Erikson Institute
Early Math Collaborative

Let's play and learn together! *Games engage ALL children and families in math thinking*

Jeanine Brownell and Rebeca Itzkowich

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Let's Play!
The Game of NIM

- The rules are simple: Start with 15 counters. On each turn, choose to take 1, 2, or 3 counters from the pile. Whomever is forced to take the last counter, *loses*. (This is a "poison-pill" style game.)
- Play the game several times—taking turns going first.
- Pay special attention to whom is the winner of each game and think about *why* that person won that particular game.

What's a Math Game?

Math games:

- involve a challenge, usually against one or more opponents
- are governed by a set of rules and have a clear underlying structure
- normally have a distinct finishing point
- have specific mathematical cognitive objectives

(Oldfield, 1991)

Benefits of Using Math Games

Motivation

- Meaningful situations for the application of mathematical skills
- Children choose to participate and enjoy playing
- Opportunity for building self-concept and developing positive attitudes towards mathematics, through reducing the fear of failure and error

Benefits of Using Math Games

Access

- Few language barriers
- Build independence—children can work independently of the teacher
- Build home/school connections when families are encouraged to play games at home
- Increase exposure to math

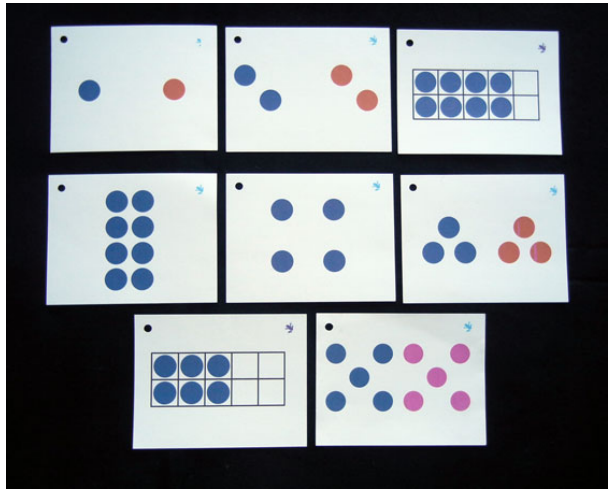
Benefits of Using Math Games

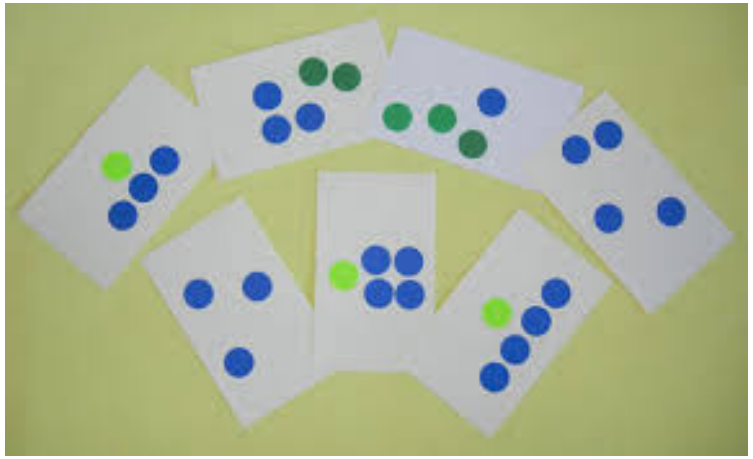
Increased Learning

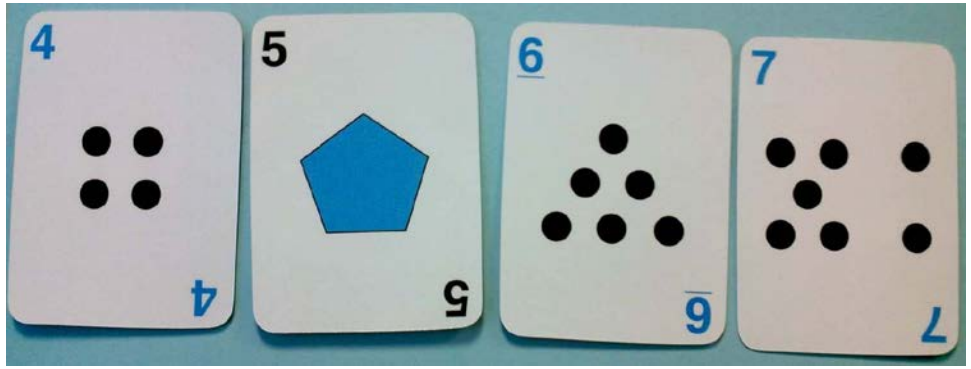
- Allow children to operate at different levels of thinking and to learn from each other
- Develop logical thinking—children test intuitive ideas and problem solving strategies
- Opportunity for assessment of learning in a non-threatening situation

(Davies, 1995)

What games can we play with quantity cards?







Game Play Rotation

1 Through 10

magic 10

match / make a number

salute

Game Features

- **Spatial Arrangements**—recognize how many in a set without counting by seeing a spatial arrangement
- **Magnitude**—understand the relative size of a quantity and where it fits on a number path
- **Benchmarks of 5 & 10**—anchor numbers in relation to 5 or 10
- **Combinations of 10—**builds foundational facts for deriving others facts (e.g., 2+8; 6+4)
- **Part/Whole Relationships**—conceptualize a number as being made up of two or more parts

Game Play Rotation

You will have approximately 5 minutes with each game.

- Try the game. Consider variations.
- Discuss what kind of mathematical thinking the game activates.

Games support number relationships that build strong number sense

- **Spatial Arrangements** - recognizing how many without counting by seeing the visual structure.
- **One & Two More, One & Two Less** - this is not the skill of counting on two or counting back one, but instead knowing which numbers are one more or two less than any given number.
- **Benchmarks of 5 and 10** - since 10 plays such an important role in our number system (and two 5s make up 10), knowing how numbers relate to 5 & 10 is key.
- **Part-Part-Whole** - seeing a number as being made up of two or more parts. *(A quantity can be broken up [decomposed] into smaller parts & the smaller parts can be joined [composed] to form the whole.)*

Let's watch a family playing a card game

What do you notice in terms of:

- The opportunities for math development
- The interactions between the parent and the child
- The experience for the parent and the child

A Thought to Ponder…

What books are to reading, games are to mathematics.

-Dan Finkel, founder of mathforlove.com

Questions?
Comments?

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Find more resources

at

Earlymath.Erikson.edu