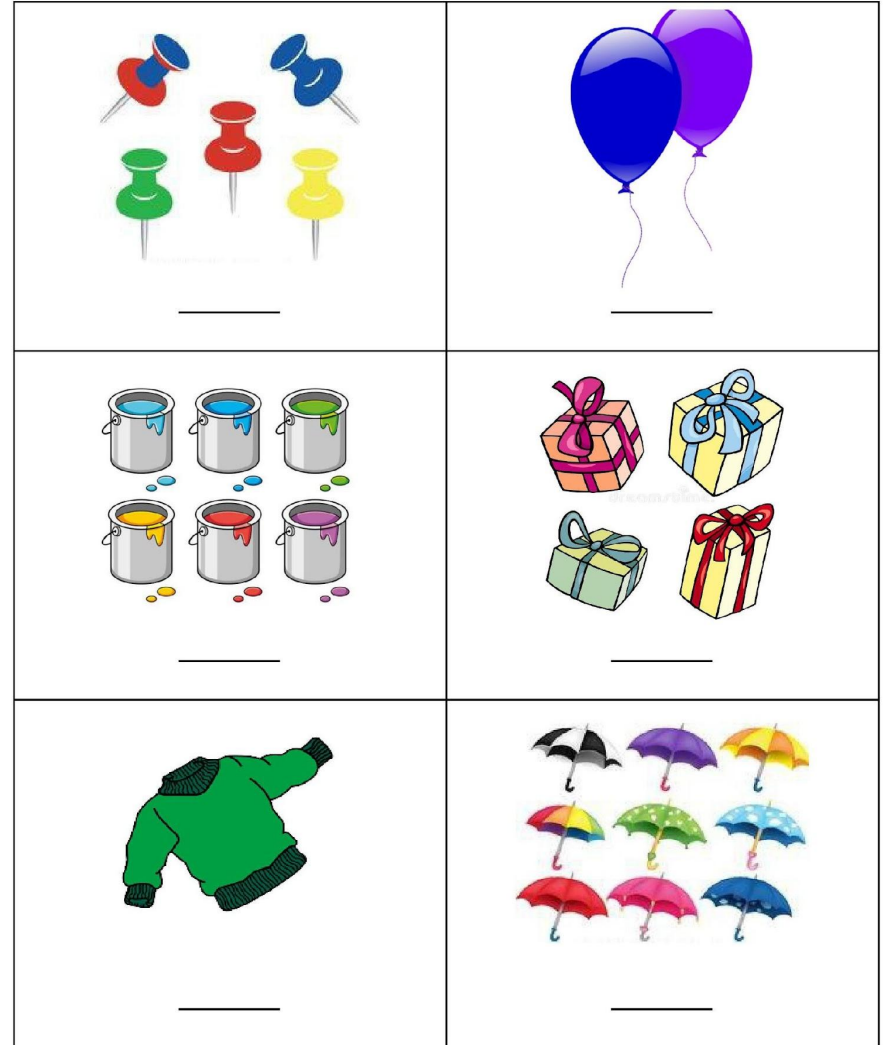
A party where one monster joins at a time. Good introduction book showing the physical value of one additional monster at a time

Worksheet Examples

Name: _____



Name: _____

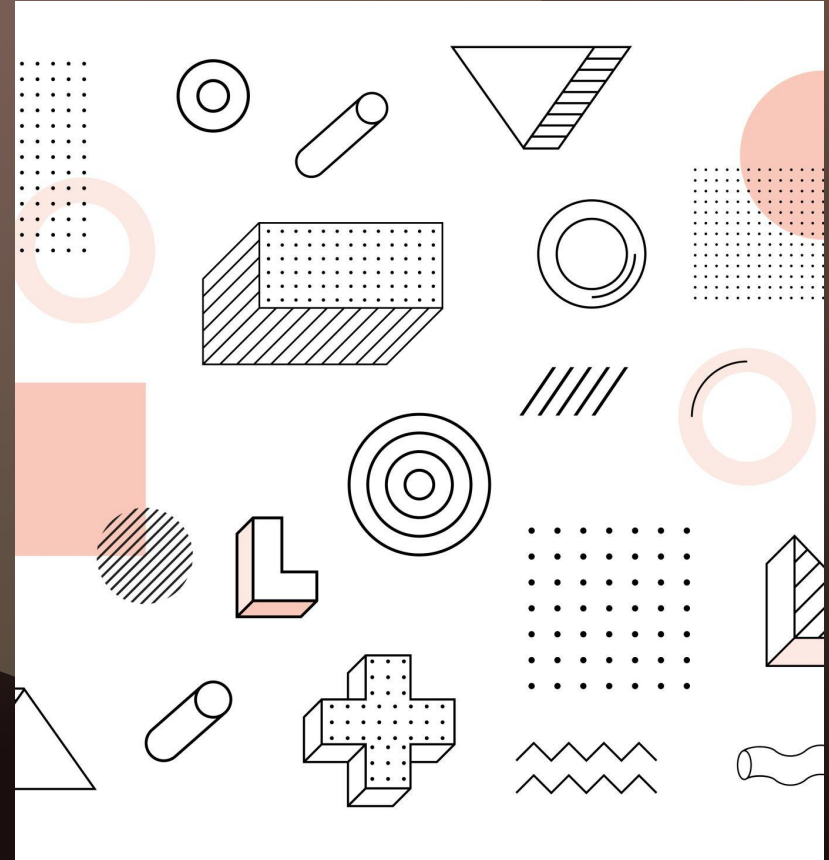


Subitizing is something that we are constantly using

- As we get older the numbers just get bigger
- The larger the numbers get the more the brain must be adjusted to memorization
- Children primarily want to resort to counting, but later grow into subitizing

Written Report

<https://empactsstudentprojects.files.wordpress.com/2022/05/math-structures-report.docx.pdf>



Acknowledgements

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Works Cited

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