

Playing with
Purpose:
*Assessing
Student
Understanding
Through Games*

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Games provide an
environment in which
children reveal their level
of understanding.

Jane Felling

Session Goals

- Explore a set of games that support numeracy
- Observe students playing the games
- Use data collection forms to record children's understanding
- Develop purposeful questions
- Adapt the games and data collection forms to fit your needs

50 and
Counting:
*data
collection
sheet*

[illegible]

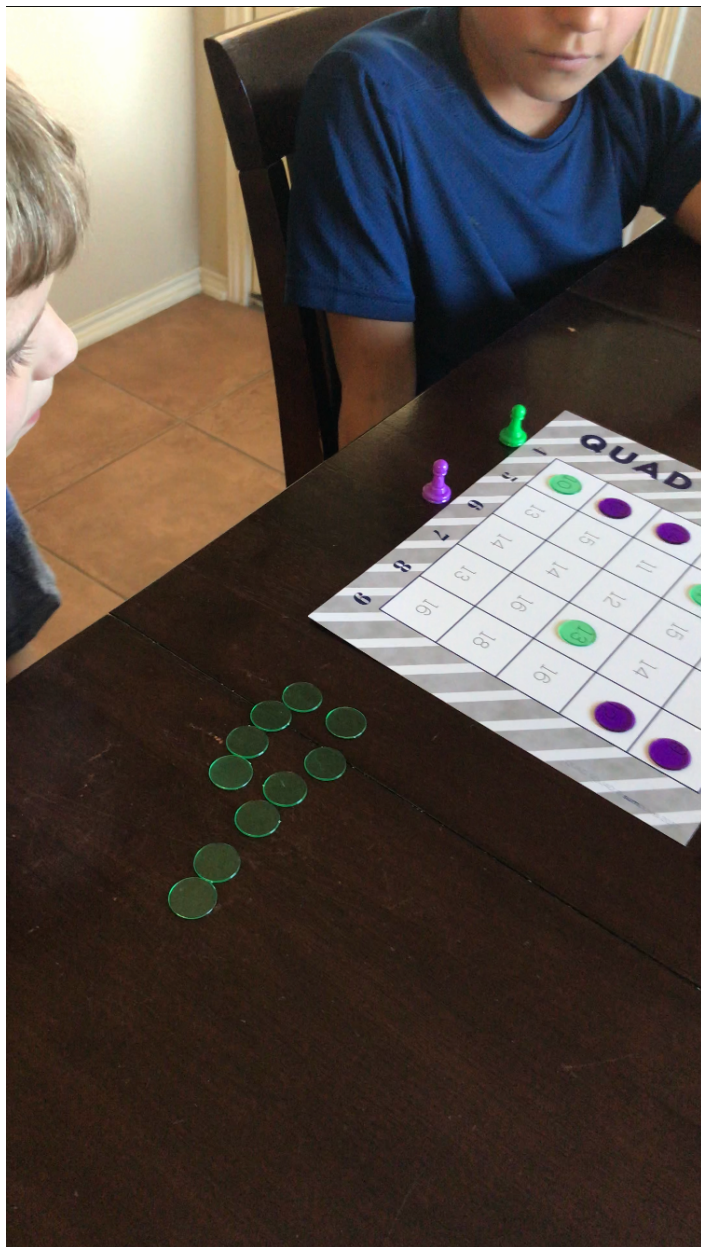
CHILDREN'S NAMES	Data being Collected														
	DICE DOT PATTERN/ NUMBER RECOGNITION						NOTES for ORAL COUNTING	How did the child count out the objects on each roll?	How does the child count the total number of objects?	Response to the question, "How many counters do you have?"					
	1	2	3	4	5	6	Note the portions of the counting sequence the child knows, as well as, the portions that are not yet intact	<ul style="list-style-type: none">By 1s, 2s, 5s, or 10sTakes a handful; counts out the amount	<ul style="list-style-type: none">Makes groups of 10Lines up the countersMoves each counterOther	Estimates	No answer	Recounts	Tells how many	Correct answer	Other
A	x	x	x	x	x		Knows 1-10 patterns 11-20, not sure consistent	by 1s	moves each counter by 1s (suggested by me)	100 w/ teacher support			✓	No	
< B	✓	✓	✓	✓	✓	✓	Knows 1-39 40 → 21 + started over	by 1s	lined them up touched each one	agreed w/ A. ✓			✓	Yes (30)	
C	x	x	x	x	x	x	all	by 2s to 10 then by 1s	lined them up	50		✓	✓	Yes (42)	
< D	x	x					Knows 1-10	grabbed a handful (teacher support)	in a pile, not an organized system	7		✓	✓	no	

Data says...

Kindergarten: *50 and Counting*

While observing children at play and joining in the conversations, we are able to note children's level of understanding of the following:

- *Verbal Number Sequence (Rote Counting)*
 - Communicating the numbers in a particular order
- *One to One Correspondence*
 - When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object, in synchrony
- *The cardinality of a set*
 - Know that the last number name stated tells the number of objects counted; the number name is the same regardless of their arrangement or the order in which they were counted














Relationships between quantity and unit lay a solid foundation for number. Counting then plays a major role in integrating aspects of number, such as sequence, cardinality, order, and measure.

This integration, in turn, supports more abstract and general ideas of number and our base-ten, place-value number system.

Developing Essential Understanding of Number and Numeration
NCTM (2010)

Please play
at least twice;
once on
each side.

QUAD SQUAD

			15	17	
	10		15	14	
		11	12		16
		15	14	16	18
		13	14	13	16
4	5	6 	7	8 	9

Posing Purposeful Questions

Effective teaching of mathematics uses purposeful questions to assess and advance students' reasoning and sense making about important mathematical ideas and relationships.

Taking Action: Implementing Effective Mathematics Teaching Practices
Huinker & Bill (2017)



NAMES	Dominoes		MODELS			STRATEGIES						Additional Notes
	dots	numbers	Uses counters	Uses fingers	Uses game board as a number line	Counts all	Counts on	Doubles/near doubles	Makes 10	Addition facts	Subtraction Facts	

Quad Squad Recording Sheet

In teams, please discuss the following:

- What is the purpose of each column?
- What questions might you ask so you gain insight into children's reasoning and sense-making; especially if they are quiet thinkers?

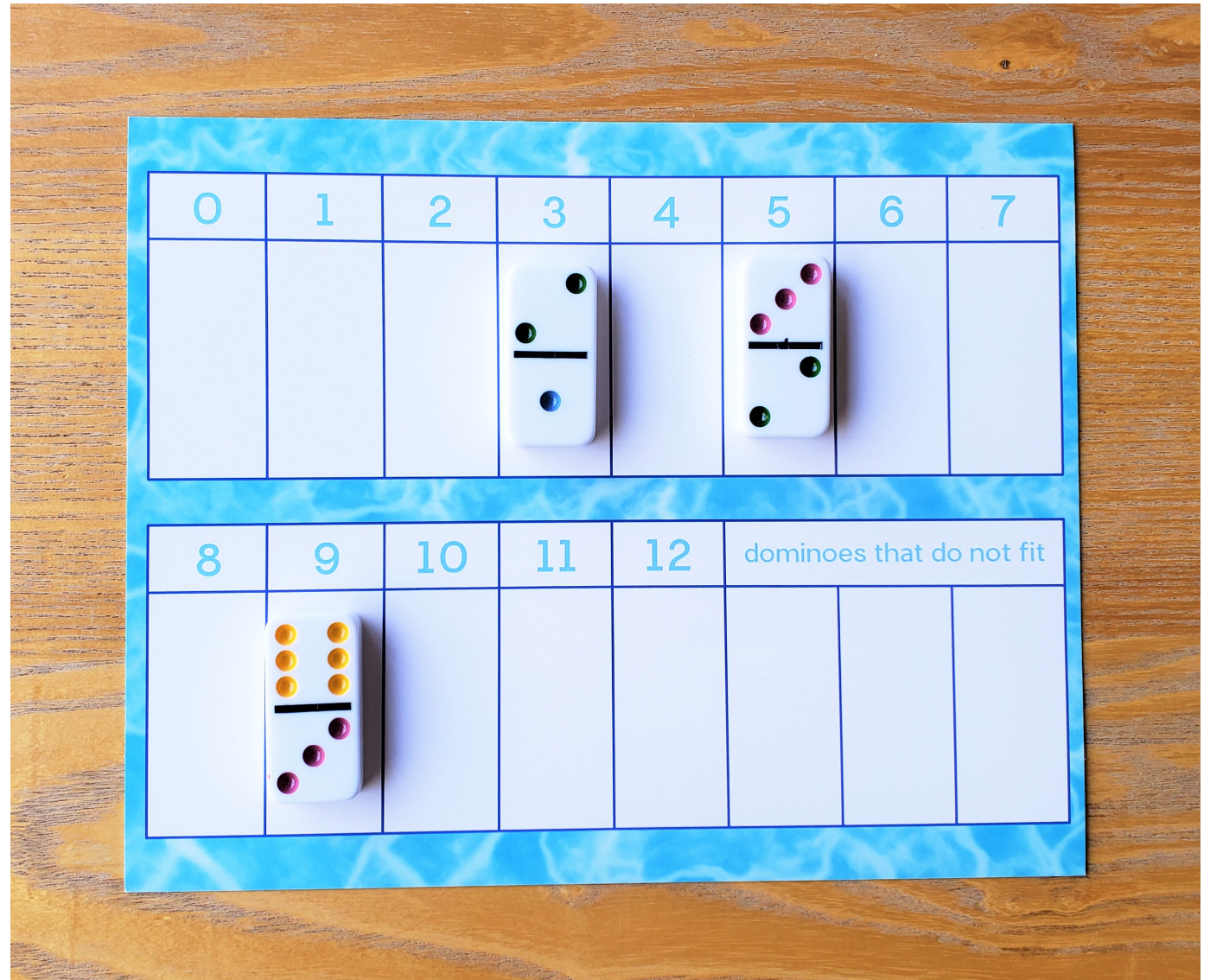
“Fluency is not a simple idea. It takes time and requires the integration of ideas. It cannot be developed in a single day.”

Developing Numerical Fluency

S. Leinwand and P. Kanter, p. xi & 34

FILL IT UP!

Please play the game in pairs—
4 players to a board.





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Scientists have recently determined that it takes approximately 400 repetitions to create a new synapse in the brain - unless it is done with play, in which case, it takes between 10 - 20 repetitions.

DR. KARYN PURVIS

OT KIDS
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Special thanks to Sumboxes for the use of their games.

www.sumboxes.com