

# Make Your Math Super Powered!

Using games and  
activities that promote  
the Common Core Math  
Practices in a  
Workshop Model



# Zeno

- Who are we?
- What do we do?
- Contact: [manuelacr@zenomath.org](mailto:manuelacr@zenomath.org)



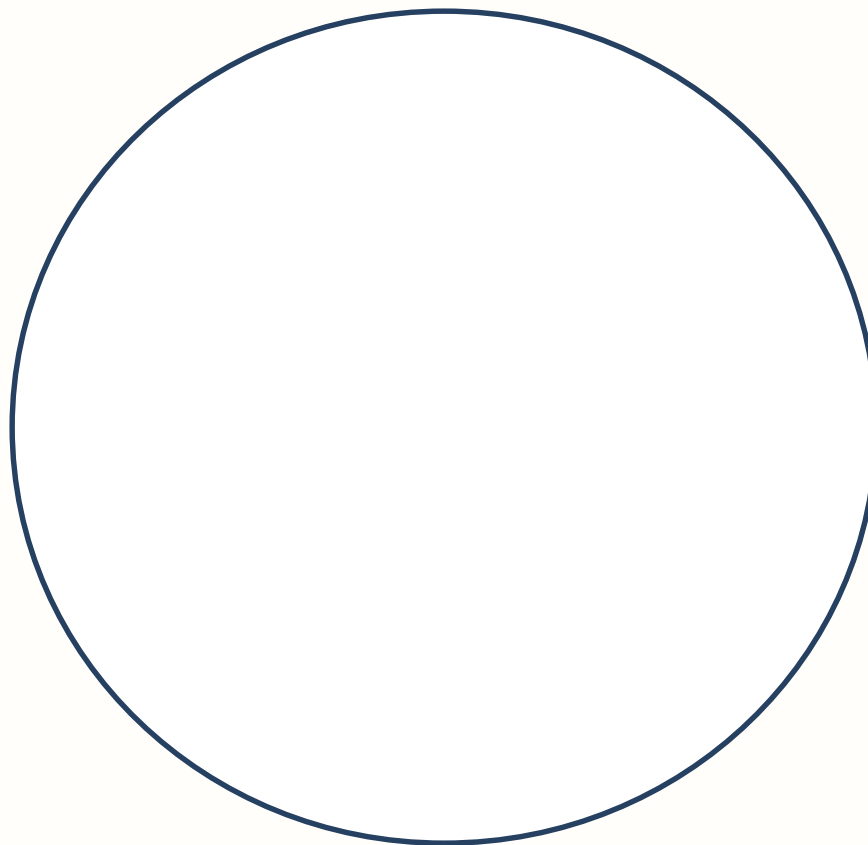
# Zeno Mission

- Increase children's competence and confidence in math with fun and engaging activities
- We work with the adults in kids' lives
- We serve early learners and elementary school aged children in the communities with the greatest need

# How does Zeno do it?

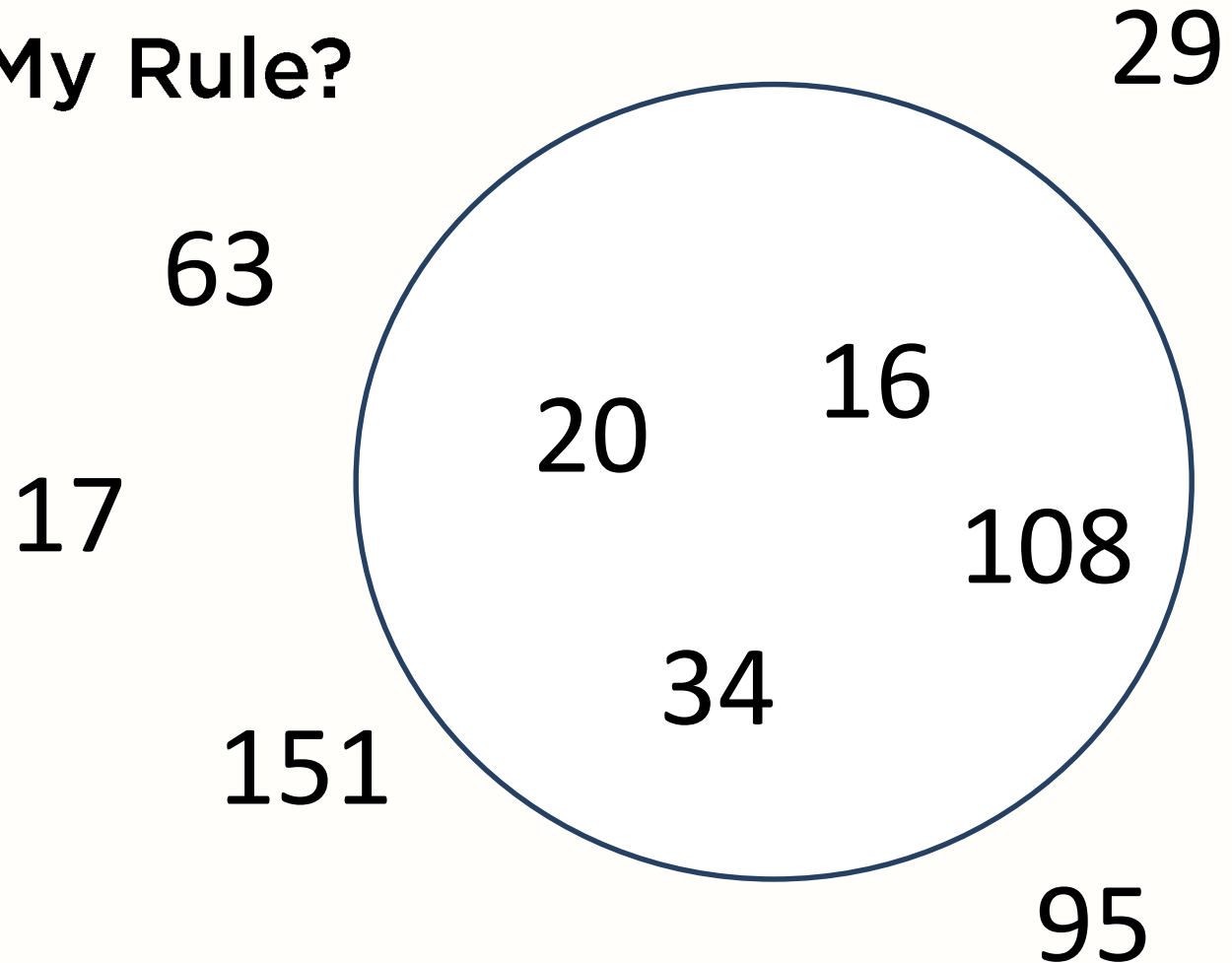
- MathWays for Early Learning (MEL)
- Mathematician in Residence Program (MIR)
- Family Math Nights
- Mathfests
- Math+Science Mash-Ups

# What's My Rule



# Warm Up

- What's My Rule?



# Agenda



- Warm Up
- Goals –
  - To learn about the CC Math Practices and how they are supported in games and enrichment activities
  - To learn about a Math Workshop Model
  - To experience a Math Workshop Model
    - Mini Lesson
    - Center Work
    - Reflection

# Math Practices Focus



- Make sense of problems and persevere in solving them (MP1)
- Reason abstractly and quantitatively (MP2)
- Construct viable arguments and critique the reasoning of others (MP3)
- Attend to precision (MP6)



# Math Workshop

- What is Math Workshop?
  - Math Block Structure
  - Organization
    - Time
    - Groupings
    - Accountability
  - Routines
  - Reflection

# Get to 100

- Each student is dealt 5 cards
- Students are allowed to use the numbers on those cards to create a set of numerals that add up to as close to 100 as possible.



# Get to 100

- Cards dealt

4

3

7

5

6

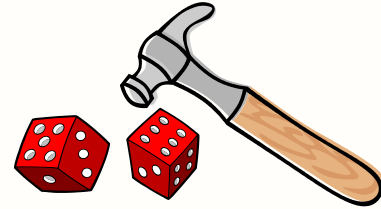


# Play Get to 100



<b>PLAYER 1:</b> _____	<b>CARDS</b>	<b>EQUATION</b>	<b>SUM</b>	<b>ROUND SCORE</b>
<b>PLAYER 2:</b> _____				
ROUND 1				
ROUND 2				
ROUND 3				
ROUND 4				
ROUND 5				
<b>TOTAL</b>				

# What is Math Workshop?

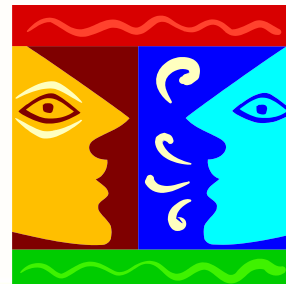


- Reading Workshop similarities
- Vehicle for small group instruction
  - Guided group
- Differentiation
- Centers where students work independently or with peers

# Math Block Structure



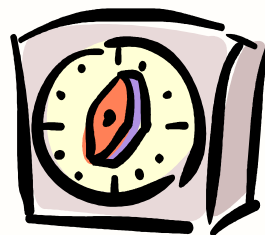
- Warm up
- Goals
- Mini Lesson or Explanation of Centers
- Centers
- Reflection



# MW Organization



- Time
  - 75 minute Math Block or more
    - Mini-Lesson
    - 20 minute center times
    - Allows for transition
    - Allows for enough instructional time
    - Reflection
  - Use a Timer!



# Math Workshop Routines

Important to have strong [routines](#) in place

- Transitions
- Noise Level
- Supplies
- Help!!
- Turn in Trays (finished/unfinished)
- Partners (assigned)





# Twinks

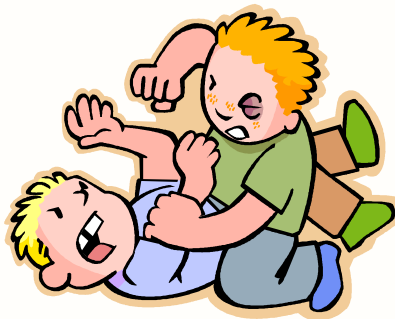
- Four cards laid out face up
- First player to make 12 using any number of cards and operations says “Twinks”
- Collect any cards used in their equation and any cards beneath them

# MW Organization

## Groupings



- Skills based
  - Pre-assessment (Unit pre-test, entrance or exit slip)
  - Homogeneous/Heterogeneous [GroupMaker](#)
- Behavior based
  - Partners who work well together
  - Well balanced personalities
  - Assigned partners
- Frequency of changes
  - Daily
  - Weekly
  - Monthly
- Group sequence



# Math Workshop

Any questions?



# Mini Lesson

- Enrichment (Independent Center)

2-		2
2÷	3÷	
	1-	

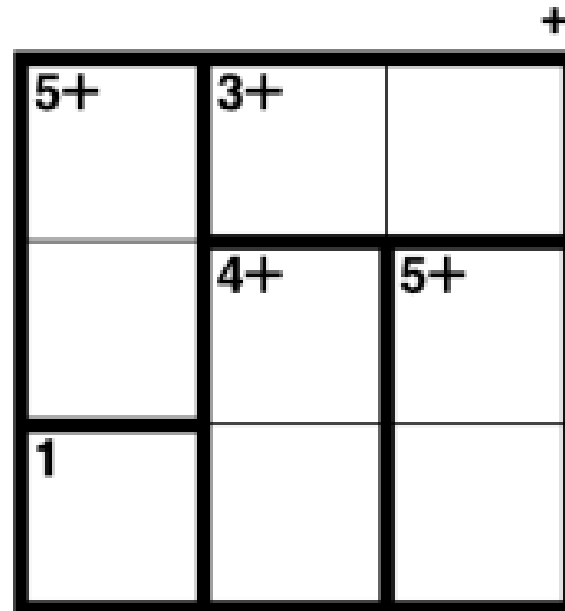
– KenKen

– Pentominoes



# KenKen

- Grid
- Cages
- Numbers
- No Repeats



[www.kenken.com](http://www.kenken.com)

02-01

# KenKen

+

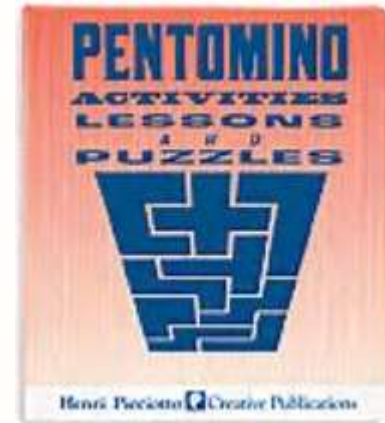
5+	3+	
	4+	5+
1		

[www.kenken.com](http://www.kenken.com)

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# Pentominoes

- Find all the ways
  - Dominoes: two squares
  - Triominoes: three squares
  - Tetraminoes: four squares
  - Pentominoes: five squares
- Beware of:
  - Flips
  - Rotations



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# Two squares- Dominoes





# Three squares - Triominoes



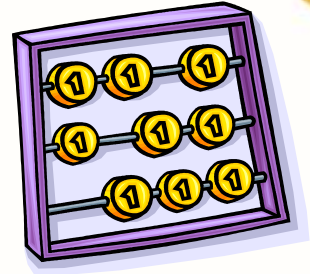
# Four Squares - Tetrominoes



# Five Squares - Pentominoes



# Center Work



- Guided Group
  - Explore the CC Math Practices
    - (MP1, MP2, MP3, MP6)
- Game Center
  - Get to 100
  - Twinks
- Enrichment Center 1
  - Pentominoes
- Enrichment Center 2
  - KenKen




# Information Board

	Hearts	Clubs	Diamonds	Spades
9:00	<u>Guided Math</u> <i>Exploring the CC Math Practices</i>	<u>Game</u> <i>Get to 100 Twinks</i>	<u>Enrichment</u> <i>KenKen</i>	<u>Enrichment</u> <i>Pentominoes</i>
9:25	<u>Games</u> <i>Get to 100 Twinks</i>	<u>Guided Math</u> <i>Exploring the CC Math Practices</i>	<u>Enrichment</u> <i>Pentominoes</i>	<u>Enrichment</u> <i>KenKen</i>
9:50	<u>Enrichment</u> <i>Pentominoes</i>	<u>Enrichment</u> <i>KenKen</i>	<u>Guided Math</u> <i>Exploring the CC Math Practices</i>	<u>Games</u> <i>Get to 100 Twinks</i>
10:10	<u>Enrichment</u> <i>KenKen</i>	<u>Enrichment</u> <i>Pentominoes</i>	<u>Games</u> <i>Get to 100 Twinks</i>	<u>Guided Math</u> <i>Exploring the CC Math Practices</i>

Hearts	Clubs	Diamonds	Spades
Mary, Joaquim, Kahlil, Charles, Jassmin, Alan, Natasha, Max	Aby, Jaylen, Pablo, Samir, Andy, Ricky, Jovan	Loren, Elijah, Kayla, Richard, John, Briana, Jose, Shane	Joe, Lucy, Marquis, Antoio, Marcus, Luke

# Alternate Board

## Math Rotation Round #1

Math with Ms. 	Think Tank	Games	Math To Self
<ul style="list-style-type: none"><li>• Connor</li><li>• Kimyra</li><li>• Gunnar</li><li>• Lulu</li></ul>	<ul style="list-style-type: none"><li>• Evan</li><li>• Mason</li><li>• Simran</li><li>• Addison</li><li>• Gigi</li><li>• Kanisha</li></ul>	<ul style="list-style-type: none"><li>• Trino</li><li>• Amanda</li><li>• Angel</li><li>• Trisha</li><li>• Isabella</li><li>• Walter</li></ul>	<ul style="list-style-type: none"><li>• Maddie</li><li>• Sara</li><li>• Ava</li><li>• Jeremy</li></ul>

# Guided Group

- Digging deeper with MPs 1, 2, 3 and 6



# Classification Activity



- Partners or groups of three
- Math Practices 1, 2, 3, 6 on BLUE card stock
- Possible subcategories on GREEN card stock
- Try to accurately sort subcategories under the correct Math Practice



# Make Sense of Problems and Persevere in Solving Them (MP1)

- Deep Understanding
  - Students talk about the problem and the share strategies used to solve them
  - Check for understanding and change course if necessary
- Perseverance
  - **Students work at problems they don't** automatically understand
  - Gain experience grappling with problems and persevering through complex mathematical situations

# Reason Abstractly and Quantitatively (MP2)

- Understand the meanings of all parts of a mathematical problem and how they relate to each other
  - Contextualize: what does the data mean?
  - Decontextualize: to abstract math problems from a given situation
    - Using symbols:  $2x = y$

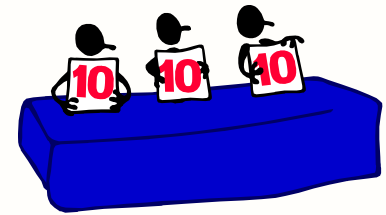


# Construct Viable Arguments and Critique the Reasoning of Others (MP3)



- Make and evaluate conjectures
  - Investigate the accuracy of their own mathematical reasoning and the reasoning of others
    - Justify conclusions,
    - Listen or read arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments

# Attend to Precision (MP6)



- Calculate accurately and efficiently
- Try to communicate precisely to others
  - Give carefully formulated explanations to each other

# Reflection

- Task Review
  - Which Math Practices were imbued in the different games?
- Math Workshop
  - How did it go?
  - Questions

# KenKen



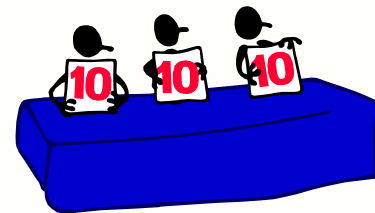
Math Practice:

- Attend to Precision (MP6)
  - Sharing their solution for a cage and why it works in the larger KenKen puzzle (must follow the rules)

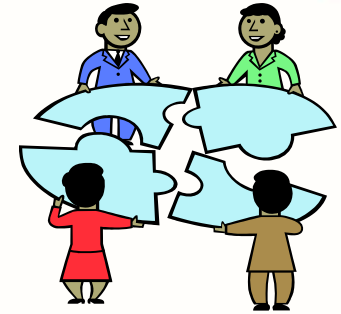
5+	3+	
	4+	5+
1		

[www.kenken.com](http://www.kenken.com)

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# Pentominoes

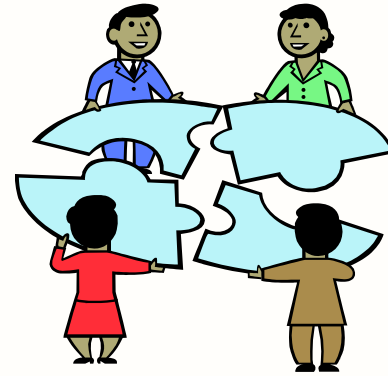


## Math Practice

- Make Sense of problems and persevere in solving them (MP1)
  - Find all the solutions
  - Is there a method or systematic way to find solutions?

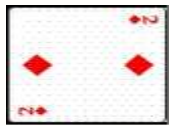


# Twinks



## Math Practice

- Make Sense of problems and persevere in solving them (MP1)



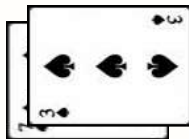
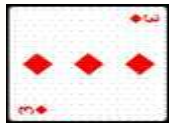
- Micro:

- How to make 12 within rules (number of cards in solution)



- Macro:

- Monitor and evaluate progress and change course if necessary:



- » “Why are they getting more cards?”
- » “How do I get more cards?”





# Get to 100

## Math Practice

- Reason Abstractly and Quantitatively (MP2)
- Decontextualize
  - The general rule is to think about place value, particularly the tens place and tens that combine to sum to the nineties
- Contextualize
  - Numerals drawn represent tens or ones



# Math Workshop

- Three Center Model
- Four Center Model
- Flip
- Independent Model

# Math Workshop

Any questions?



# Math Practices Focus



- Make sense of problems and persevere in solving them (MP1)
- Reason abstractly and quantitatively (MP2)
- Construct viable arguments and critique the reasoning of others (MP3)
- Attend to precision (MP6)

# Website Information

- [Groupmaker Excel Program](#)
- [Expand your Card Pack](#)
- [Reprint Your Card Pack](#)
- [Fun Board Games](#)
- [Fun Dice Games](#)
- [Zeno Programs](#)
- [Pentomino Book](#)
- [KenKen](#)

# Closure

Evaluations

Emails: [manuelacr@zenomath.org](mailto:manuelacr@zenomath.org)

Thank you!





**You empower your students every day when you ...**

- **Model good math habits**
- **Encourage math talk**
- **Increase their engagement with games and a fun attitude**

# Common Core Standards for Mathematical Practice

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.