

Make Your Math Super Powered



Make Your Math Super Powered: Use Games, Challenges, and Puzzles

Where's the fun? Learn a Math Workshop model by participating in one and explore fun no-cost/low-cost games and puzzles that you can easily bring into your classroom. Learn how the games and activities support the CCSS.

Engaged, happy learners + Standards for Math practice = Super Powered Math

Agenda

- Warm Up
- Goals
 - To learn about the CC Math Practices and how they are imbued in games and enrichment activities
 - To leave with games and activities for centers
- Mini Lesson
- Center Work
- Reflection
- Closure

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We believe that with the self-confidence and skills gained by experiencing math in unique ways, a person's possibilities are infinite. Our games re-frame math as fun and relevant so that all kids, adults, and families can build math confidence and lifetime skills!

Common Core Standards for Mathematical Practice

1. *Make sense of problems and persevere in solving them.* ***
2. *Reason abstractly and quantitatively.*
3. *Construct viable arguments and critique the reasoning of others.* ***
4. Model with mathematics.
5. Use appropriate tools strategically.
6. *Attend to precision.* ***
7. *Look for and make use of structure.*
8. Look for and express regularity in repeated reasoning.

*** The Math Practices covered in this workshop

What's My Rule? (STRAND: Mathematical/Logical Reasoning):

Draw a large circle on the board. All the numbers you write inside the circle follow a certain rule; none of the numbers outside the circle follow the rule. As you add numbers inside and out, students try to determine the rule. The easiest example is evens in the circle, odds outside the circle. Other possibilities include factors of 12; multiples of 4; divisible by 3 or 5 or . . . ; primes and composites; two-digits in the circle, one- and three-digits outside; numbers less than 20, numbers greater than 20; regular quadrilaterals in, irregular quadrilaterals out. Or try a trick question on the kids: only numbers written with straight lines (1, 4, 7) in the circle, only **numbers with curved lines (0, 3, 6, 8) out; this means you can't use 2, 5 or 9** because they have both straight and curved lines. This game can also be easily adapted to other subject areas.

More possibilities:

- **fractions (even vs. odd denominators; lowest terms vs. not in lowest terms)**
- **numbers that end in ____**
- **starting with 1 (or even $\frac{1}{2}$), numbers in the circle double**
- **numbers with ____ in the tens place**
- **numbers in the circle have a number in the tens place one more (or one less) than the number in the ones place (i.e.: 32, 98, 76, or 23, 45, 67; to make it more challenging, try 1098, 5432)**
- **numbers in the circle have digits that add to a certain total (57, 183, 48)**
- **numbers in the circle increase (or decrease) a set amount each time**

Digit Place Game (STRAND: Mathematical Reasoning):

The goal of this game is for students to use logical reasoning to deduce a secret three-digit (or, more difficult, a four-digit) number. The teacher (or leader) writes down a three-**digit number but doesn't** disclose it. Students take turns guessing the number. With each guess, the teacher gives one of the following clues for each digit in the number::

- **place** - correct digit and in the correct place
- **digit** - correct digit but in the wrong place
- **nothing** - no digits are correct (but ask students what valuable information this provides)

As students get more information about the number, they start making educated, rather than random, guesses.

Math Practices

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

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

Attend to Precision (MP6)

Categories and Subcategories

– Students work at problems they don't automatically understand

- Make and evaluate conjectures
- Try to communicate precisely to others
- Deep Understanding

- Listen or read arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments

- Calculate accurately and efficiently

– Check for understanding and change course if necessary

- Justify conclusions

- Perseverance

- Give carefully formulated explanations to each other

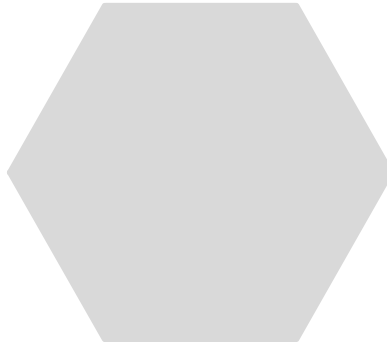
– Students talk about the problem and then share strategies used to solve them

– Investigate the accuracy of their own mathematical reasoning and the reasoning of others

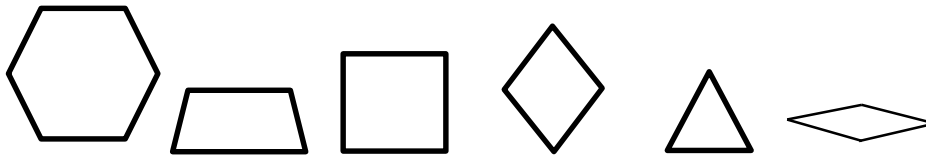
– Gain experience grappling with problems and persevering through complex mathematical situations

Pattern Blocks A

Name: _____



How many blocks did you use to solve puzzle **A?**



Puzzle

Total

a							
a							
a							
a							
a							
a							
a							
a							
a							
a							
a							
a							

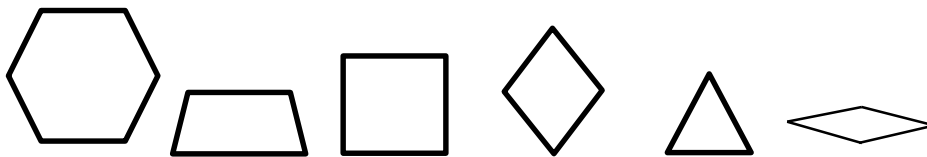
How many different ways did you solve puzzle **A?** _____

Pattern Blocks B

Name: _____



How many blocks did you use to solve puzzle **B?**



Puzzle

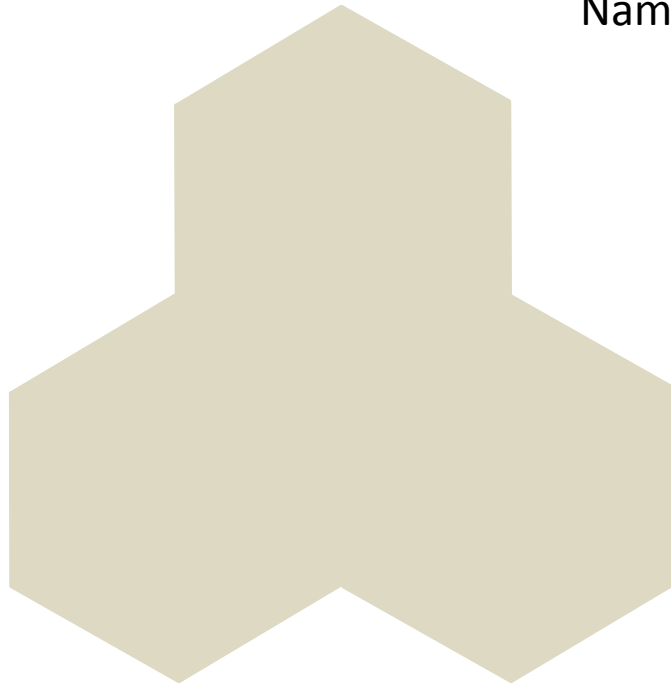
Total

B							
B							
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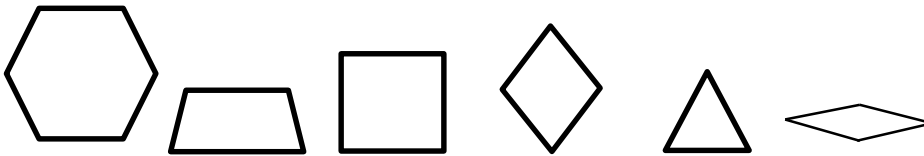
How many different ways did you solve puzzle **B?** _____

Pattern Blocks

Name: _____



How many blocks did you use to solve puzzle **C?**



Puzzle

Total

c							
c							
c							
c							
c							
c							
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c							
c							
c							

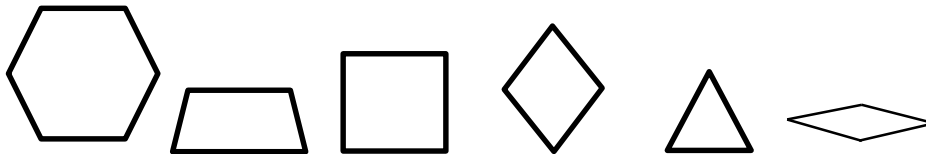
How many different ways did you solve puzzle **C?** _____

Pattern Blocks

Name: _____



How many blocks did you use to solve puzzle **D?**



Puzzle

Total

D							
D							
D							
D							
D							
D							
D							
D							
D							
D							

How many different ways did you solve puzzle **D?** _____

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Salute (STRAND: Number Sense-Addition/Multiplication):

The game can be played in groups of three or four. Again, it's going to involve addition or multiplication depending on your child's age abilities. **This game doesn't work for** division or subtraction. Each group will need a deck of cards with face cards removed (aces = 1). One player is the judge. **Players can rotate after every turn or after a game. Let's say the game is** addition. The judge gives each player a card, face down. When the judge says **"Salute!"** each player, **without looking at his/her card, puts it up to their** forehead so the judge and the other player can see it. The judge then announces the sum (using the proper word-sum) of the two numbers. The first player to correctly announce his/her own number wins the two cards. The other player must say their number also. The game winner is the one with the most cards. For example, if player A sees that Player B has a 7 and the judge announces the sum as 13, Player A knows that her card is a 6 and says so. Salute works the same way for multiplication. To make the addition game more challenging, play with four players. The judge announces the sum and each player has to look at two other numbers before deciding what his/hers is. Each player should be asked to state his/her number.

Twenty-five (STRAND: Number Sense-Add/Sub):

This is a game for two or more players. You'll need a deck of cards, with the face cards removed (ace = 1) for each group of players. Before playing the game, review the number pairs that add to 10. Then have the students look for ways to use this knowledge to help them add and subtract faster. Deal out all the cards, an equal number to each player. The cards are left face down in a pile in front of each player.

The first player turns over the top card and places it face up in the center of the play area announcing the number. The next player turns over a card, adds the number to the card already played, says the sum out loud, and places the card on top of the previously played card. The next player turns over a card and adds the number to the sum of the first two cards. Play continues in this way until someone has a card that, when added, will give a sum greater than 25. When that happens, the player must subtract rather than add. Play continues until someone gets a sum of exactly 25. The player, who gets a sum of exactly 25, wins that round and goes first in the next round.

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Website Information

[Groupmaker Explanation and Excel Program](#)

[Expand Your Card Pack](#)

[Reprint Your Card Pack](#)

[Fun Math Games](#)

[After School Math Squad and Other Zeno Programs](#)

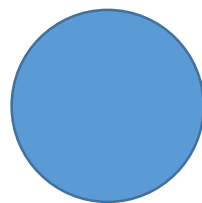
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[Kakooma](#) Greg Tang©

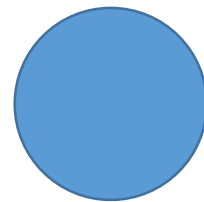
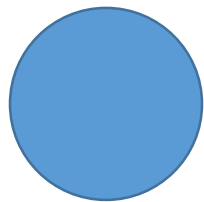
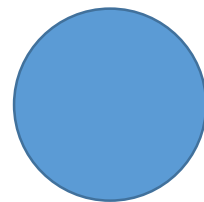
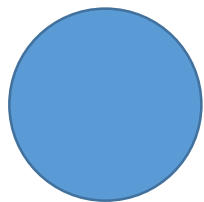
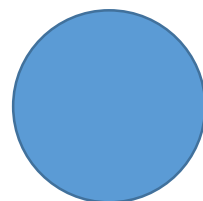
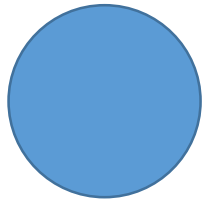
[Ten Pin Limbo](#) Greg Tang©

[Preschool Number Games](#) Gwen Dewar

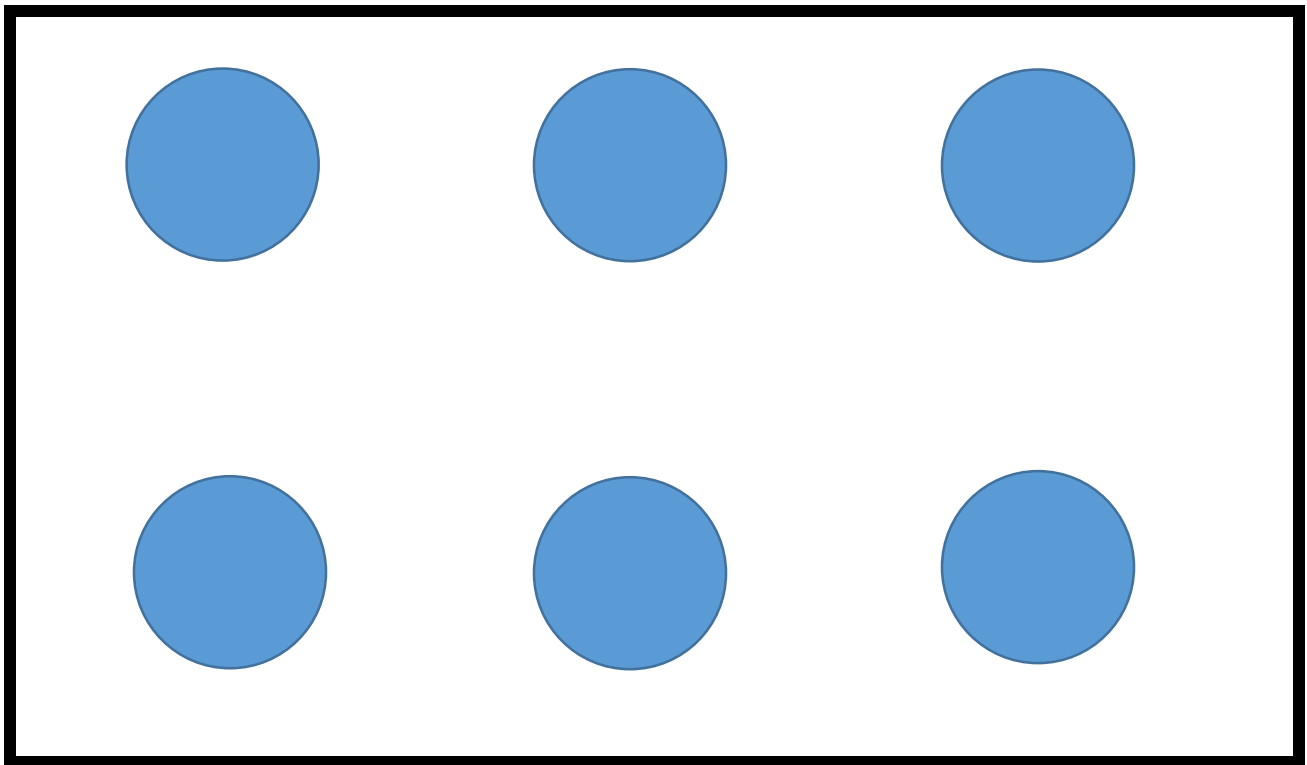
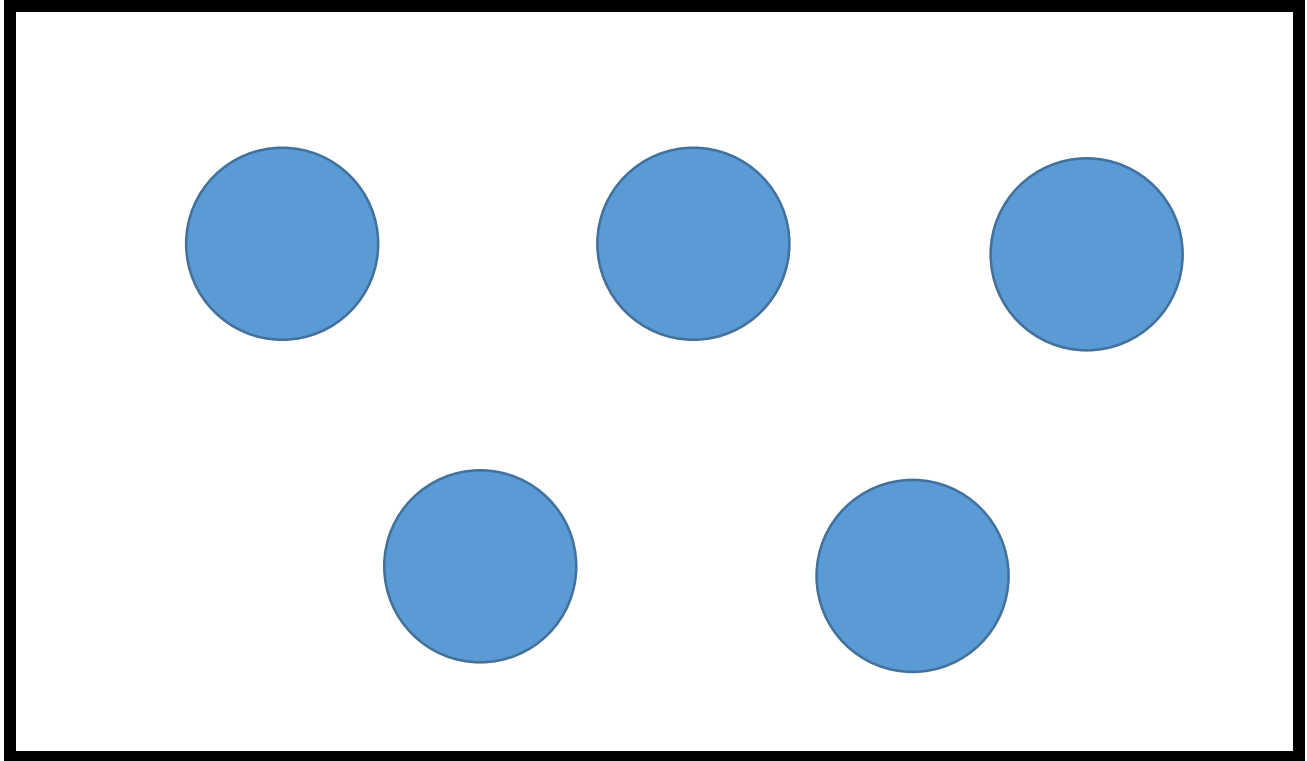
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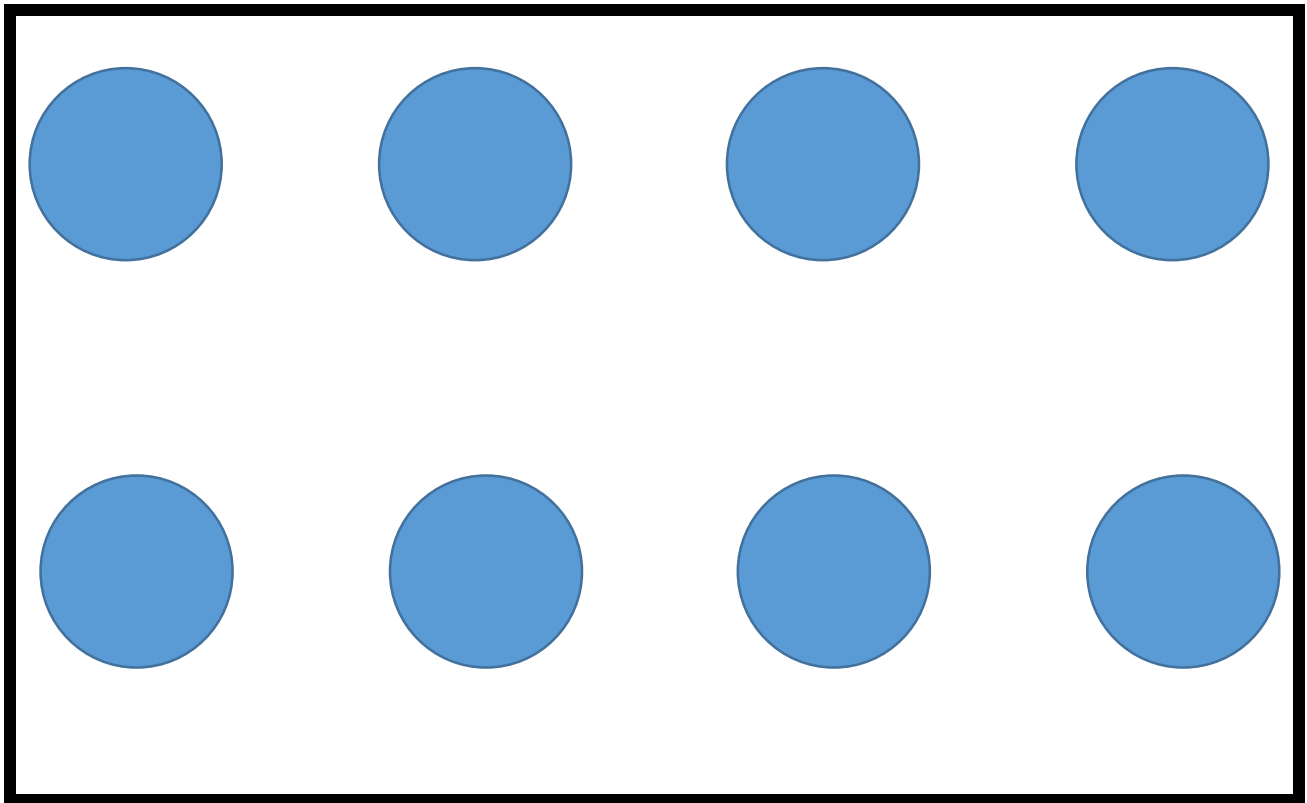
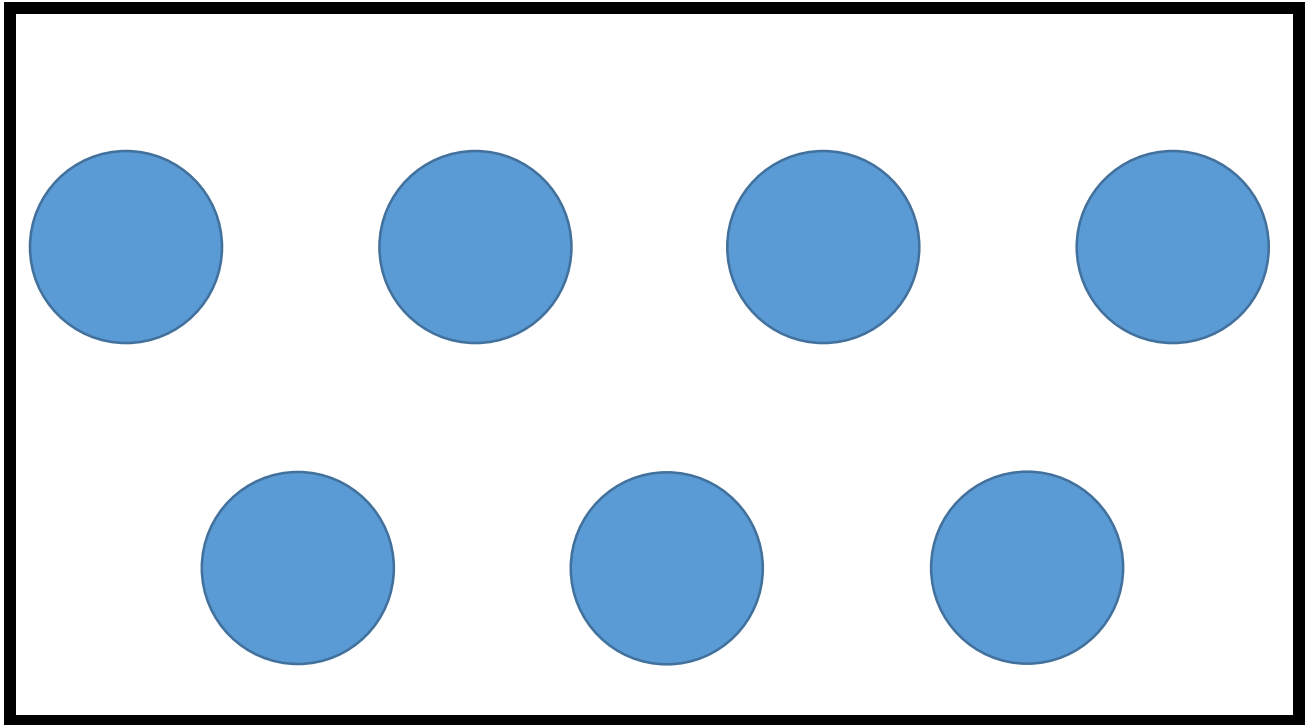
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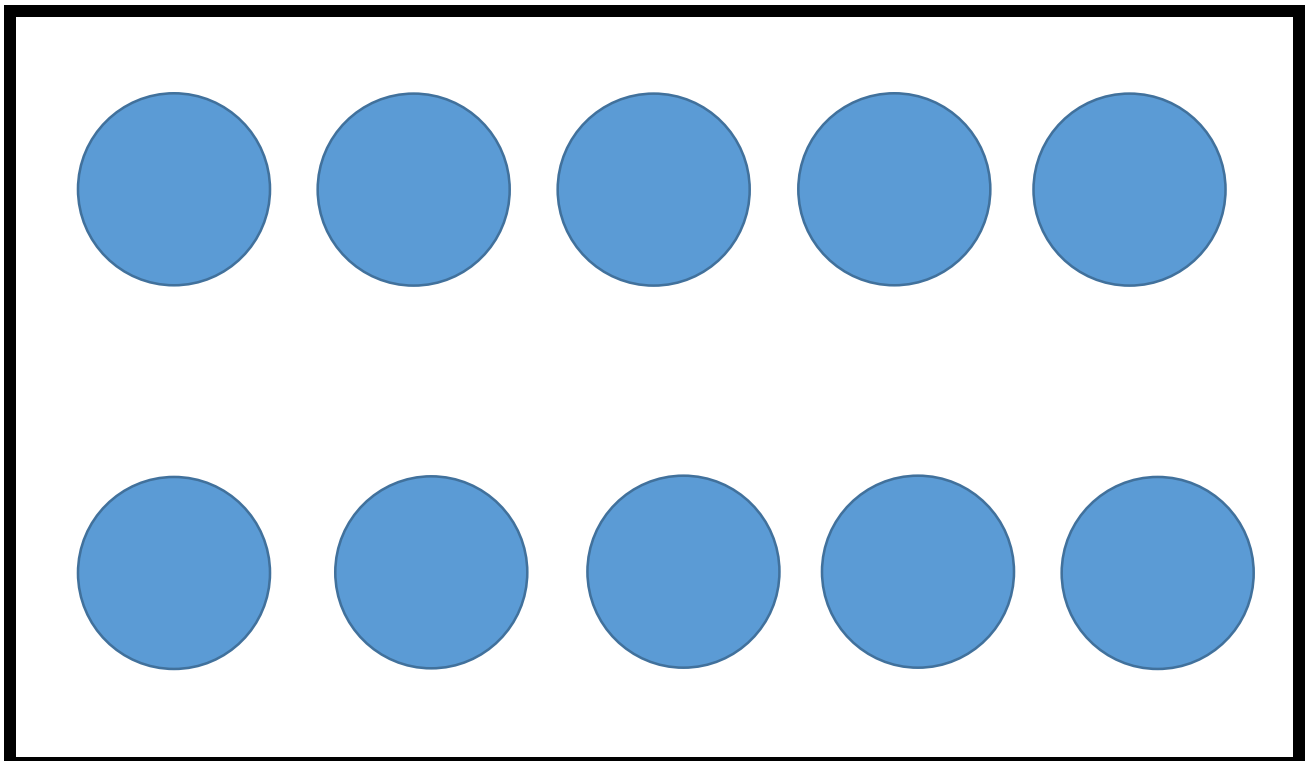
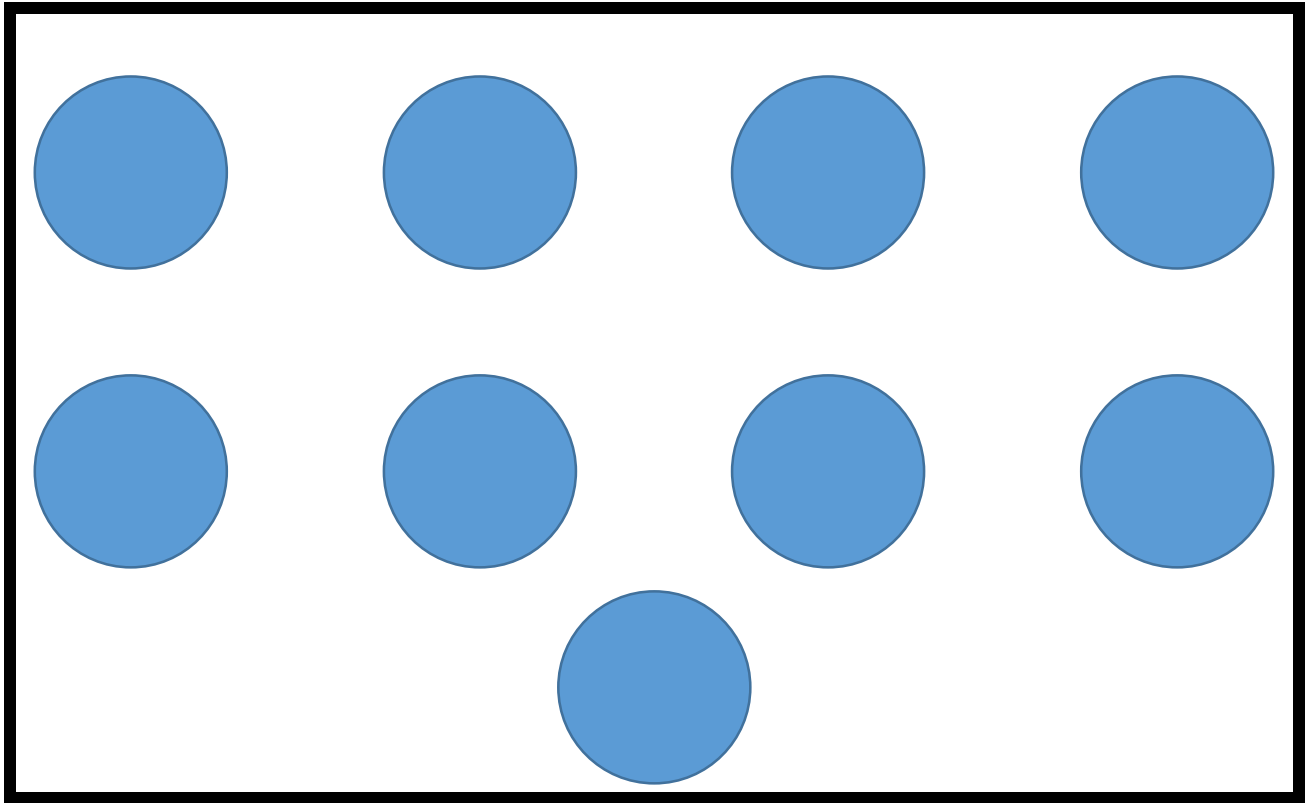
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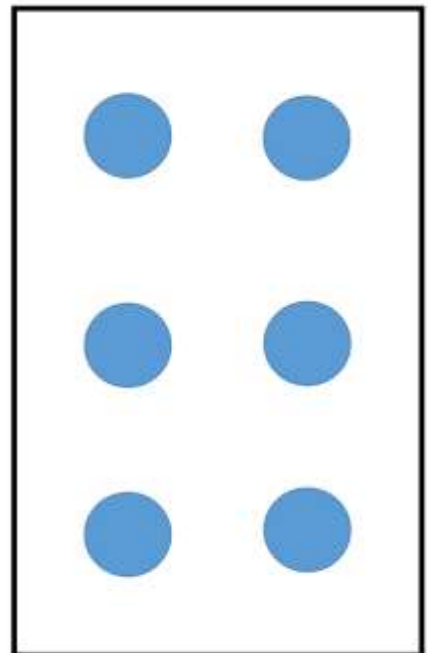
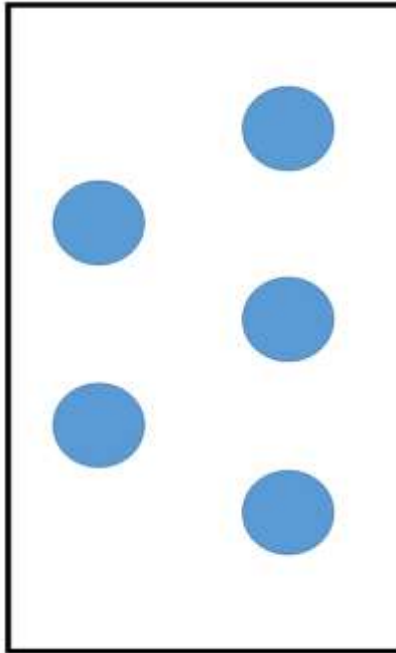
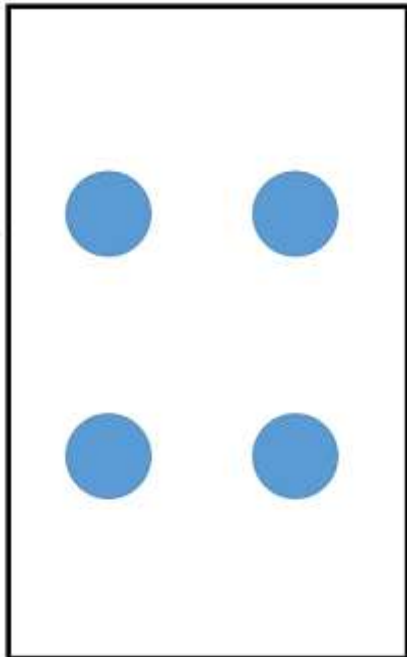
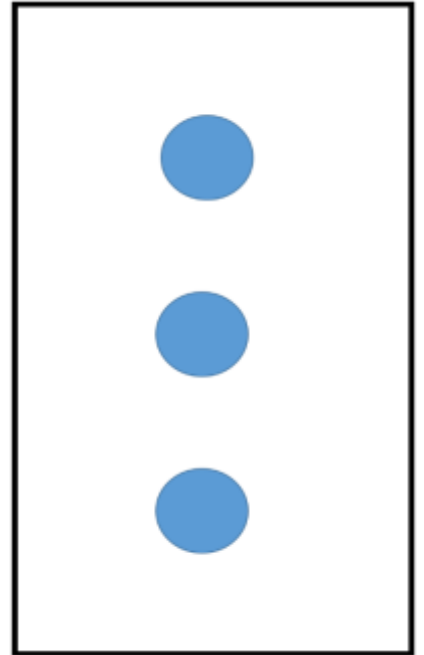
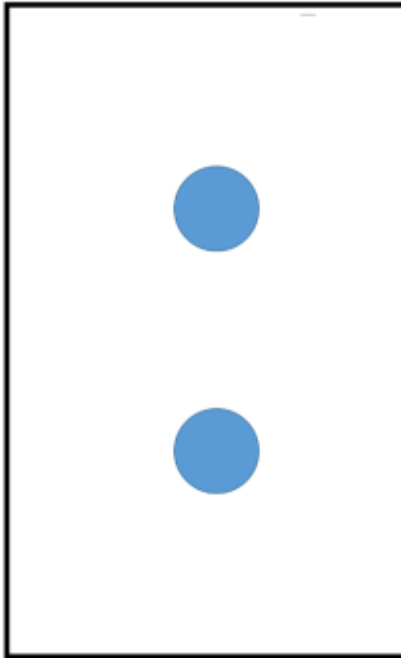
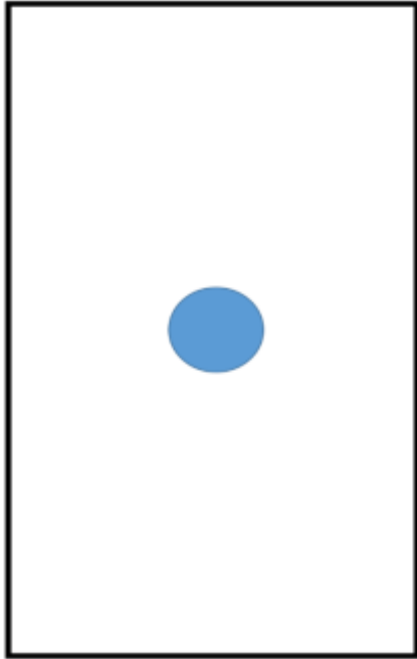
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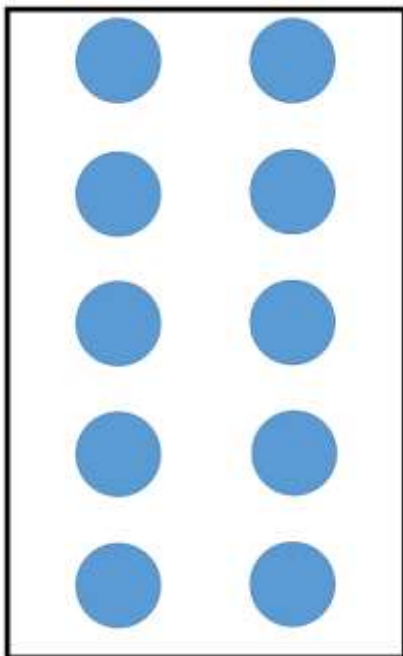
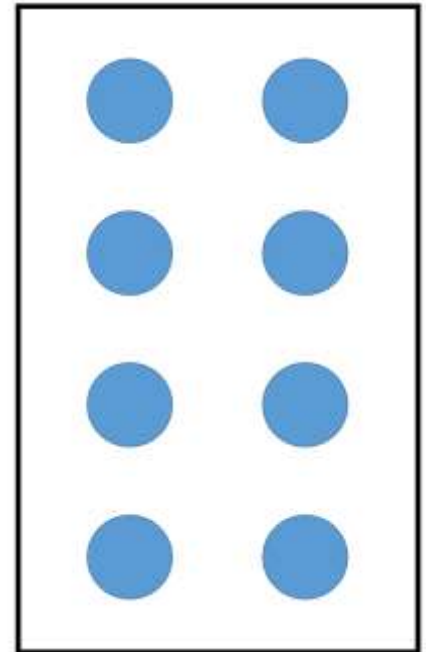
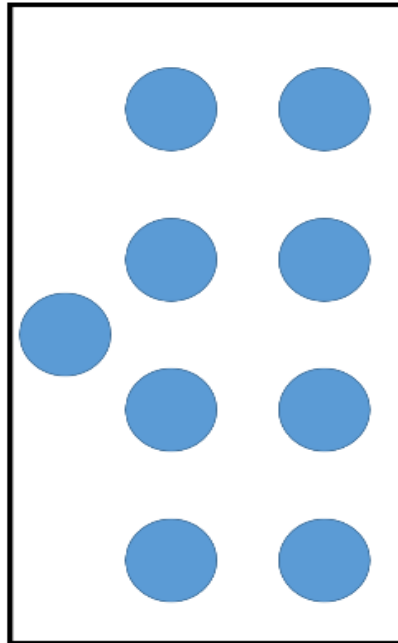
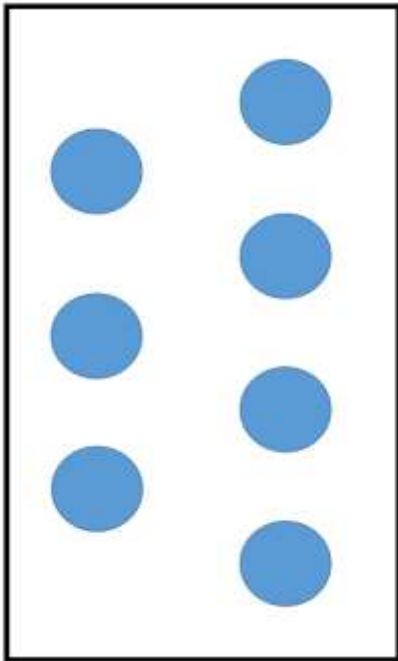
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Imagine If...

A 7 year-old girl had been encouraged to find ways to identify patterns in more than just math class. Would she enjoy music more? Have a deeper understanding of biology? Believe in her own ability to learn?



Imagine If...

The father of a 10 year-old was able to re-learn fractions—**something he'd never quite understood** in school. Would his new knowledge impact his son? Could they learn together? Would it deepen their own relationship?



Zeno, a non-profit organization, believes that with the self-confidence and skills gained by **experiencing math in unique and unexpected ways, a person's possibilities are infinite**. Our games and programs re-frame math as fun and relevant so that all kids, teachers and families can build math confidence and lifetime skills. See us at <https://zenomath.org/>.

School Partnerships

Math Clubs: A before or after school hotspot, students revel in a variety of interactive, hands-on math activities and games.

Monthly Math Challenge: Kids vie to catapult their classroom to math stardom by answering this always rigorous, yet-ever-practical, math question.

Family Math Nights: School cafeterias can barely contain the enthusiasm of students, parents and teachers as they play math games together.

Mathematician-in-Residence (MIR): Zeno MIR's team up with classroom teachers to model new and exciting ways of teaching math.

Community Connections

Summer Math Camps: More fun than camping, canoeing and crafts combined, these camps are designed to eliminate summer learning loss and increase math competency in exciting ways.

Community MathWays: Parents and para-educators **get a taste of the fun kids can have "playing math"** and build their own confidence and enthusiasm for engaging kids in math.

Math + Science Night Out: In partnership with the Pacific Science Center, experience the fun stuff MATH can make possible!

MathFest: This event sees kids and families playing math games together in a carnival-like atmosphere! While playing, kids build their confidence and enthusiasm for math, and see that the community supports their involvement.

To schedule a tour of Zeno programs or learn more about how your school can partner with Zeno, please contact Caitlin Nunberg at caitlinnu@zenomath.org.