

Math Workshop/ Balanced Numeracy - Setting the Foundations Gr. K - 7



December 4th, 2018 - William F. Davidson Elementary
Jen Barker - Surrey Numeracy Helping Teacher
Website: meaningfulmathmoments.com



@barkerjBarker

Acknowledgement

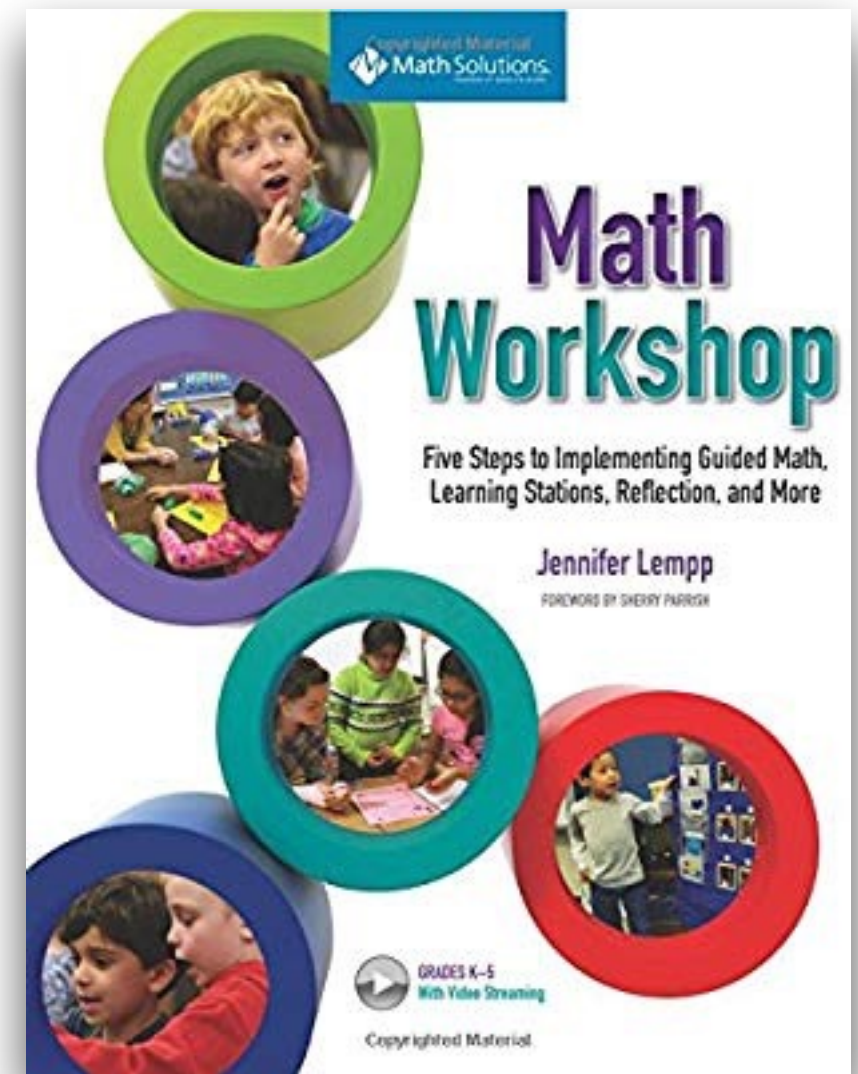


Before going any further, it is important that we recognize that we are here today on the unceded, shared territories of the Coast Salish people on which our schools are located. We are so grateful and honoured to be able to live, learn, and create on these beautiful lands.

Learning Intentions

By the end of the session, I hope you will leave with answers to:

- What is Math Workshop?
- Why would you want to use this approach?
- What are the foundations needed for Math Workshop to work?
- How do you get started?



LRS #179550

Where can you find this PPT?

www.meaningfulmathmoments.com

HOME MUSINGS RESOURCES INSTRUCTIONAL IDEAS PRESENTATIONS/PUBLICATIONS



Click the
Presentations tab

Meaningful Moments in MATHEMATICS



Welcome! Thanks for stopping by my site. I was inspired to write down my [Mathematical musings](#) by several other Math educators who have generously shared their stories with me either through workshops, blogs, Twitter, or through publications and have inspired my love of Mathematics and shaped my practice.

I have taught Kindergarten through Grade Five in both Richmond and the Surrey School District. This year I am in a new role. I have joined the Numeracy Helping teachers and will be working primarily with K - 7

Search



Tweets by [@Barkerjbarker](#)



Jennifer Barker

[@Barkerjbarker](#)

Check out all the amazing K - 7 sessions!
Titles and descriptions are online
[#sd36learn](#)

Why Math Workshop/Balanced Numeracy?

$$242 - 196 =$$

No talking

Work independently

Be as quick as you can

Be prepared to prove your are correct

Could all students access
this question?

$$\begin{array}{r} \overset{1}{\cancel{2}} \overset{3}{\cancel{4}} \overset{1}{\cancel{2}} \\ - 196 \\ \hline 46 \end{array}$$

Can you explain why
you crossed the four out
and moved over a one ?

Julie had many hockey cards. She put most of them into a binder.



Julie had 242 hockey cards. She put most of them into a binder.



**BRAMPTON
THUNDER**

Hometown: Ste. Anne, MB
DOB: May 19, 1988
Height: 5' 6"
Shoots: Left
University: Minnesota Duluth

Jocelyne Larocque

This is Larocque's 1st season with the Brampton Thunder after a rookie year with the Calgary Inferno. She played college hockey at Minnesota-Duluth, helping her team win two NCAA championships. Jocelyne was part of the Canadian gold medal squad at 2014 Sochi Olympic Games and won gold again at the 2014 4 Nations Cup.

CWHL Regular Season--Team Alberta

Year	GP	G	A	Pts	PIM	+/-	GWG
2012-2013	23	1	2	3	44	-1	0



© 2014, MJB Card Design

Photo credits: Jessica Bazal, Brandon Taylor



Julie had 242 hockey cards. She put 196 of them into a binder.



Julie had 242 hockey cards. She put 196 of them into a binder. How many cards are not in the binder?



A Naked Number Problem

$$246 - 196 =$$

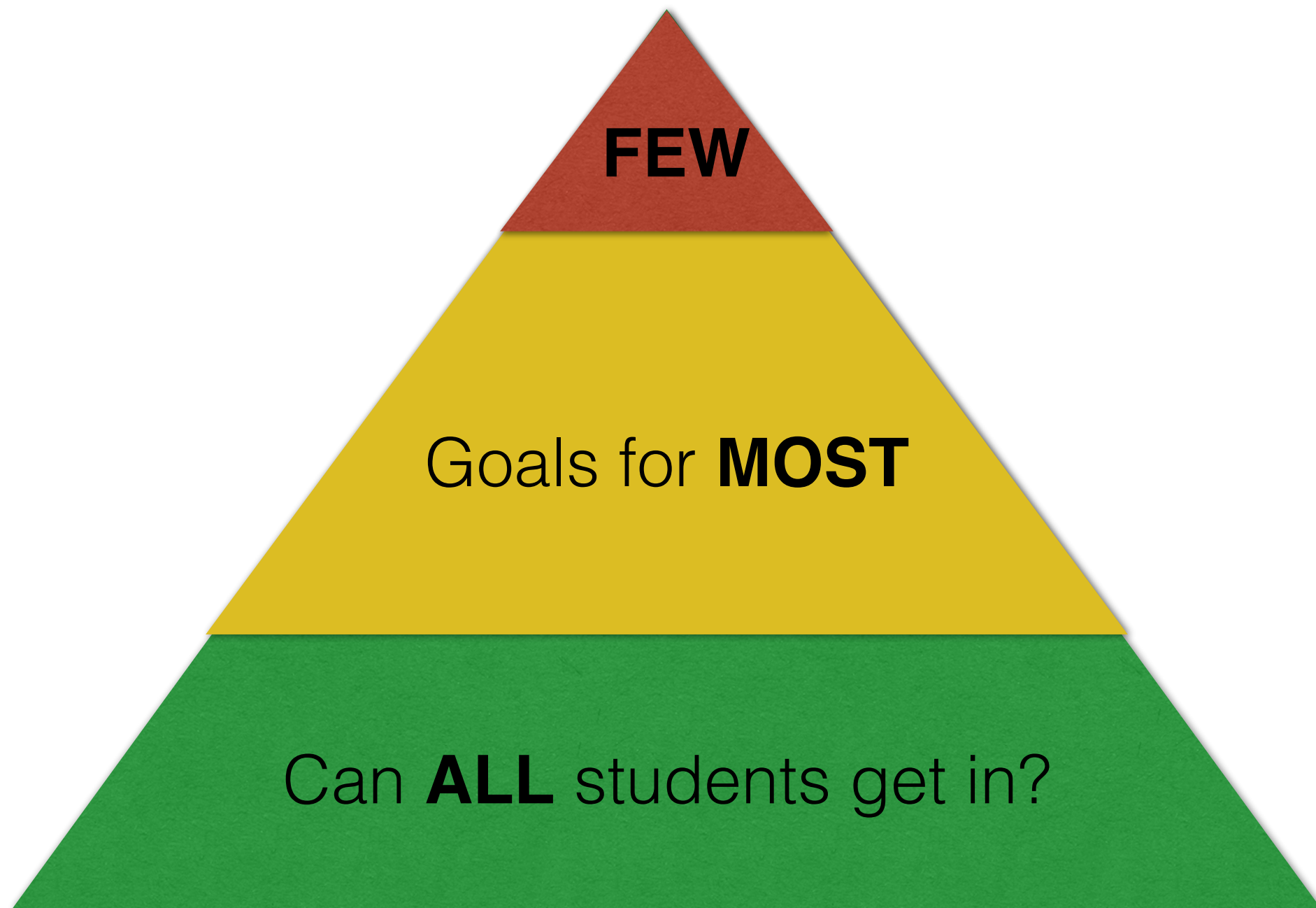
$$\begin{array}{r} 246 \\ -196 \\ \hline \end{array}$$

Contextual Problem Solving

Julie had 246 hockey cards. She placed 196 into a binder. How many cards were not in the binder?

Which problem has different entry points for students who may not have prior knowledge of the traditional algorithm?

Math Workshop is about designing
Learning for **ALL** our students!



I'm doing number sense routines. I am doing whole class problem solving and I have stations but I don't really know why or how they all fit together?

HELLO
I need

HELP

I've got a combined class and
I am not sure how I can
engage, challenge and
support the needs of ALL my
learners in my classroom?

HELLO
I need

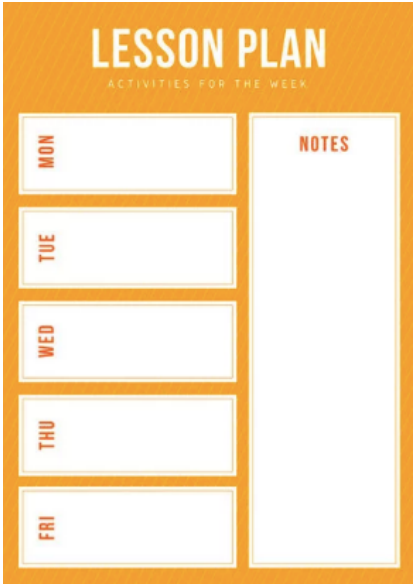
HELP

An average teacher may be reaching 50 - 70% of their students. A great teacher may be reaching at any time 50 - 70% of their students, but a different 50 - 70% each time. They use a variety of strategies, instructional methods to differentiate.

– Eric Jenson (2003)



Traditional Math Lesson Structure



5 minutes	Warm Up
15 minutes	Homework Check
30 minutes	Teacher Model/Guided Practice Teacher stands at the board showing the steps/procedures of how to solve a problem. The teacher models problems until they feel the students comprehend the procedure.
10 minutes	Student Independent Practice Students spend time completing a worksheet or pages in a textbook.
2 minutes	Assign Homework

Math Workshop Structures

TASK AND SHARE		FOCUS LESSON, GUIDED MATH, AND LEARNING STATIONS		GUIDED MATH AND LEARNING STATIONS	
5–10 minutes	NUMBER SENSE ROUTINE An engaging, accessible, purposeful routine to begin your math class that promotes a community of positive mathematics discussion and thinking.	5–10 minutes	NUMBER SENSE ROUTINE An engaging, accessible, purposeful routine	5–10 minutes	NUMBER SENSE ROUTINE An engaging, accessible, purposeful routine to begin your math class that promotes a community of positive mathematics discussion and thinking.
30 minutes	MATH TASK A problem-solving activity in small groups that probes students' understanding of a concept. The task typically allows for all students to work on the problem.	FOCUS LESSON, GUIDED MATH, AND LEARNING STATIONS Activities in which students engage in meaningful mathematics and are provided with purposeful choices.		GUIDED MATH AND LEARNING STATIONS Activities in which students engage in meaningful mathematics and are provided with purposeful choices.	
20–25 minutes	TASK SHARE AND STUDENT REFLECTION A math task in which students come together as a whole class and discuss the various strategies they used to solve the problem. Students ask questions, clarify their thinking, modify their work, and add to their collection of strategies.	FOCUS LESSON, GUIDED MATH, AND LEARNING STATIONS A deliberate and meaningful time for students to consider new learning.		GUIDED MATH AND LEARNING STATIONS A deliberate and meaningful time for students to consider new learning.	

How is your current structure similar to math workshop? How is it different?



Math Workshop IS...

- students doing most of the math
- students making choices
- students enthusiastically talking about their mathematical thinking and reasoning with each other
- teachers facilitating, clarifying, connecting, monitoring, and collecting data as students solve problems
- students working collaboratively
- teachers allowing students to struggle with challenging mathematics
- teachers working with small groups and/or individual students



“Math Workshop is simply good mathematics instruction... It is more of a philosophy than a lesson plan template.... [it] includes accessible mathematical tasks, open-ended problem solving, small-group instruction, student choice, and time for practice of important concepts throughout the year. It can and should look different in the hands of different teachers working in different schools.”

– Jennifer Lempp (2017)



Setting the Foundation for Math Workshop - The 3 Buckets



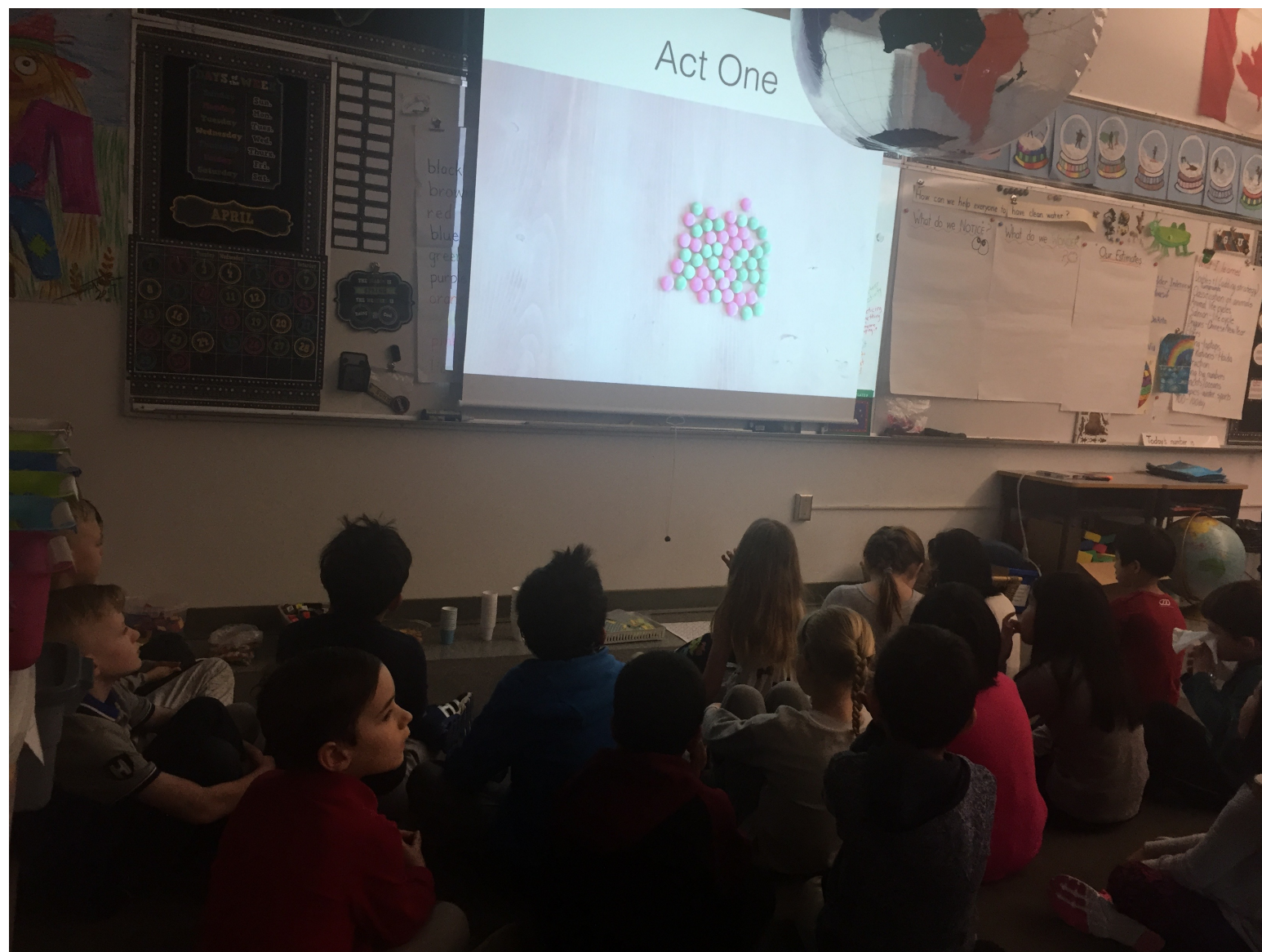
CLASSROOM ARRANGEMENT



Setting the Stage for Math Workshop Success

A Place to Start Together

- Start your class with a Number Sense Routine such as a Number Talk, Choral Count, Clothesline Math, Estimation Clipboard
- This is the students' first impression of the class



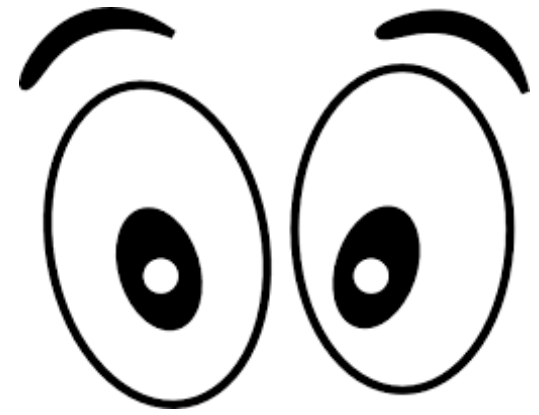
A Place for Learning Stations

- Engaging and Meaningful
- Accessible for all
- Provide choice
- Space and opportunities for collaboration
- Quality over quantity
- Clear expectations



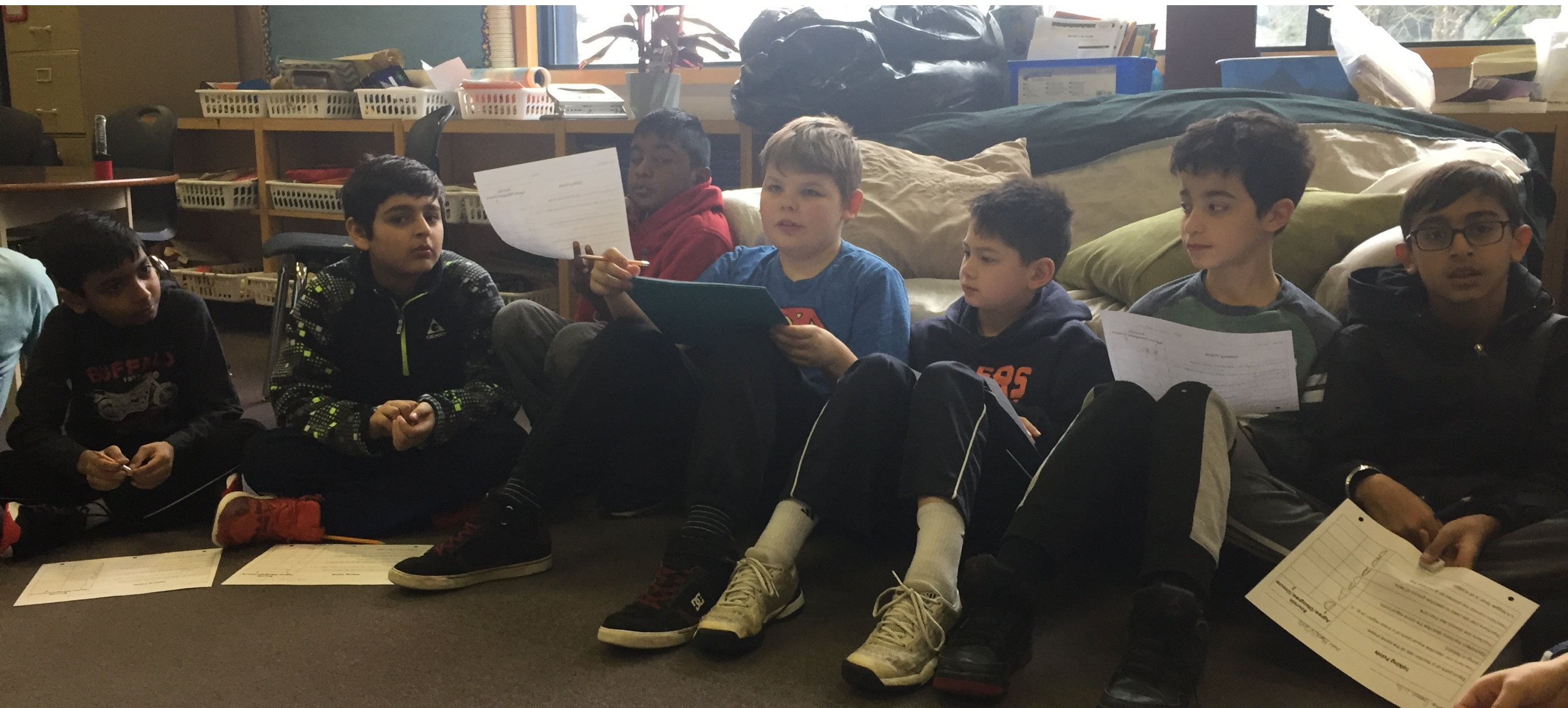
A Place for Guided Math

- Small Group Instruction
- Conferences
- Meeting students where they are at “just right”
- Deep listening
- Flexible

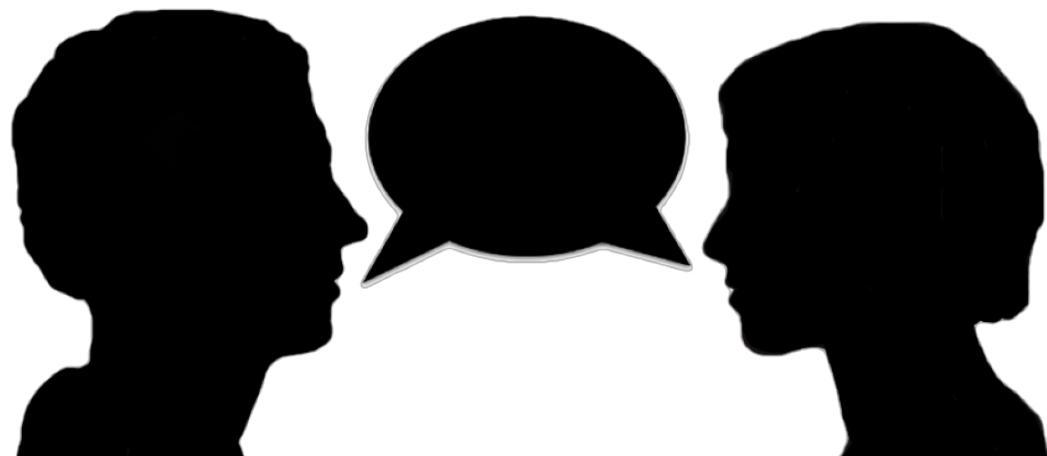


A Place to End Together

- Share strategies
- Ask questions
- Connect
- Reflect



What needs to change in
your classroom arrangement
to accommodate the three
types of places for math
workshop?



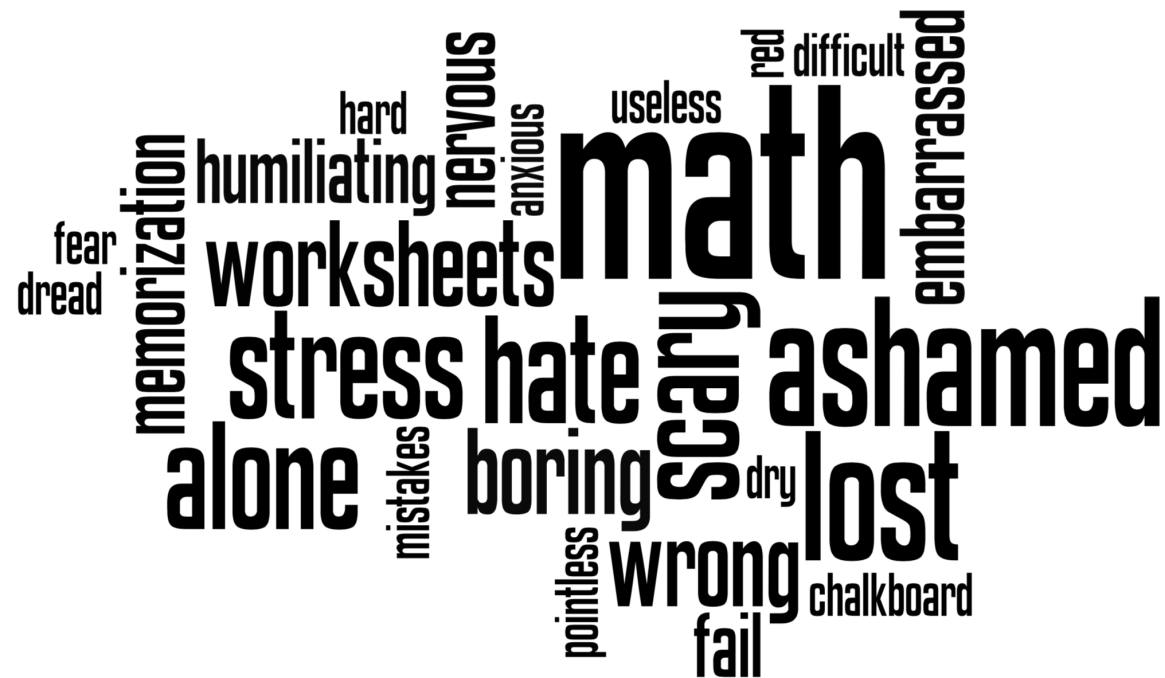
MATHEMATICS COMMUNITY



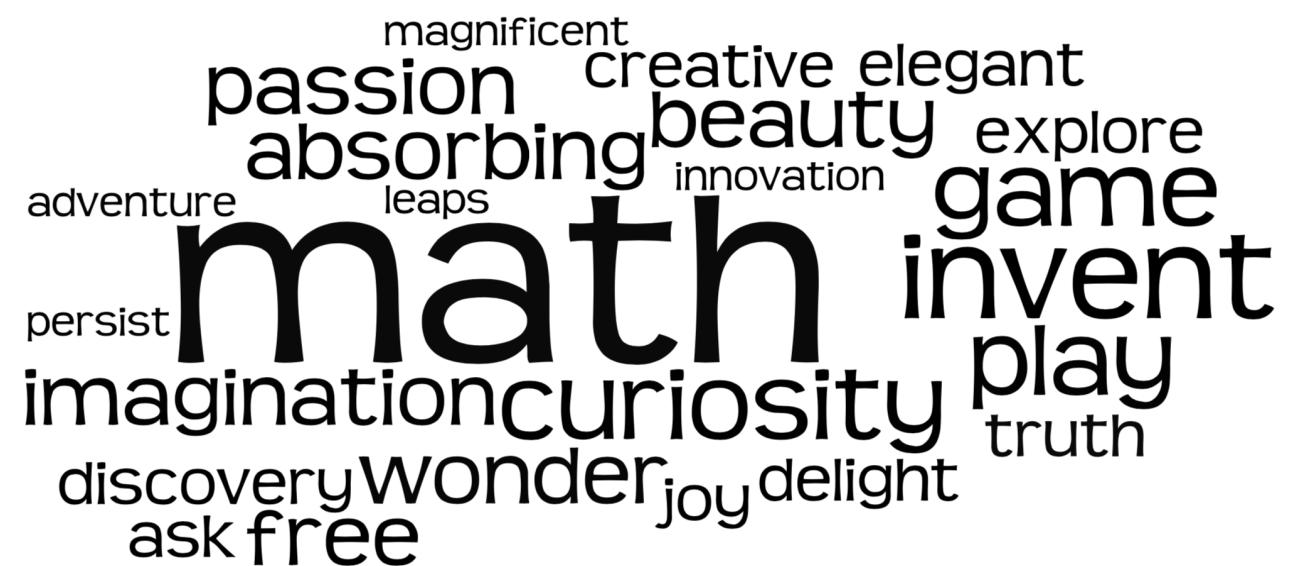
Creating Opportunities for Student Discourse

What narrative do we want for our students?

Descriptions from
teachers and students



Descriptions from Real
Mathematicians



Wordles from Zager (2017), p.g. 5.

“Student self-efficacy, or a student’s beliefs in perceptions of his or her ability to perform a mathematical task is a strong predictor of student success in mathematics... As teachers of mathematics, we need to plan engaging activities that allow for many entry points, so all students can experience success and feel motivated to learn mathematics.”

– Krpan in Teaching Math With Meaning (2018) p.g., 14



What
messages
are implied in
this?

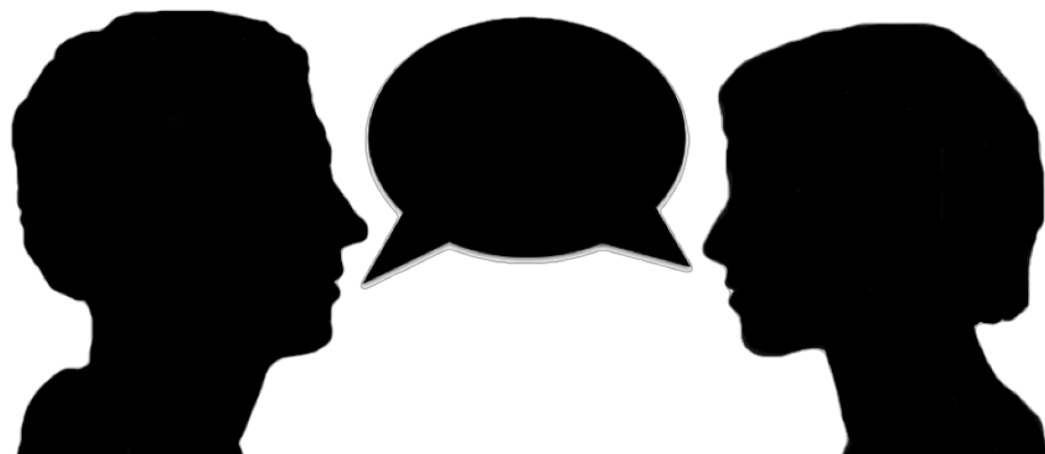
52
64

Adding with Some Regrouping (A)

Find each sum.

5 +1 — 6 ✓	7 +4 — 9 ✓	1 +4 — 5 ✓	1 +9 — 10 ✓	7 +9 — 16 ✓	1 +7 — 8 ✓	7 +6 — 13 ✓	4 +5 — 9 ✓
3 +1 — 4 ✓	9 +2 — 11 ✓	1 +7 — 8 ✓	4 +3 — 7 ✓	2 +2 — 4 ✓	2 +5 — 7 ✓	9 +6 — 15 ✓	5 +6 — 11 ✓
1 +2 — 3 ✓	6 +8 — 14 ✓	7 +7 — 14 ✓	2 +4 — 6 ✓	6 +2 — 8 ✓	4 +4 — 8 ✓	2 +5 — 7 ✓	9 +3 — 12 ✓
5 +9 — 14 ✓	5 +1 — 6 ✓	9 +6 — 15 ✓	3 +7 — 10 ✓	3 +9 — 12 ✓	3 +3 — 6 ✓	5 +6 — 11 ✓	6 +1 — 7 ✓
9 +4 — 13 ✓	6 +1 — 7 ✓	1 +2 — 3 ✓	9 +8 — 17 ✓	9 +9 — 18 ✓	6 +7 — 13 ✓	8 +2 — 10 ✓	4 +2 — 6 ✓
6 +3 — 9 ✓	8 +9 — 17 ✓	1 +1 — 2 ✓	4 +8 — 12 ✓	8 +5 — 13 ✓	3 +5 — 8 ✓	4 +6 — 10 ✓	7 +1 — 8 ✓
1 +2 — 3 ✓	4 +4 — 8 ✓	4 +1 — 5 ✓	7 +1 — 8 ✓	9 +1 — 10 ✓	2 +9 — 11 ✓	9 +5 — 14 ✓	8 +8 — 16 ✓
1 +6 — 7 ✓	3 +4 — 7 ✓	9 +7 — 16 ✓	9 +9 — 18 ✓	3 +7 — 10 ✓	4 +6 — 10 ✓	6 +5 — 11 ✓	5 +9 — 14 ✓

Math-Drills.Com



A Strong Classroom Community has...

Students **talk** to one another; they explain and clarify their thinking to each other.

Students see working together as learning; they **collaborate**, ask each other **questions**, and **respectfully challenge ideas**.

Students **believe they are all capable** of being successful in math - they exhibit a **growth mindset**.

Students **constructively struggle** together and hold all members of the group **accountable** for learning.

Students **respect their peers' ideas** and view one another as knowledgeable.

Students **share their work** with each other.

Students feel their opinions and ideas do matter - it is worth the **risk!**

What learning opportunities can we provide that encourage?

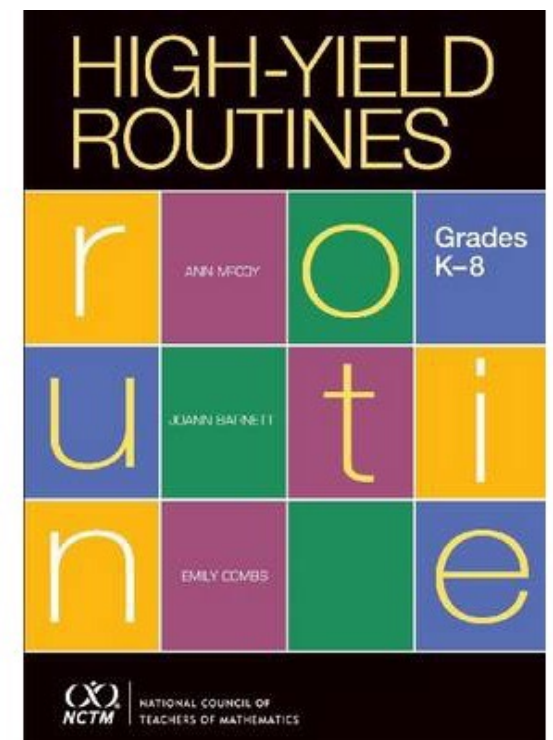
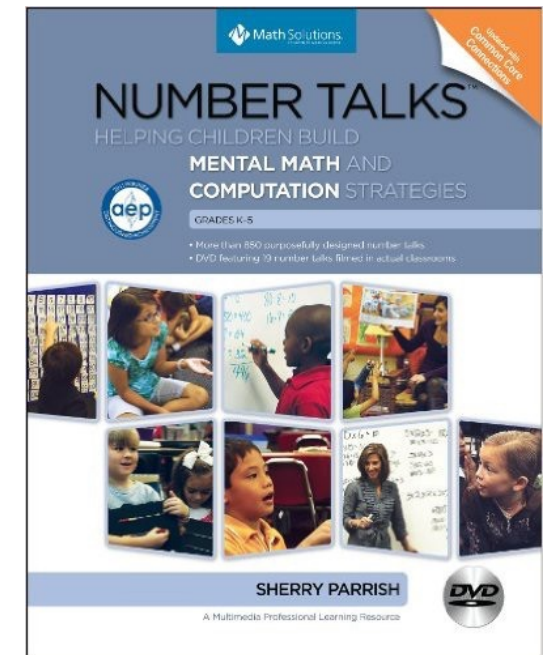
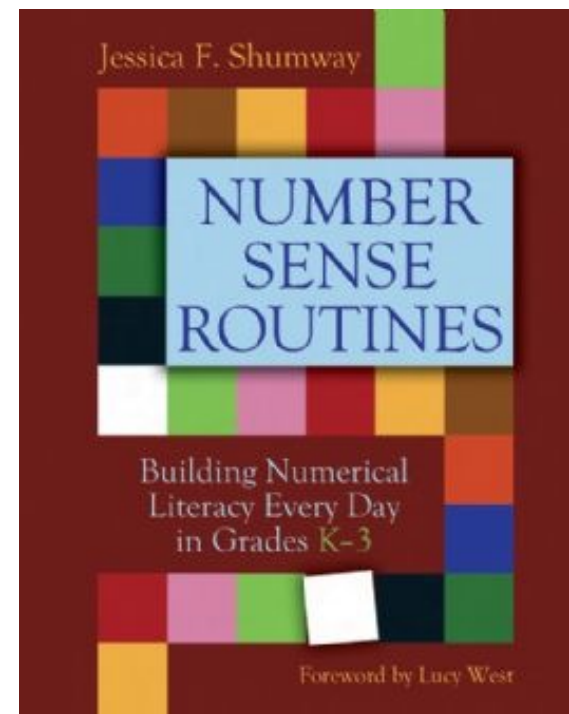


Math Workshop Structures

TASK AND SHARE		FOCUS LESSON, GUIDED MATH, AND LEARNING STATIONS		GUIDED MATH AND LEARNING STATIONS	
5–10 minutes	NUMBER SENSE ROUTINE An engaging, accessible, purposeful routine to begin your math class that promotes a community of positive mathematics discussion and thinking.	5–10 minutes	NUMBER SENSE ROUTINE An engaging, accessible, purposeful routine to begin your math class that promotes a community of positive mathematics discussion and thinking.	5–10 minutes	NUMBER SENSE ROUTINE An engaging, accessible, purposeful routine to begin your math class that promotes a community of positive mathematics discussion and thinking.
30 minutes	MATH TASK A problem that students work on in small groups. The teacher circulates and probes students' thinking through questions. The task typically has multiple entry points, allowing for all students to have access to the problem.	15 minutes	FOCUS LESSON A well-planned, small-group lesson focused on the day's target and accessible to all levels of learners.	45 minutes	GUIDED MATH AND LEARNING STATIONS Small-group activities in which instruction is differentiated so students engage in meaningful mathematics and learn more about students' understandings and misconceptions. In this structure, the focus lesson is addressed in guided math groups and differentiated for each group.
20–25 minutes	TASK SHARE AND STUDENT REFLECTION A math share in which students come together as a whole class and discuss the various strategies they used to solve the problem. Students ask questions, clarify their thinking, and add to their collection of strategies.	5–10 minutes	STUDENT REFLECTION A deliberate and meaningful time for students to consolidate new learning.	5–10 minutes	STUDENT REFLECTION A deliberate and meaningful time for students to consolidate new learning.

What are Number Routines?

- Collection of quick, low-prep 5 to 10 minute activities.
- They focus on the big ideas in Mathematics.
- They serve to reteach, reinforce, and enrich.
- Can be used as warm ups, mini lesson, with the whole class or in small groups.

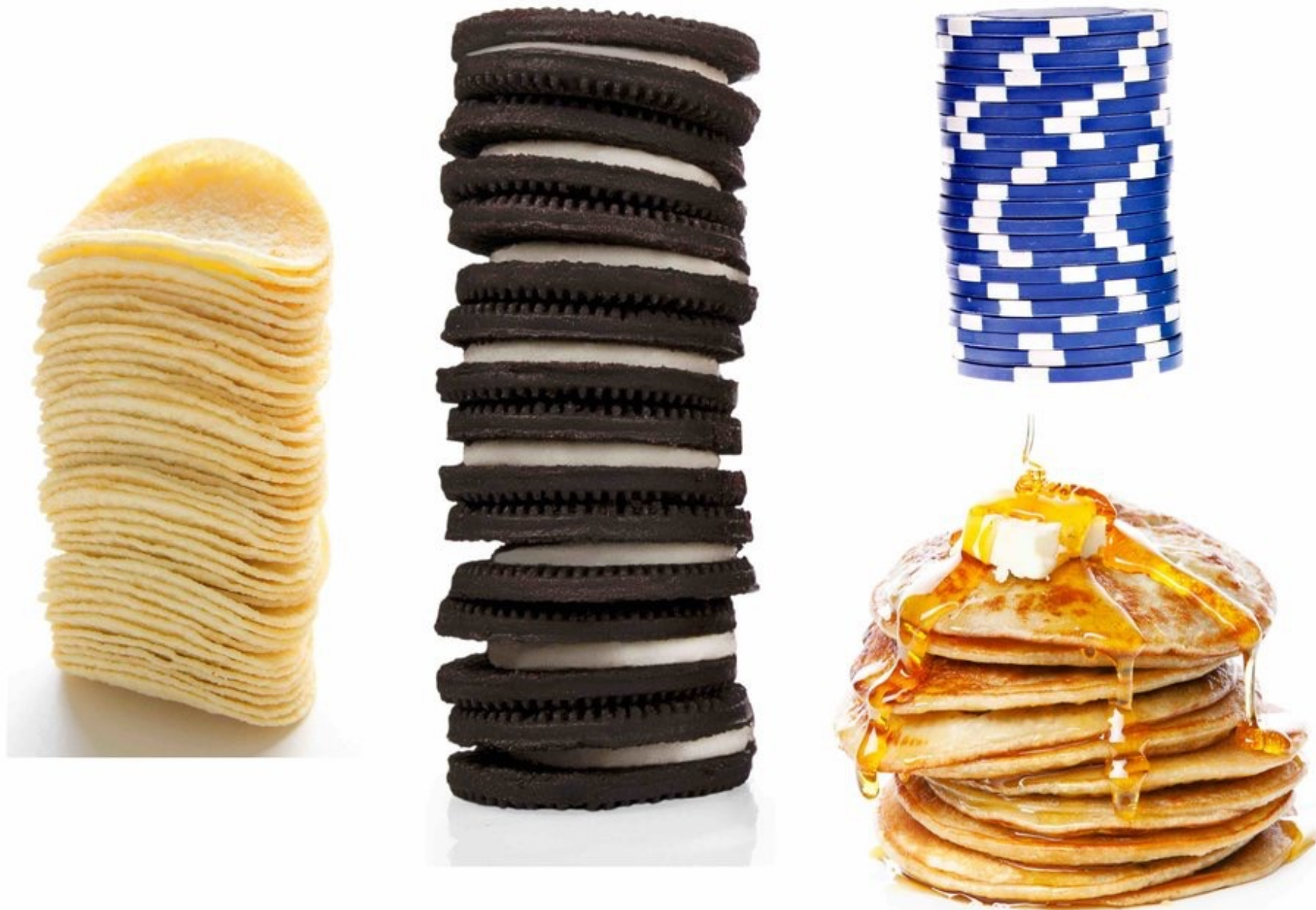


Why use Number Routines?

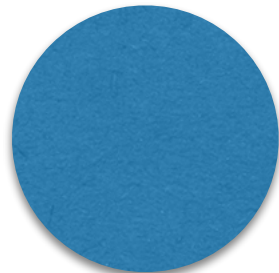
- Builds a Math community where students feel safe to take risks and can learn from one and other
- Everyone has access and can work to their full potential
- Emphasizes the core and curricular competencies in relation to mathematical content. Provides daily number sense experiences where students clarify their thinking, consider and test strategies, and build a repertoire of efficient strategies
- Allows for spiralling through concepts and helps students make connections to the big ideas in mathematics

Number Routines: WODB

Which one doesn't belong?



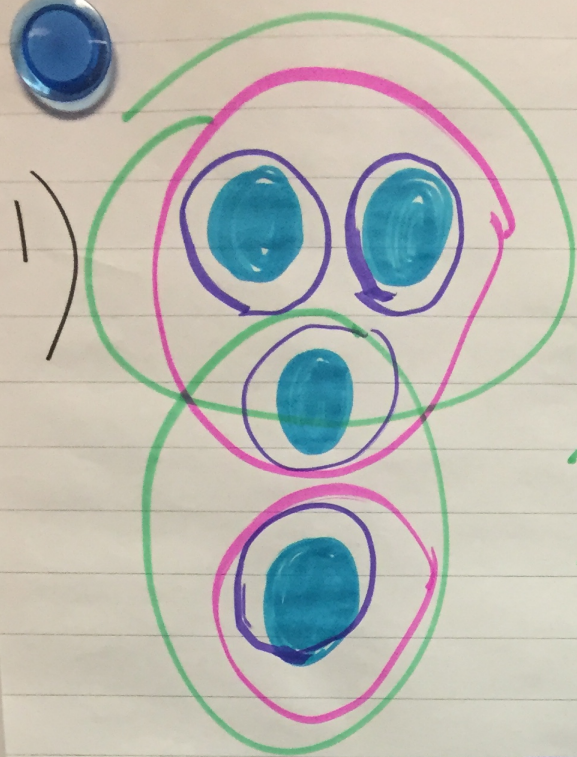
Number Routines: Quick Images



Subitizing

- Perceptual Subtizing - Instantly seeing how many
- Conceptual Subitizing - involves the ability to see the smaller groups and being able to combine them together to compose the whole/total.

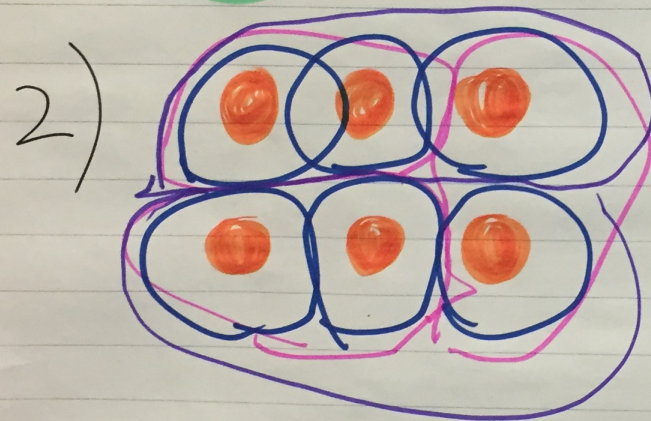
It helps students move from counting by ones, and assists them in seeing how numbers can be taken apart and put back together (decomposing). This will help students to develop derived facts.



$$3 \text{ and } 1 = 4$$

$$1 \text{ and } 1 \text{ and } 1 \text{ and } 1 = 4$$

$$2 \text{ and } 2 \text{ is } 4$$

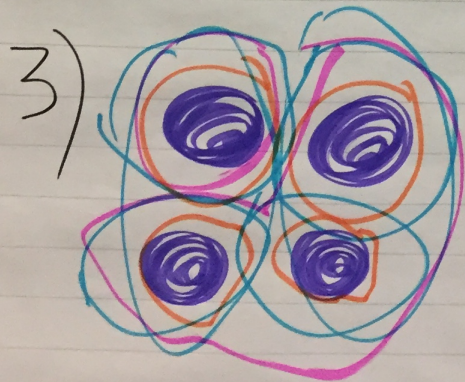


$$1 + 1 + 1 + 1 + 1 + 1 = 6$$

$$3 \text{ and } 3 = 6$$

$$2 \text{ and } 2 \text{ and } 2 = 6$$

$$1, 2, 3, 4, 5, 6 \Rightarrow (6)$$



$$7 = 1 + 1 + 1 + 1 + 1 + 1 + 1$$

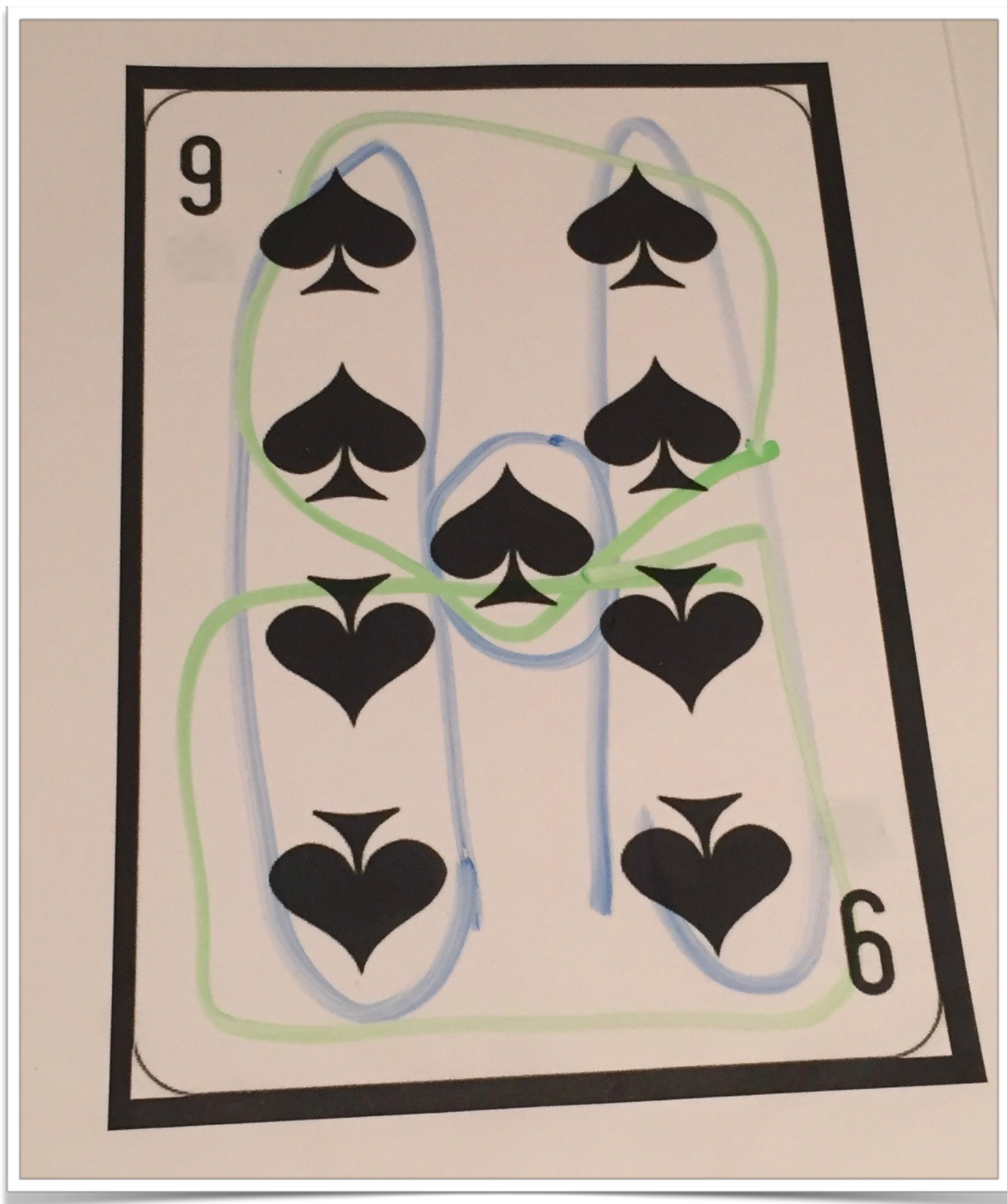
$$2 + 2 + 3 = 7$$

$$1 + 3 + 2 + 1 = 7$$

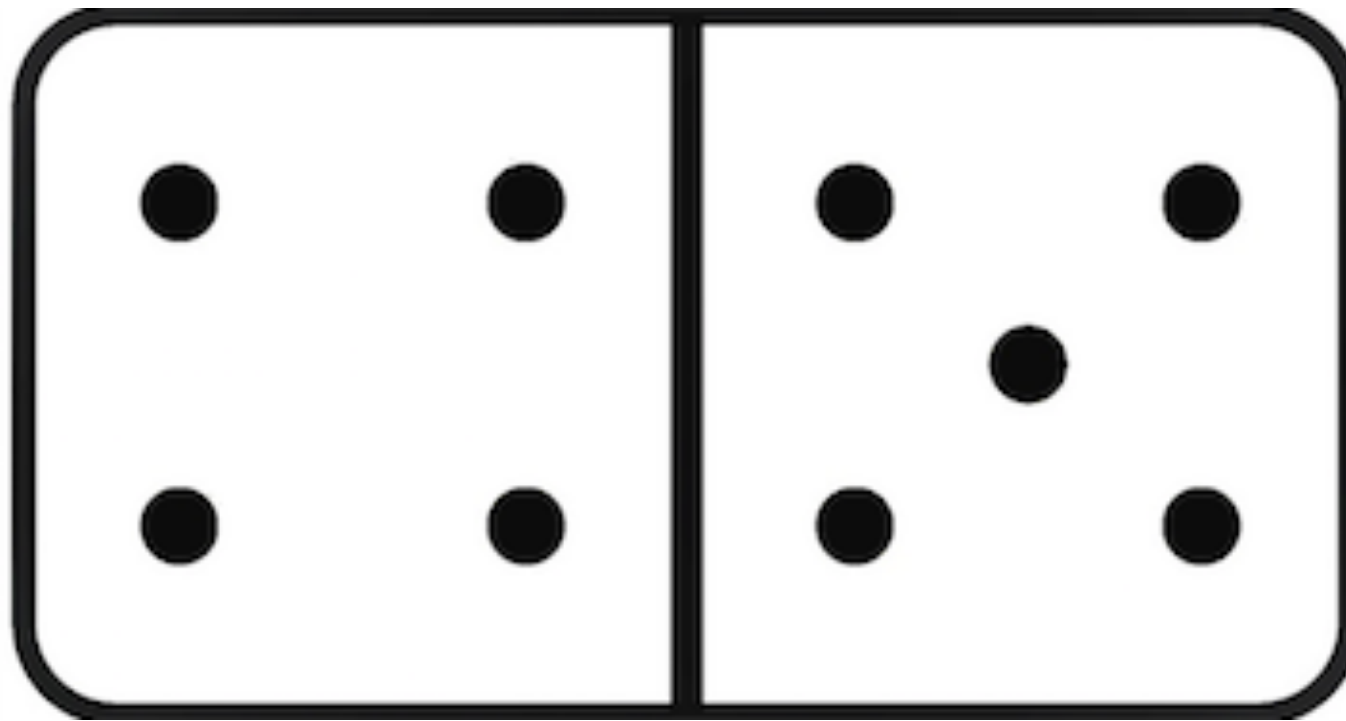


Playing Cards





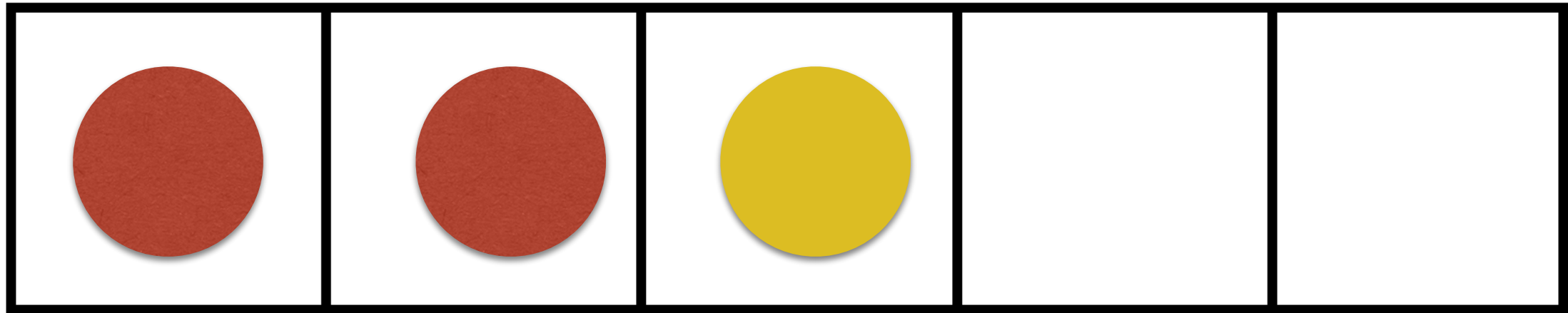
Dominoes



How many do you see?

How do you see them?

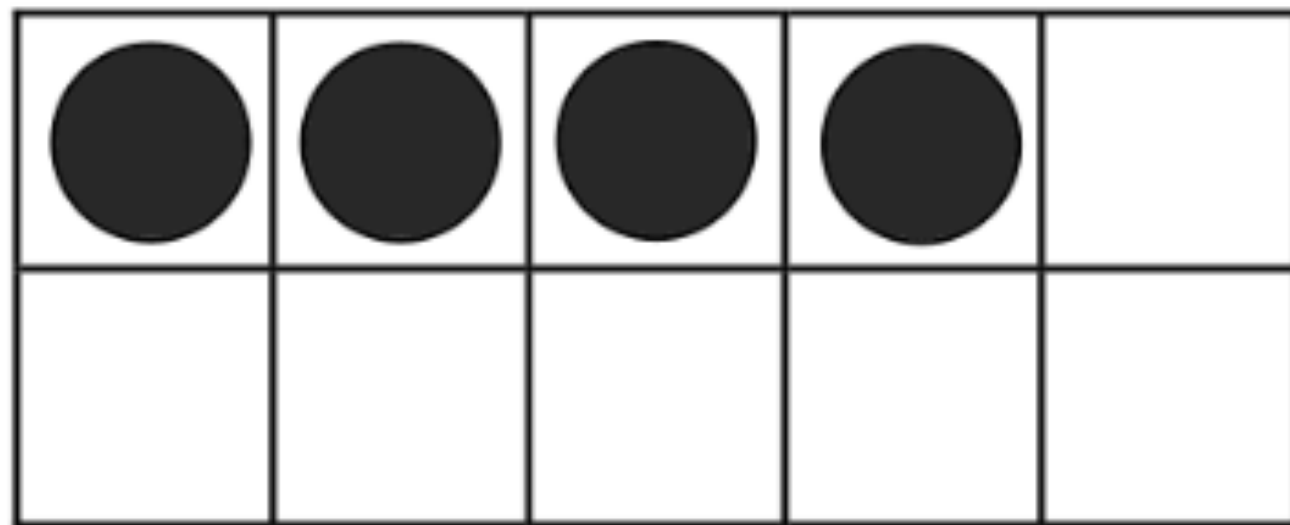
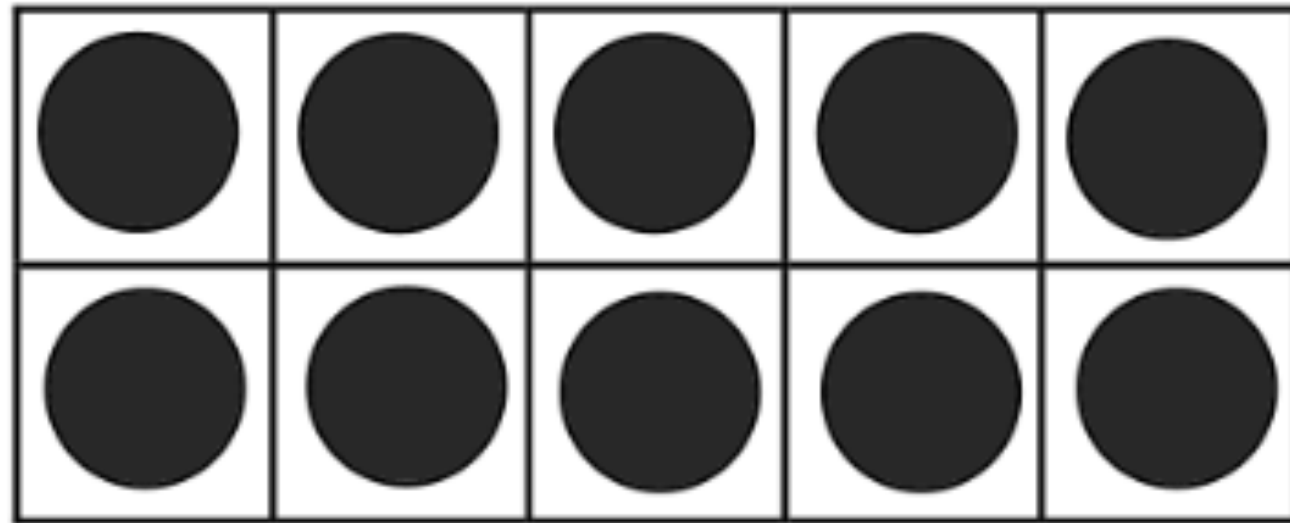
Five and Ten Frames



How many?

How did you see them?

Double Ten Frames

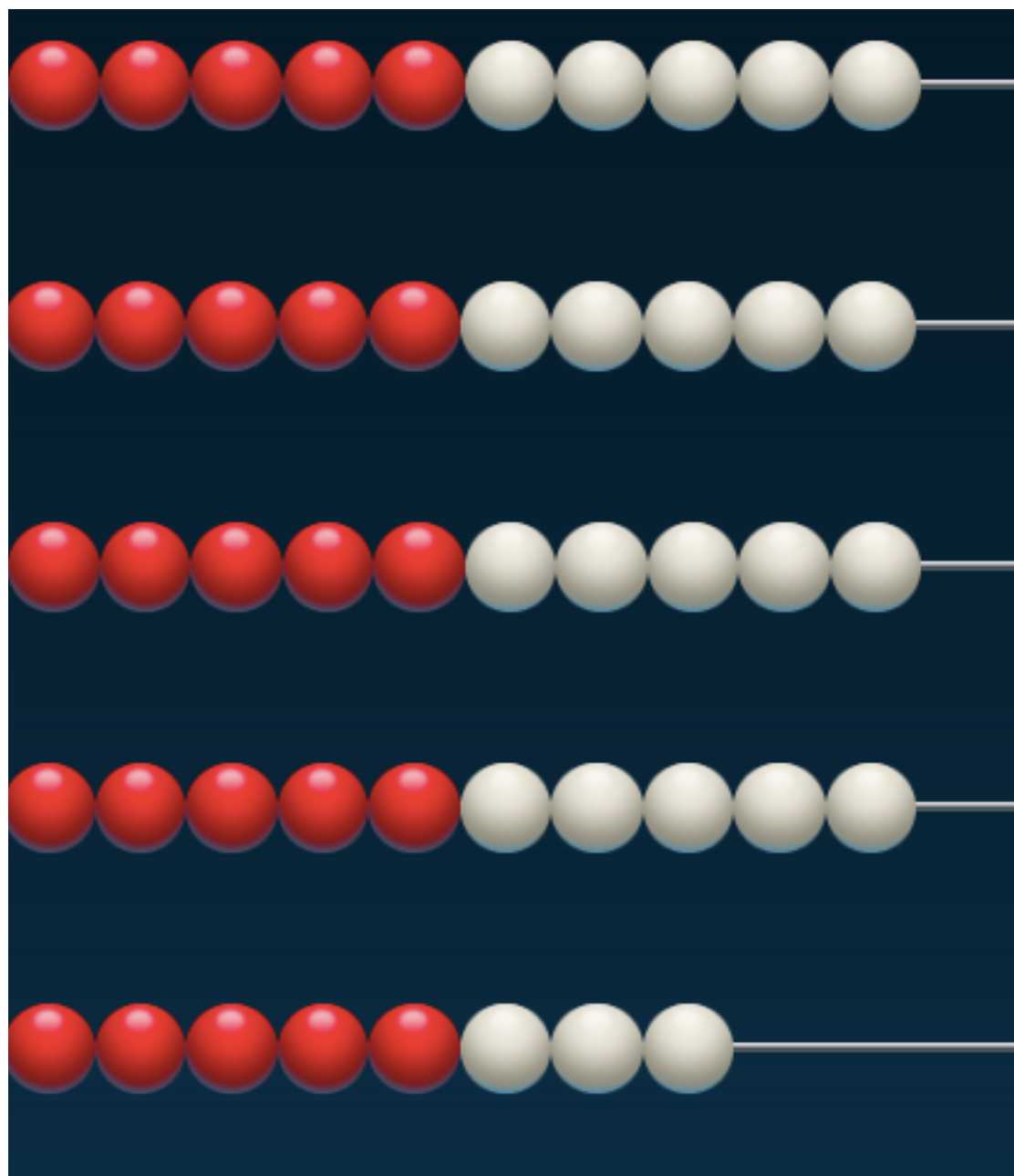


Rekenrek or Math Rack



There is 8!

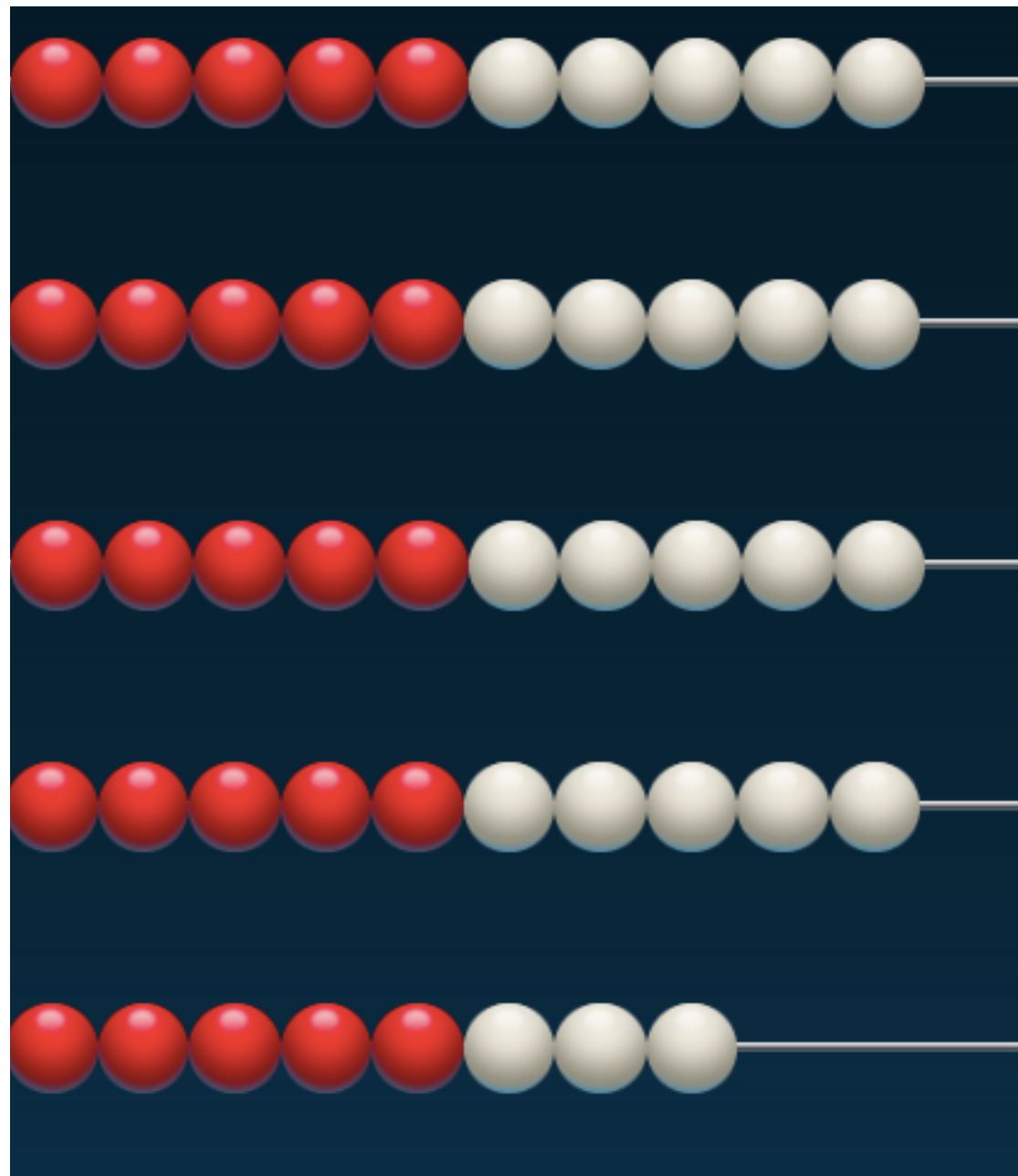
I know it is 8 because I see
5 and 3



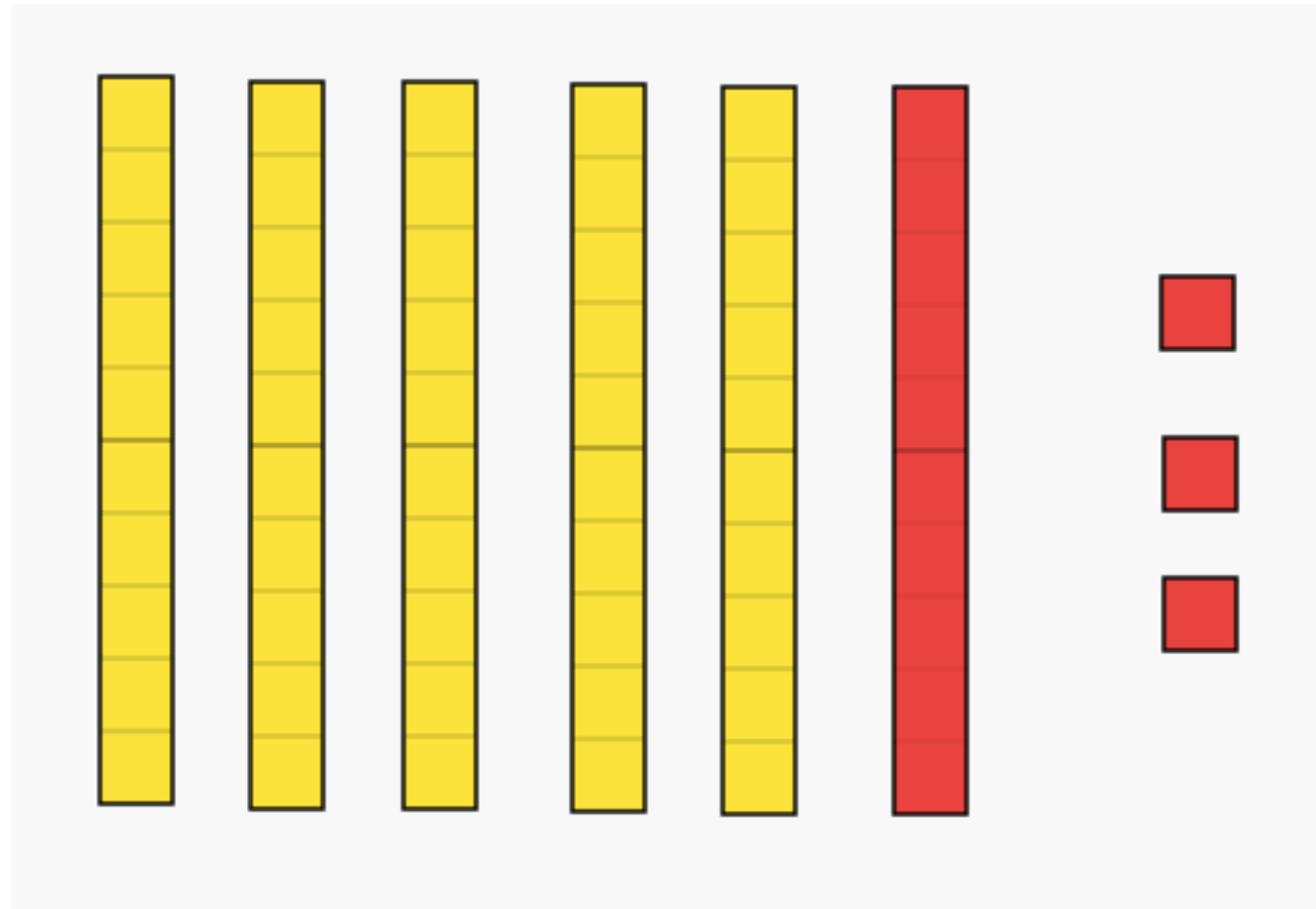
<https://www.mathlearningcenter.org/resources/apps>

How many?

How did you see them?



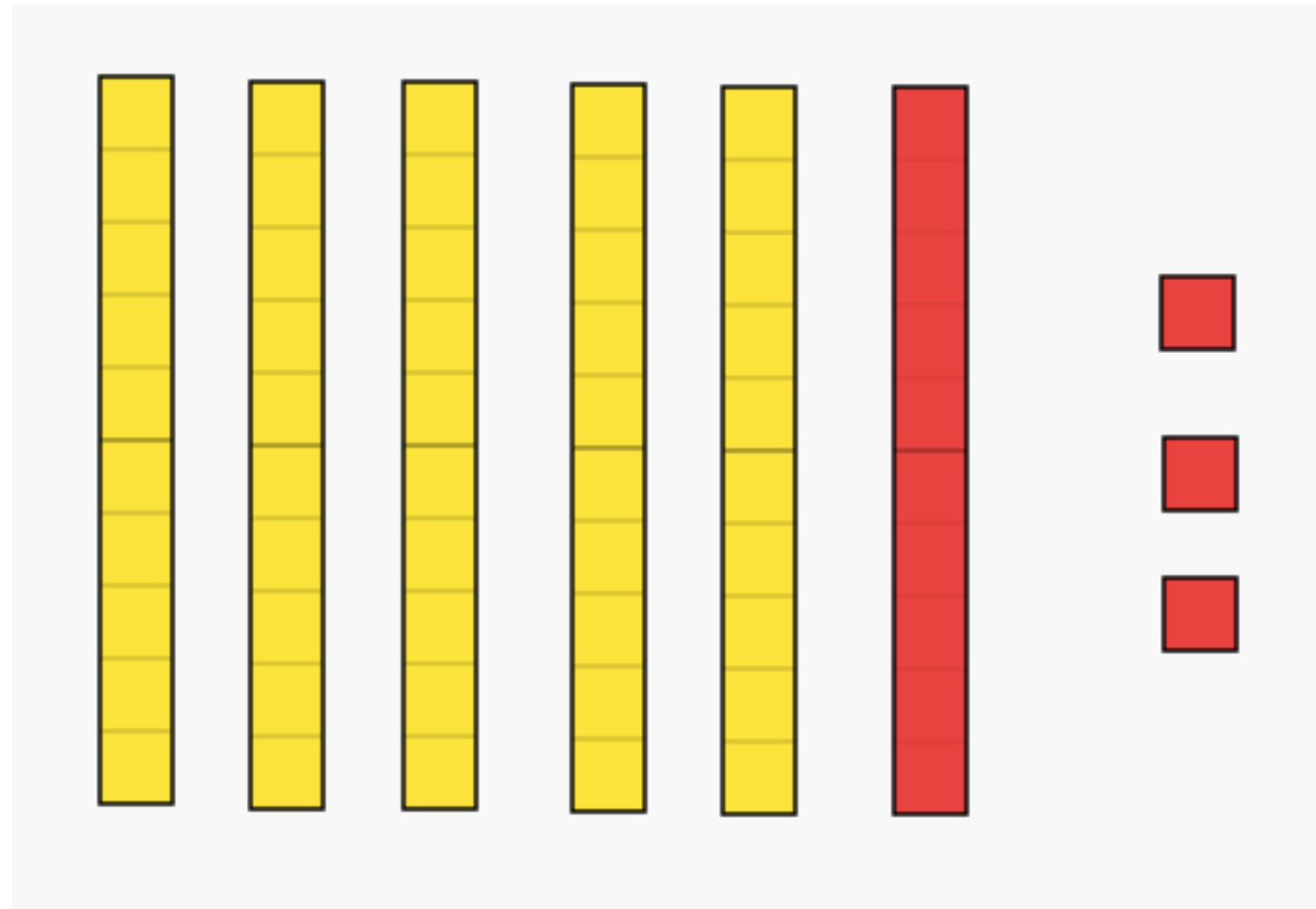
<https://www.mathlearningcenter.org/resources/apps>



<https://www.mathlearningcenter.org/resources/apps>

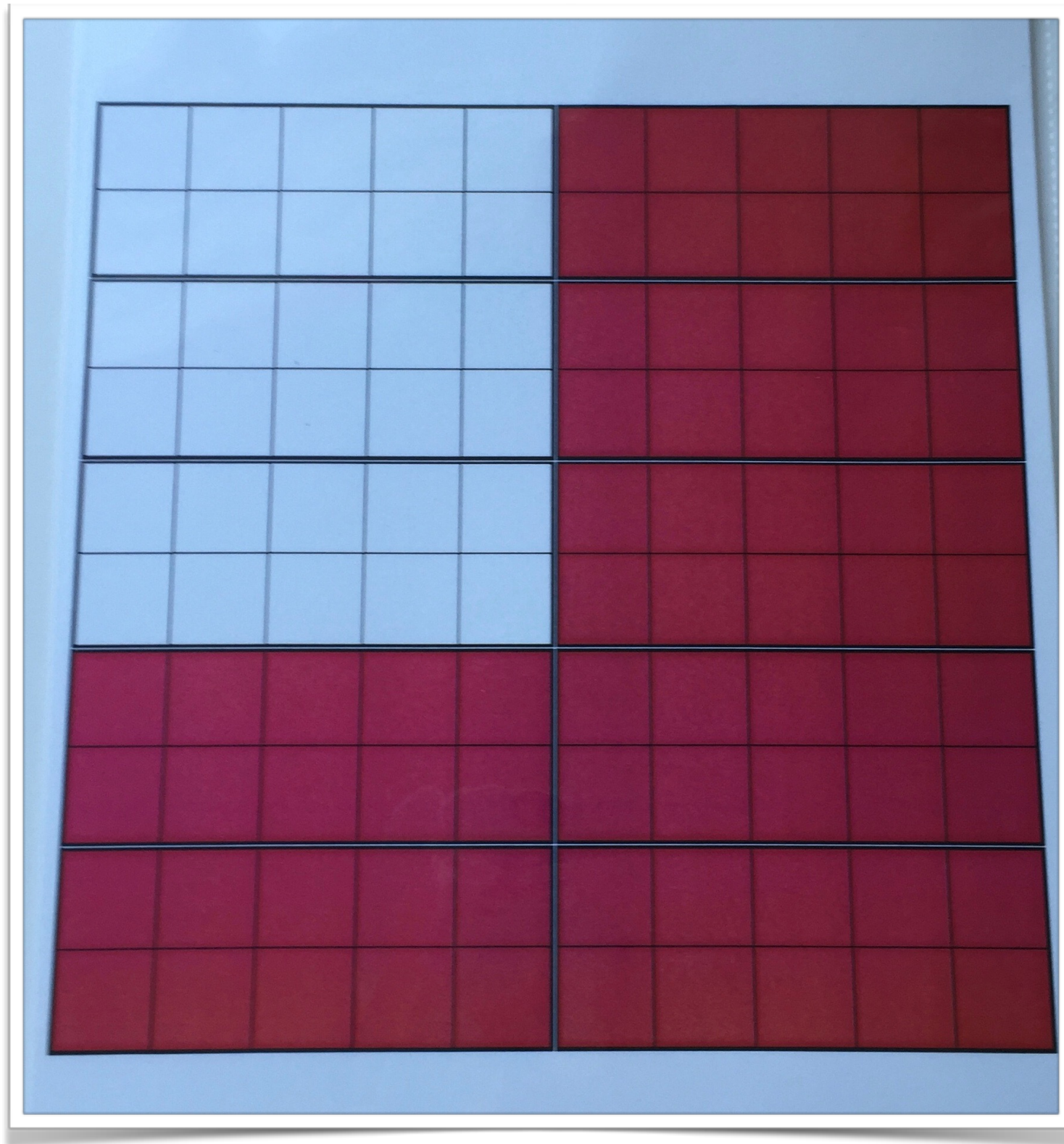
How many?

How did you see them?

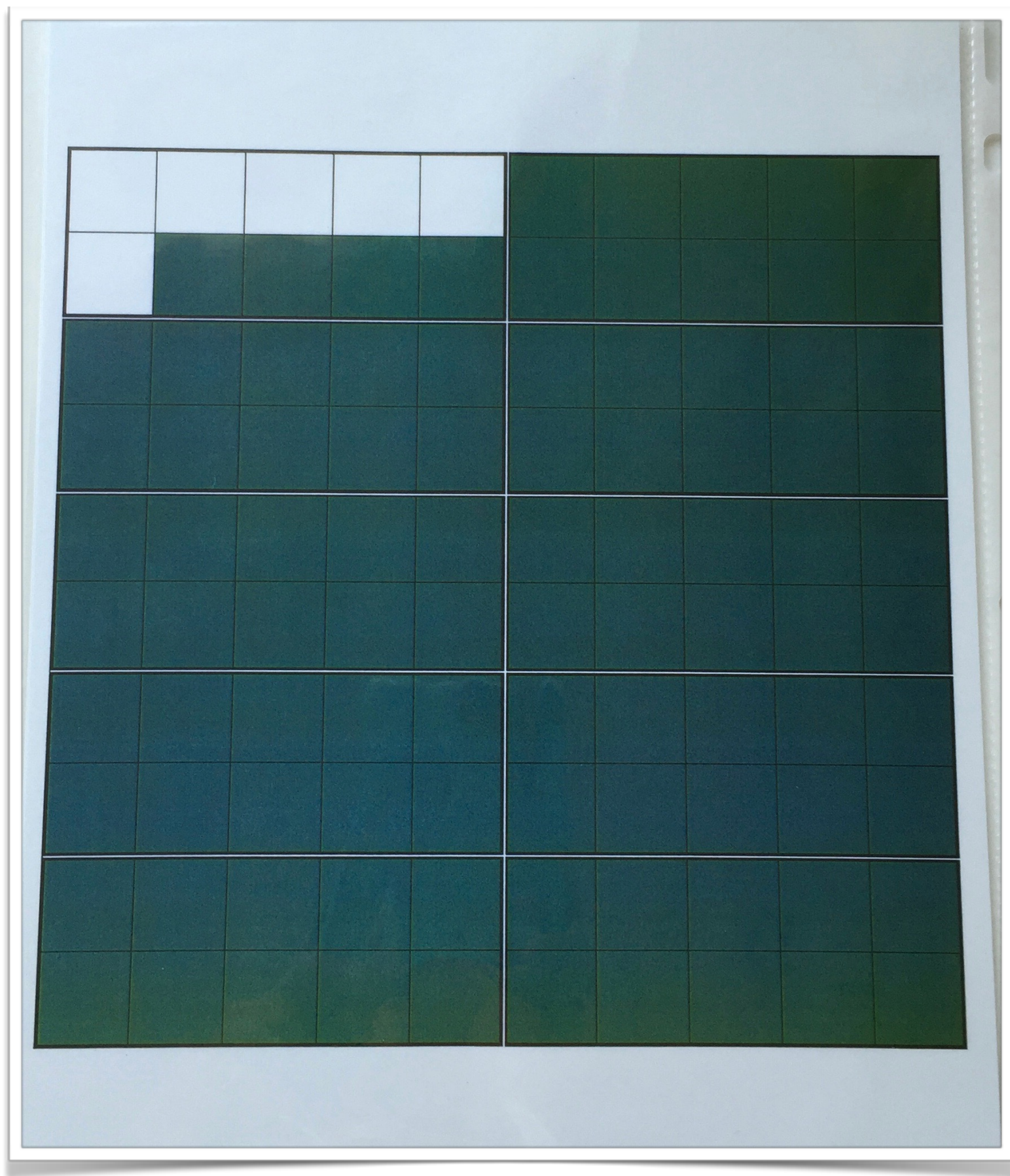


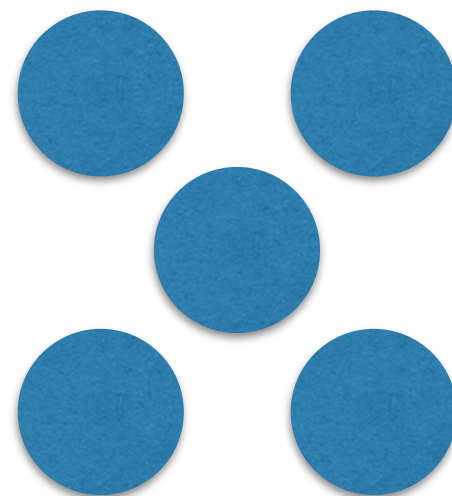
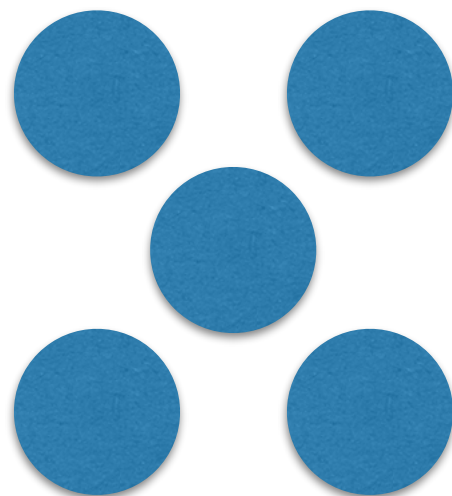
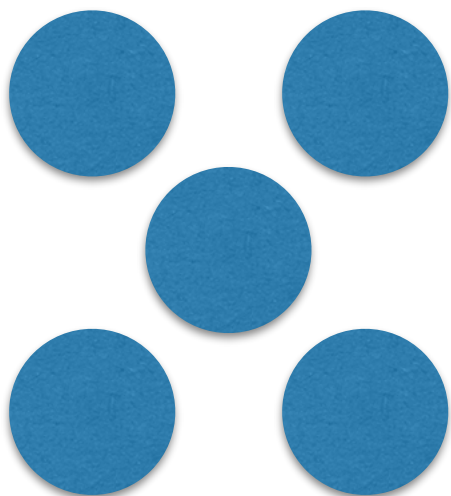
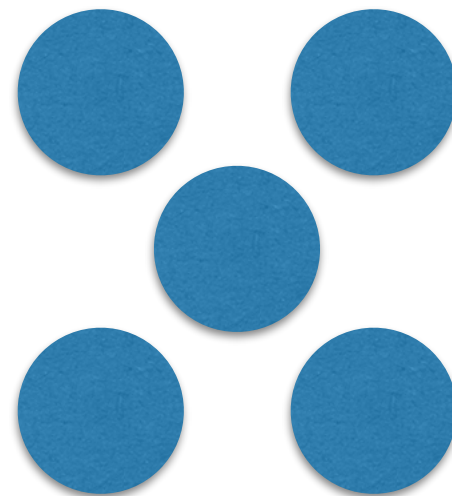
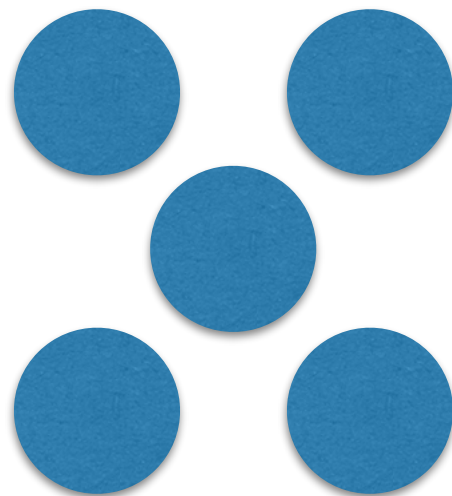
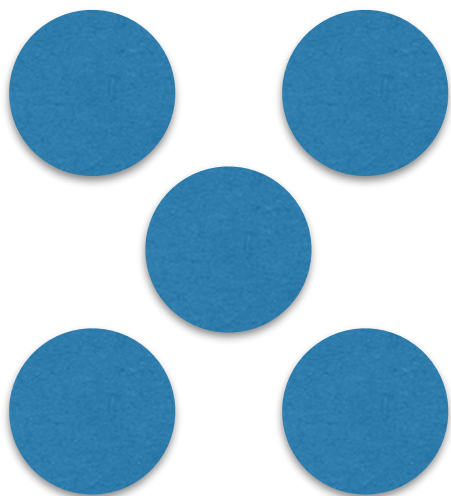
<https://www.mathlearningcenter.org/resources/apps>

Hundreds Boards



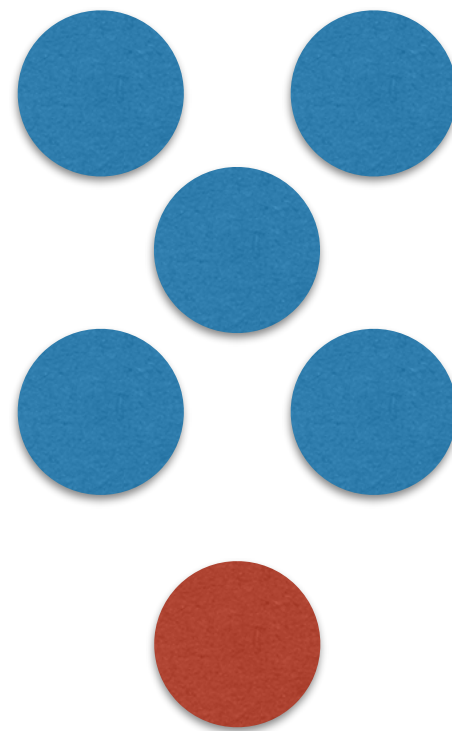
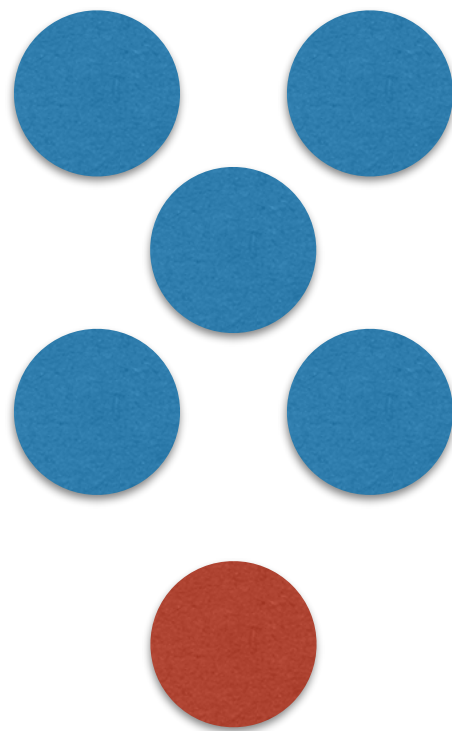
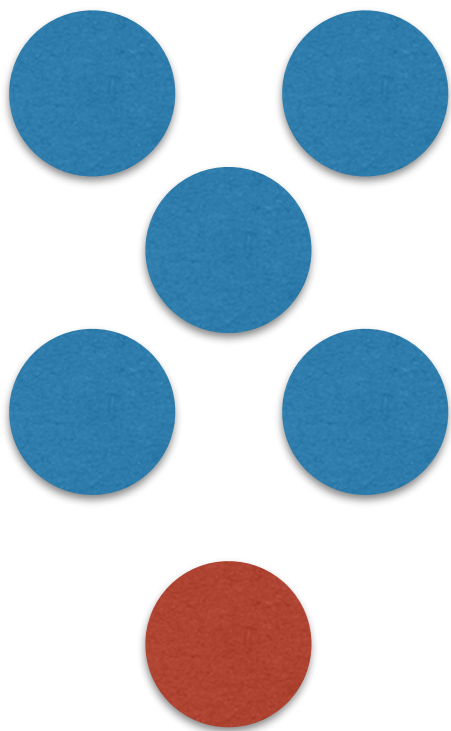
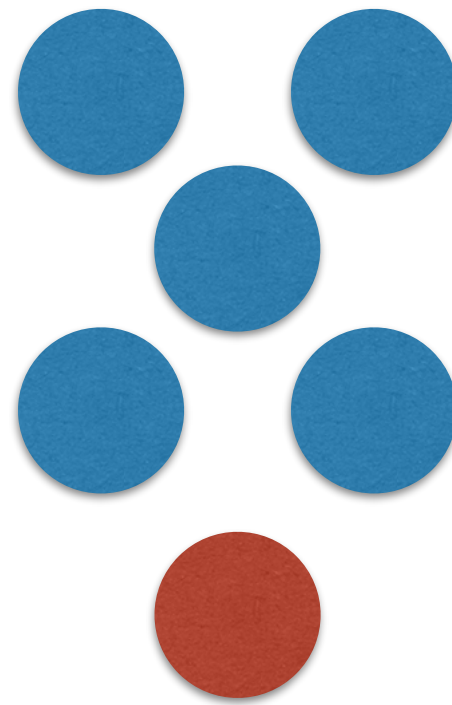
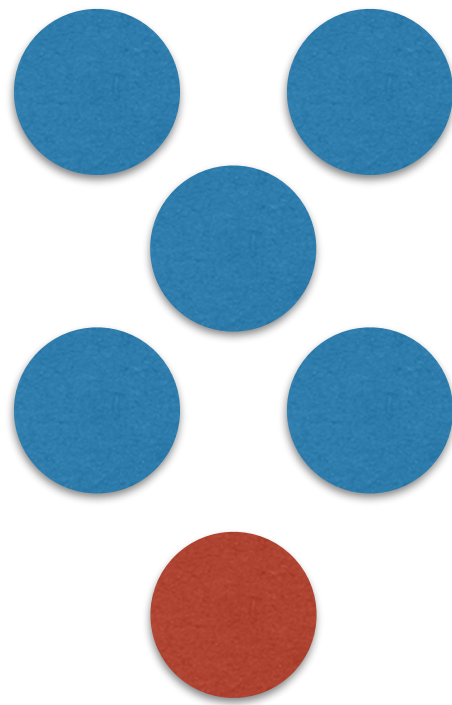
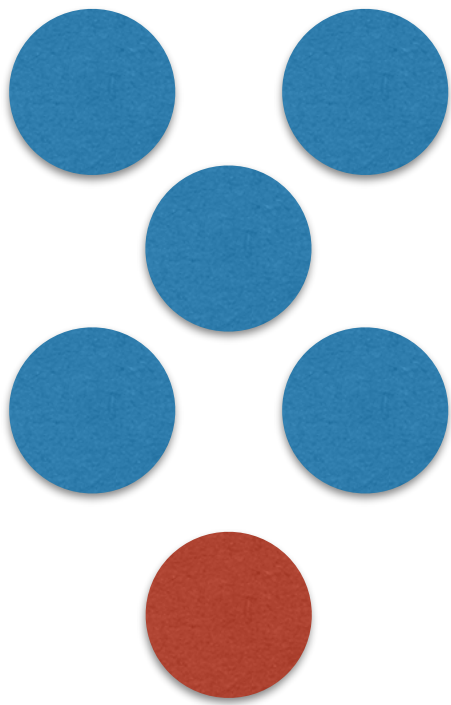
[illegible]





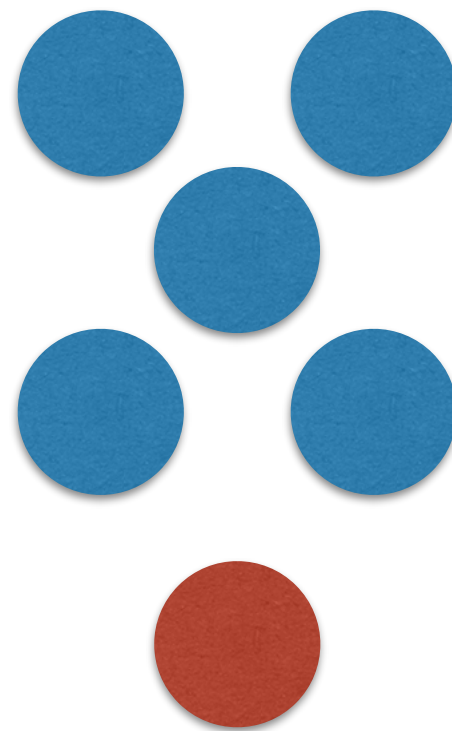
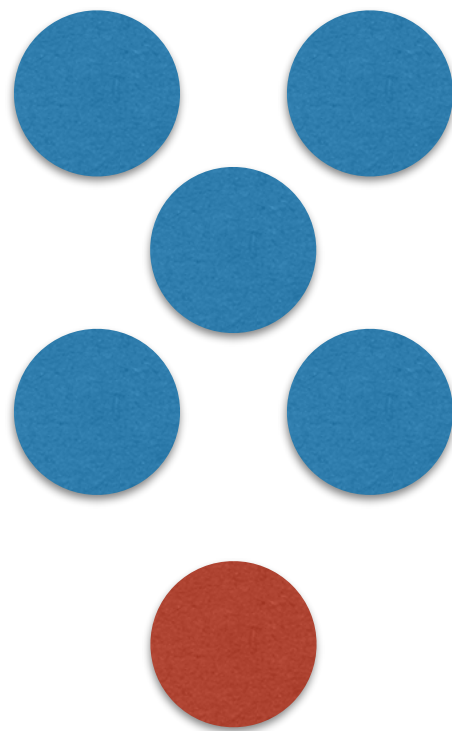
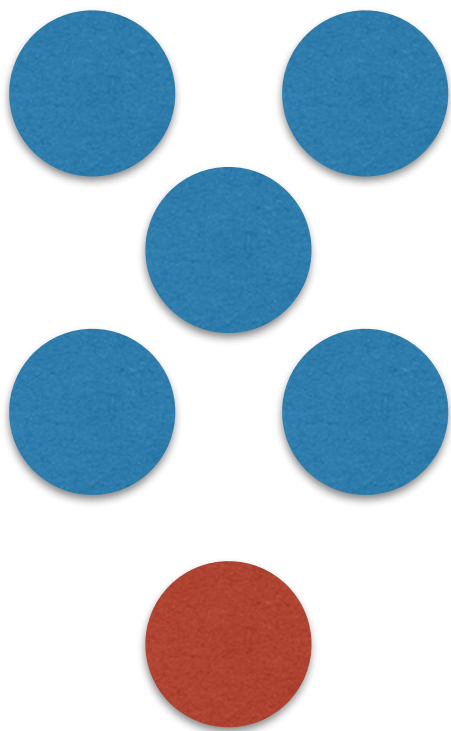
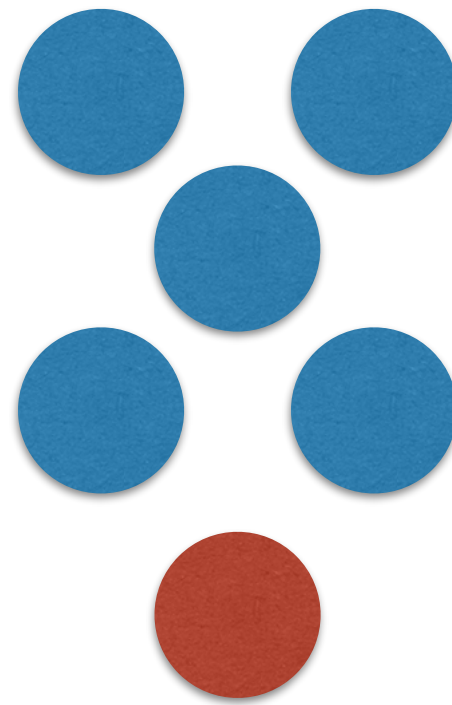
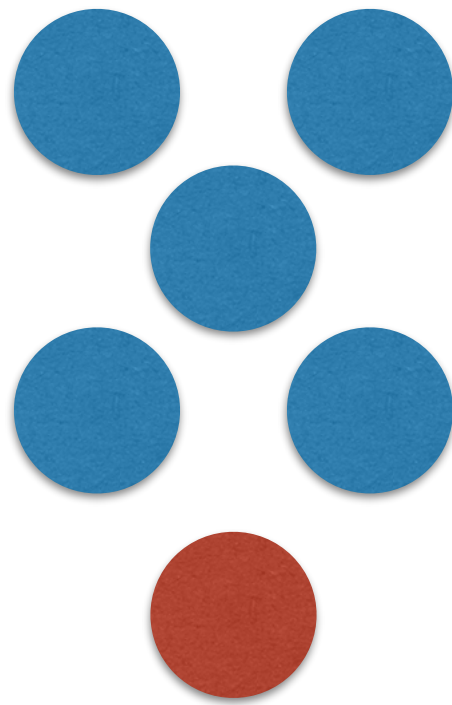
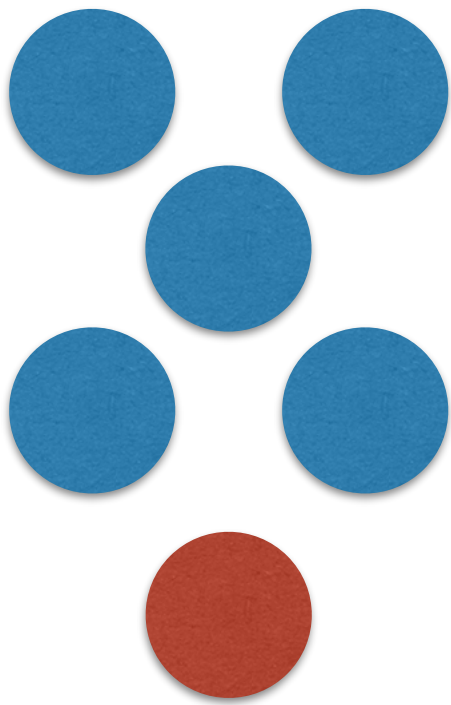
How many?

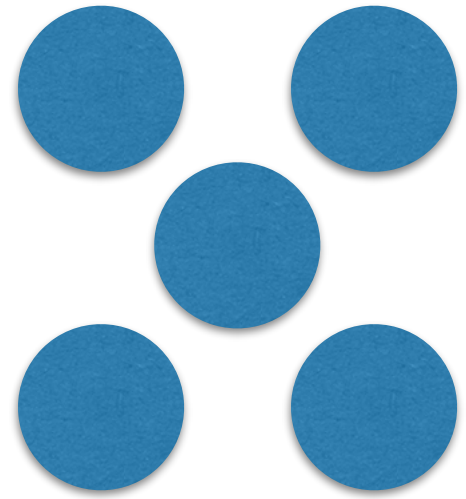
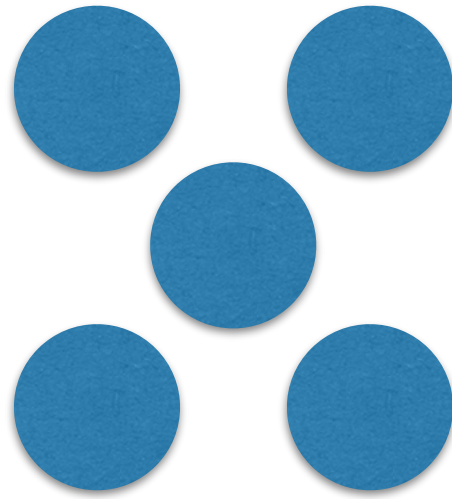
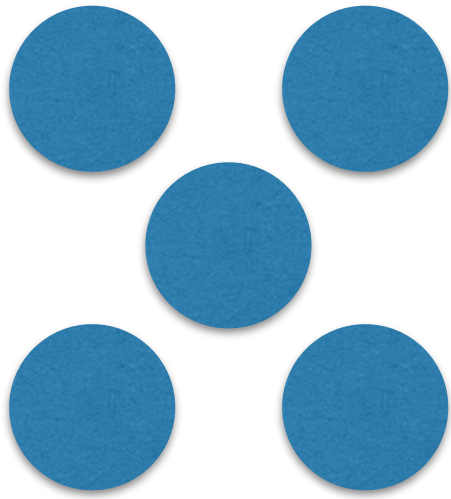
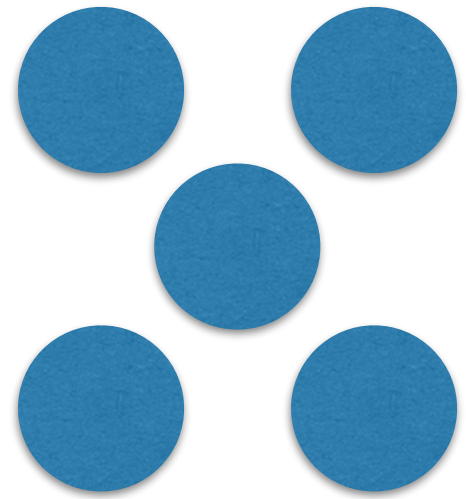
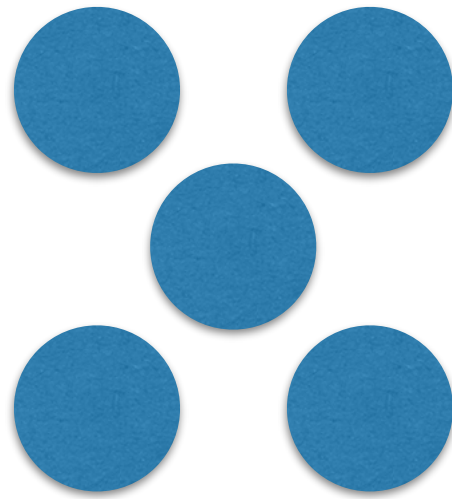
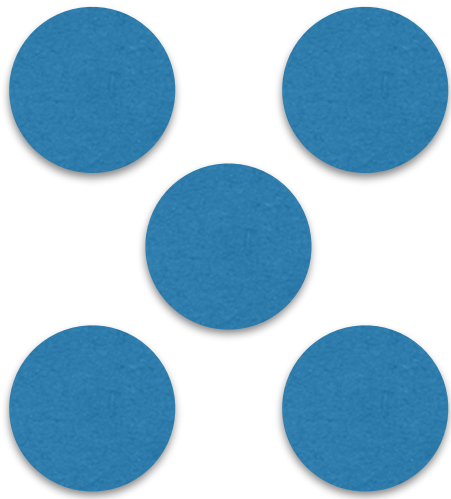
How did you see them?



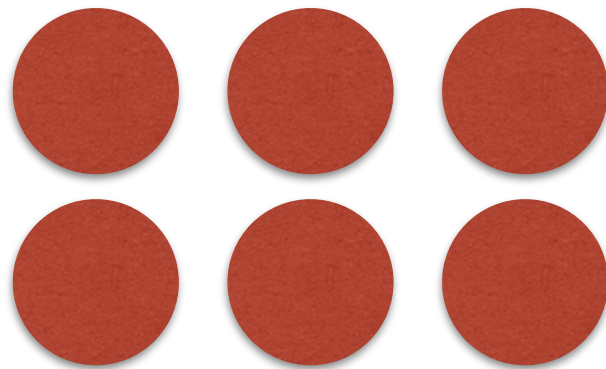
How many?

How did you see them?

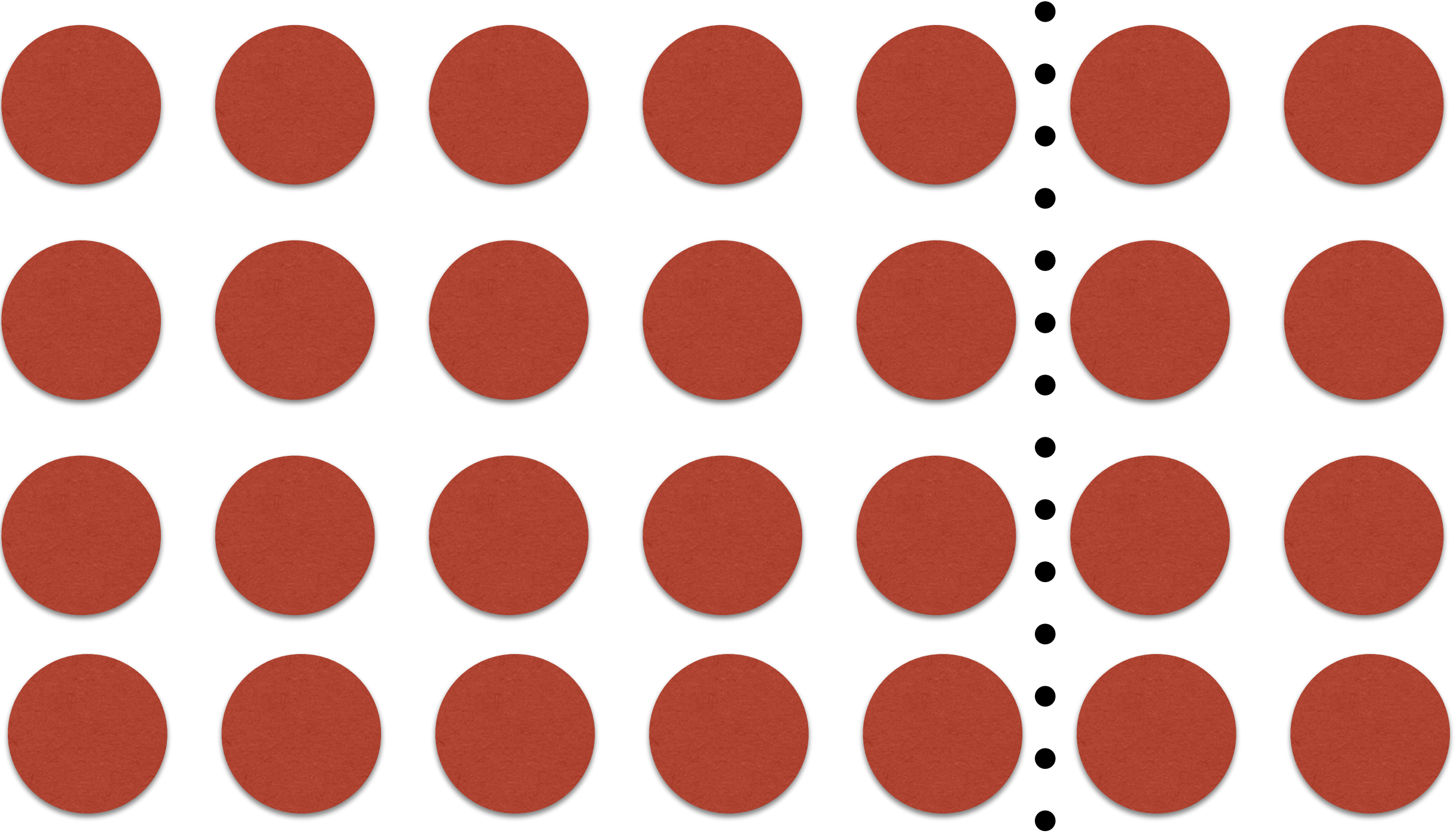




Partial Products



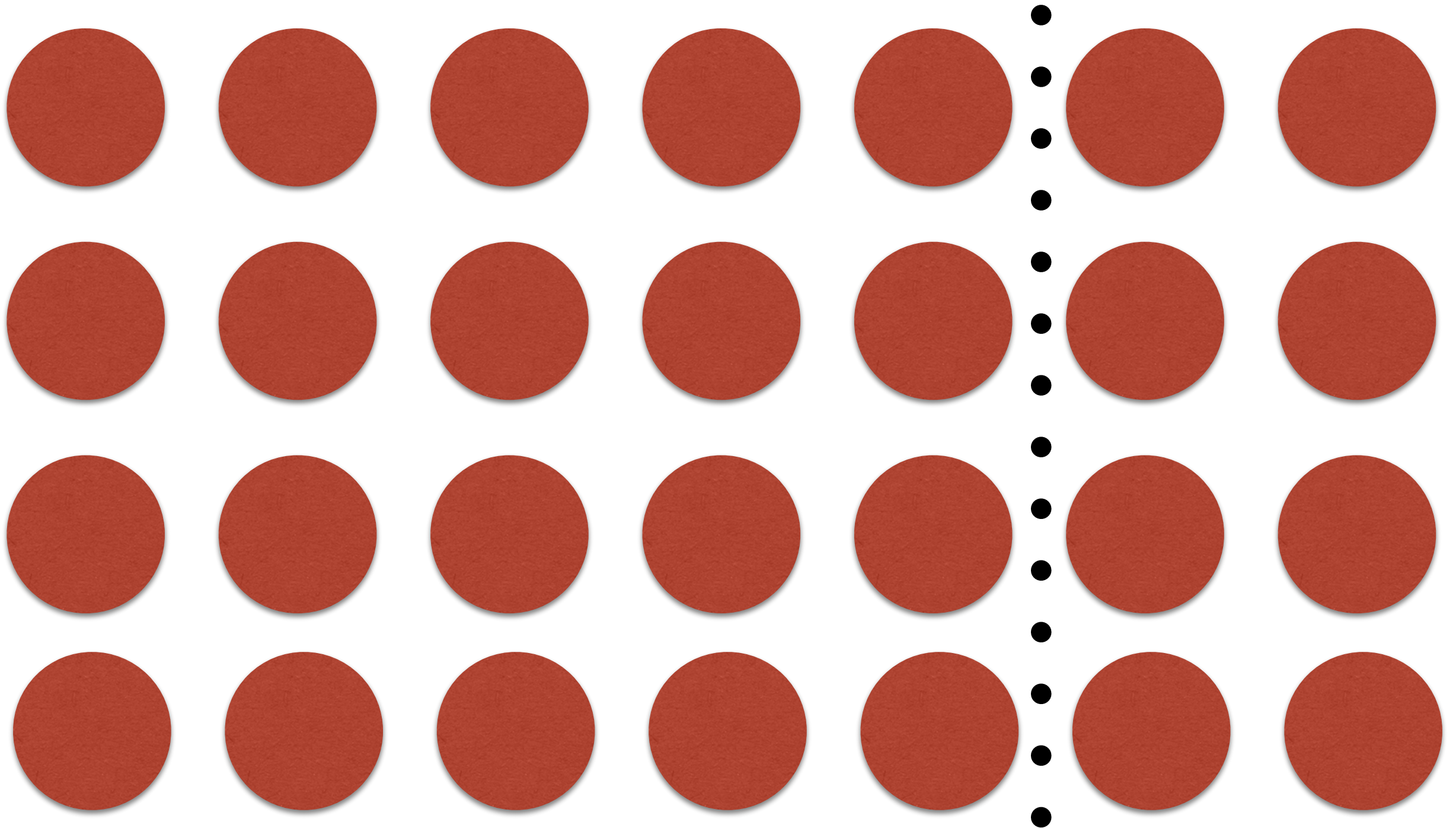
$$\begin{array}{c} 6 \\ \swarrow \quad \searrow \\ (6 \times 5) + (6 \times 1) \end{array}$$

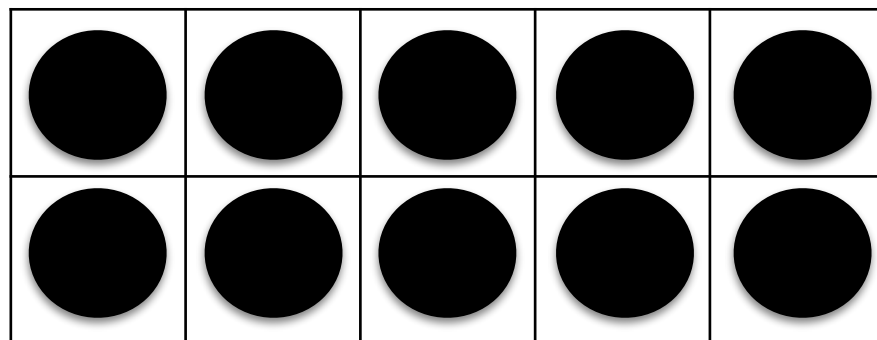
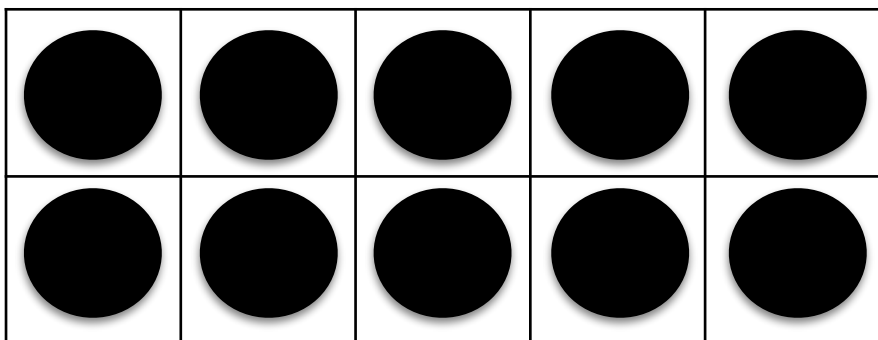
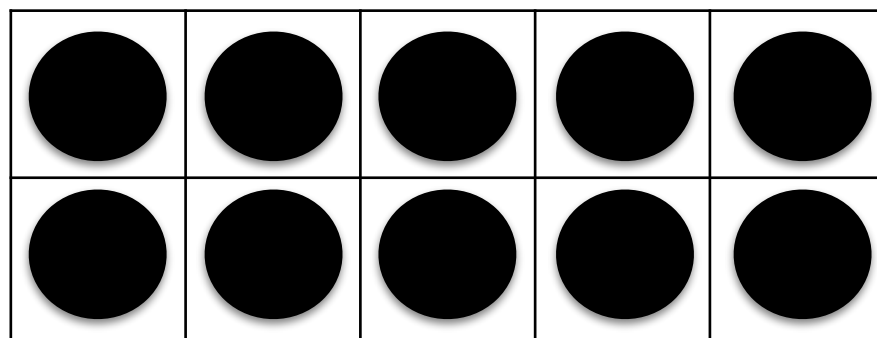
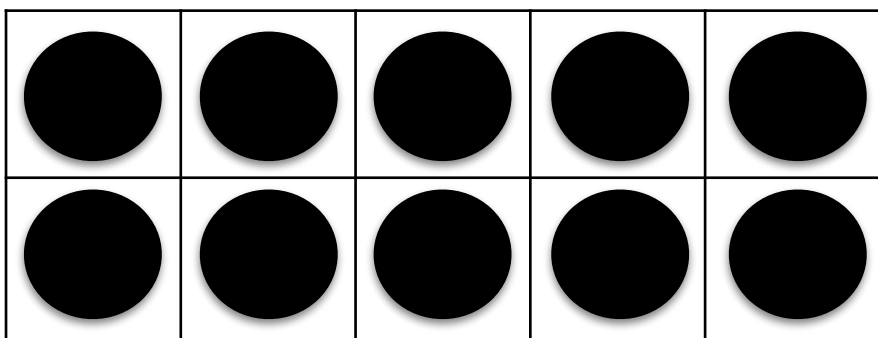
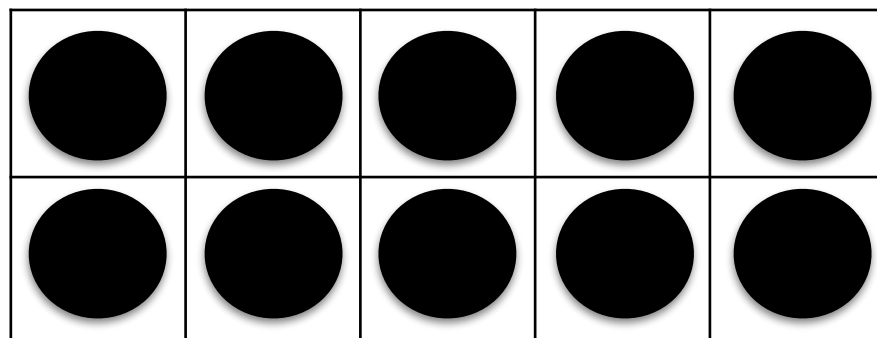
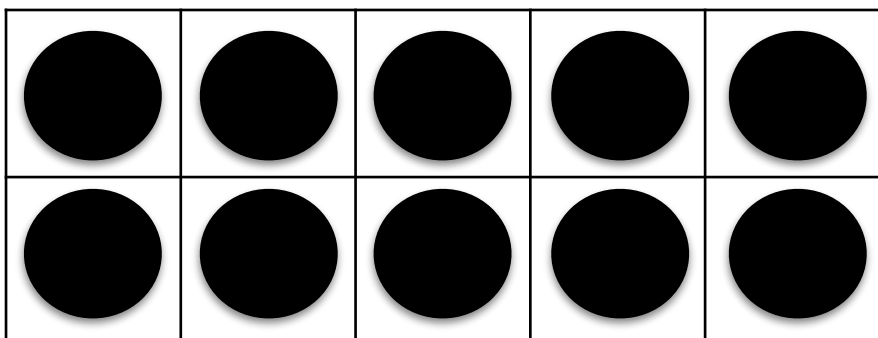
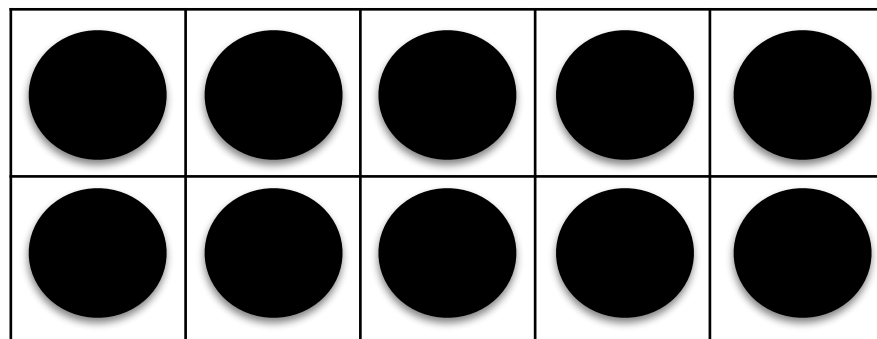
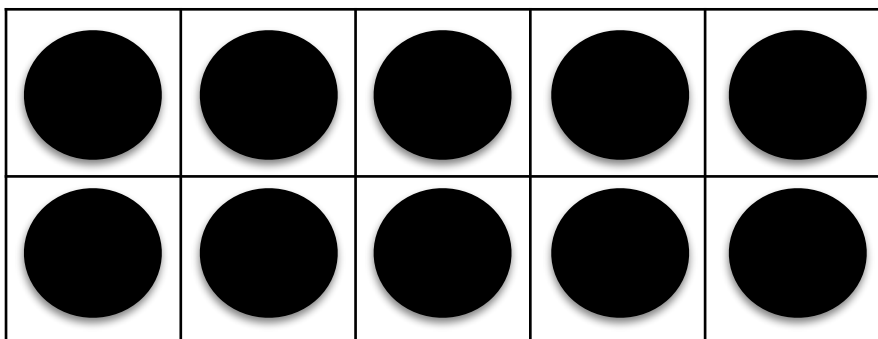


How many?

How did you see them?

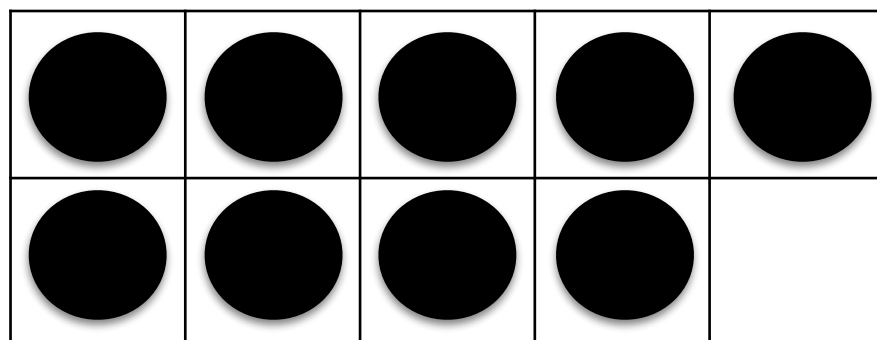
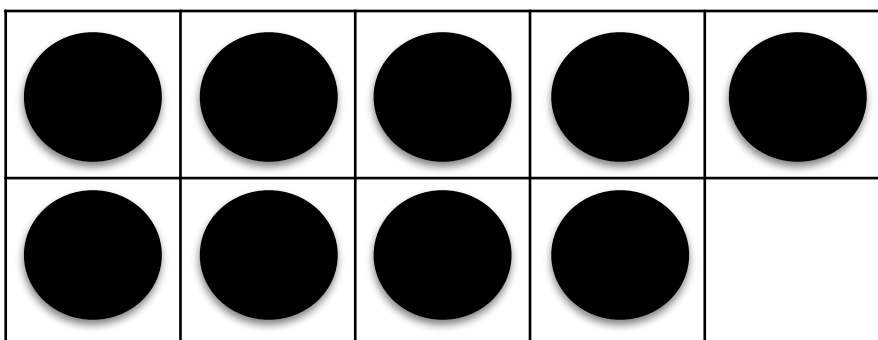
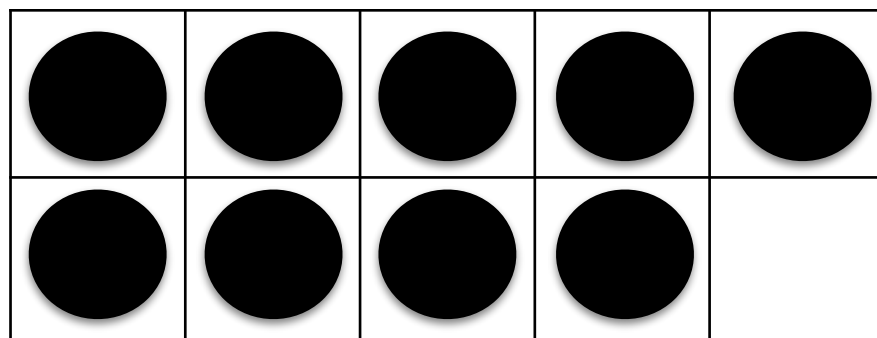
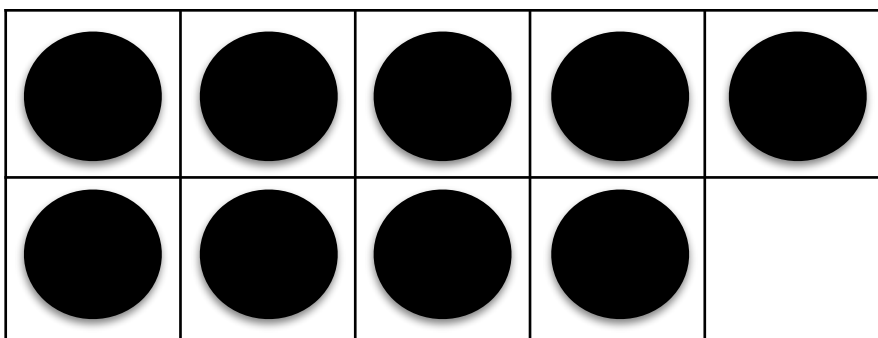
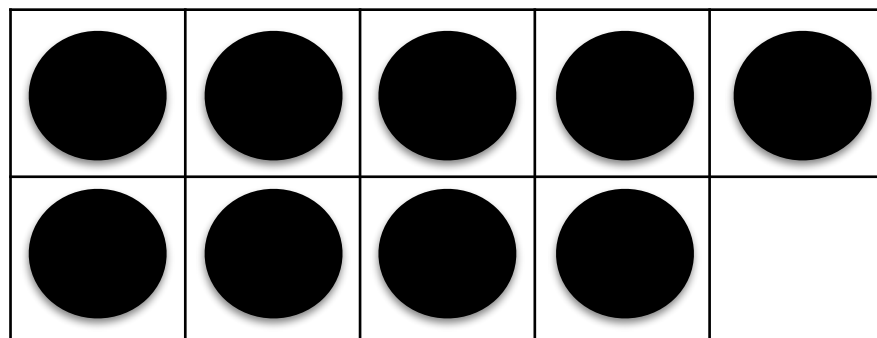
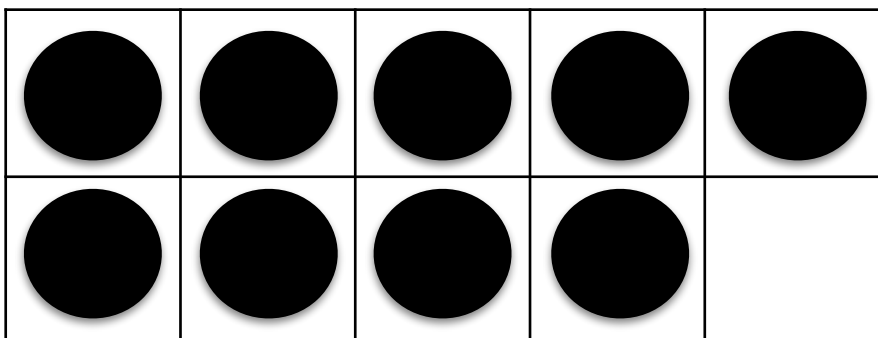
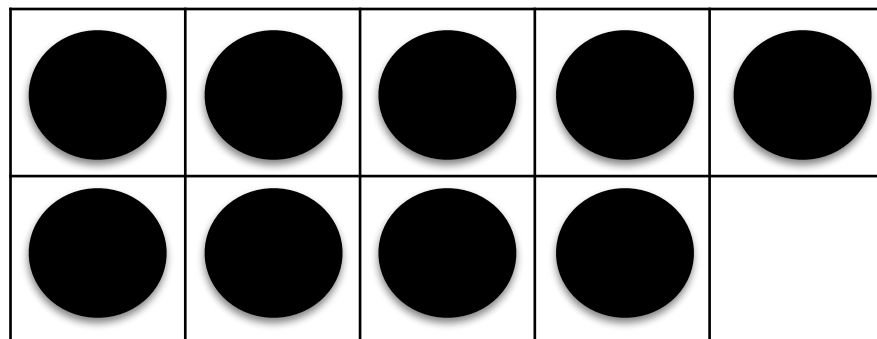
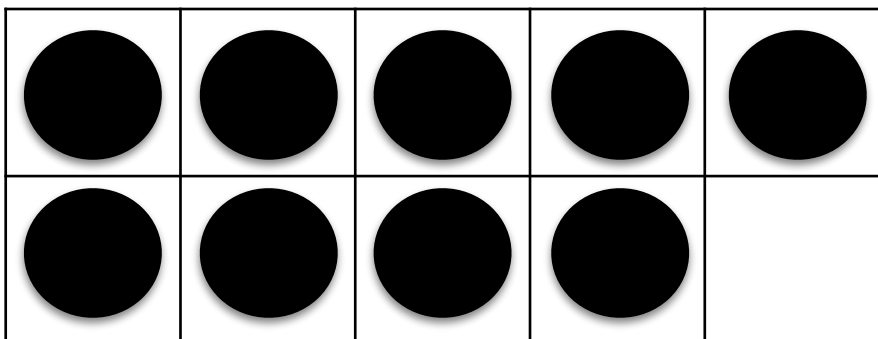
$$(4 \times 5) + (4 \times 2)$$





How many?

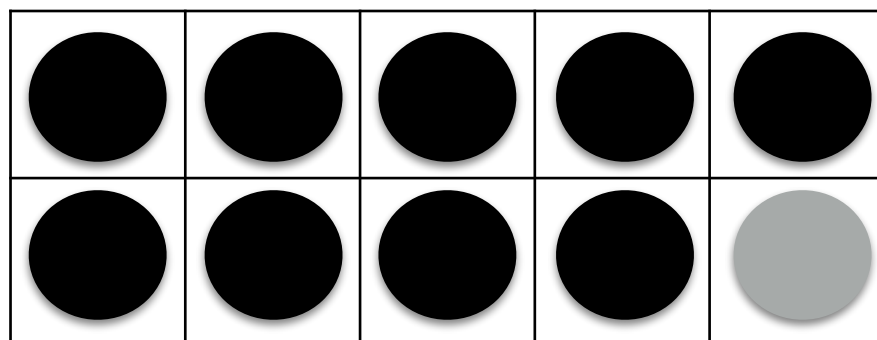
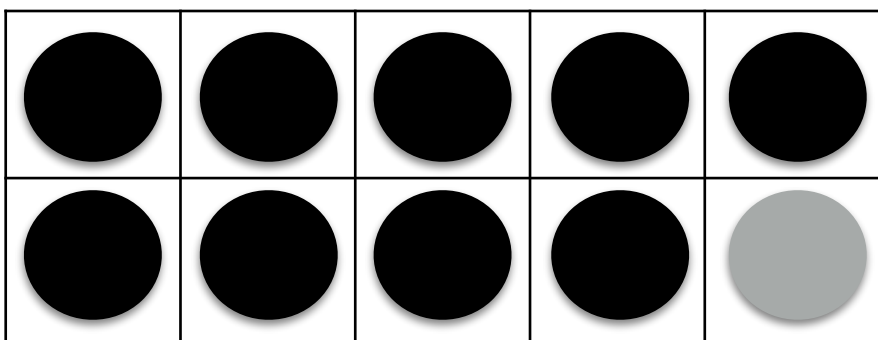
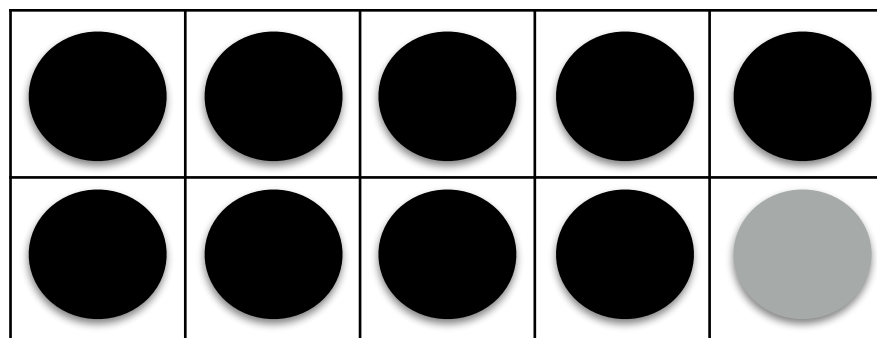
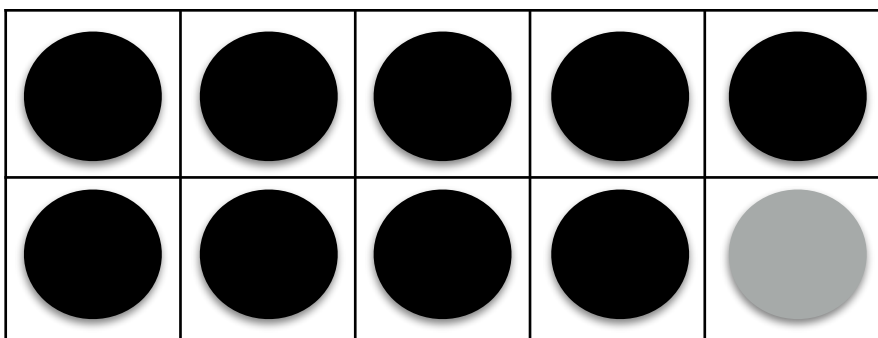
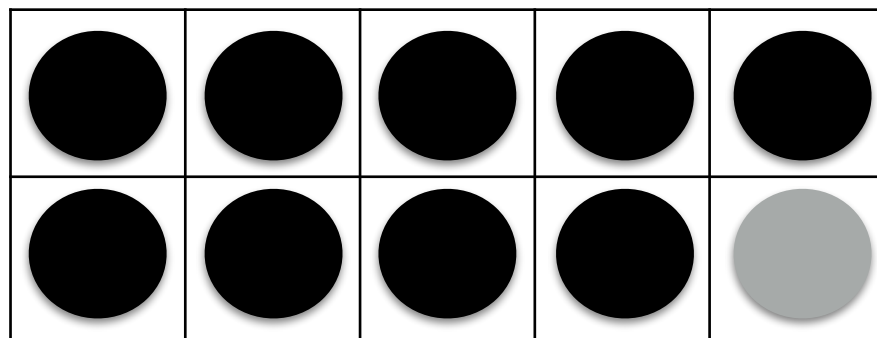
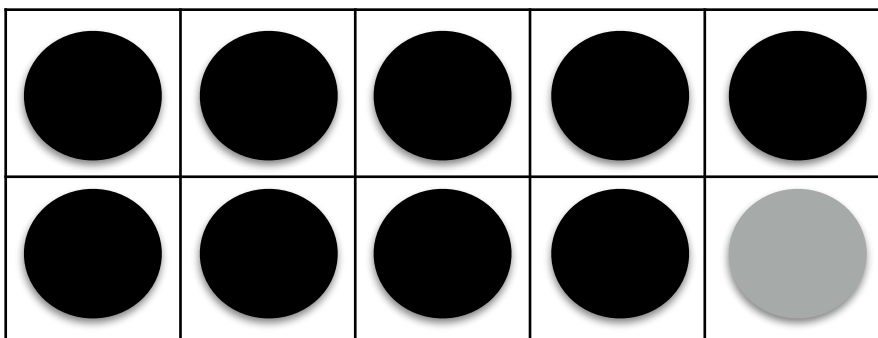
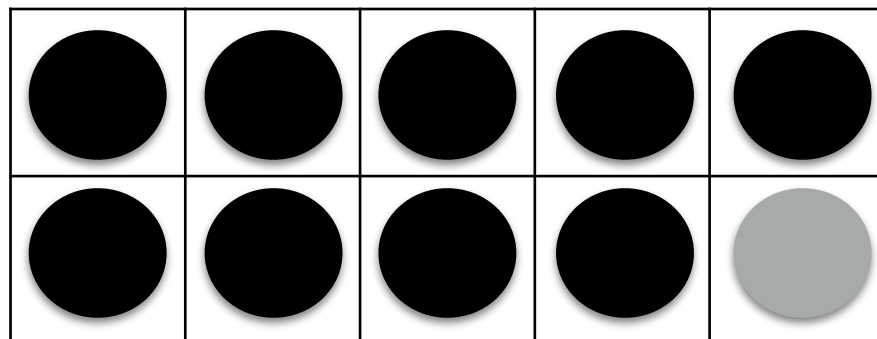
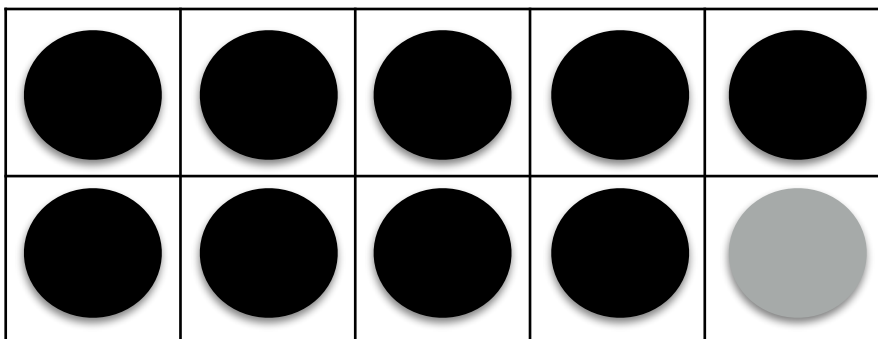
How did you see them?

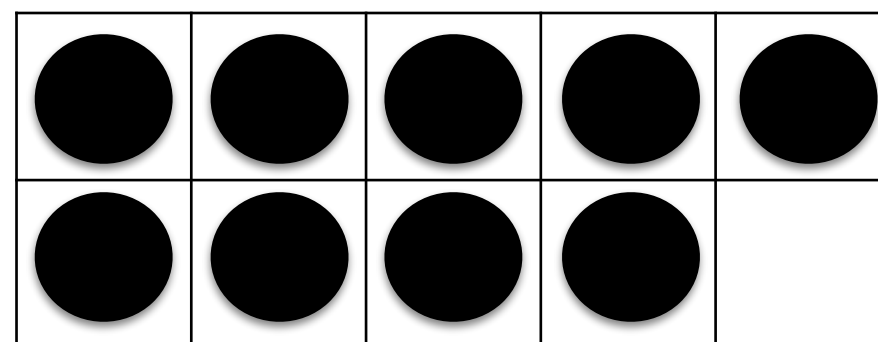
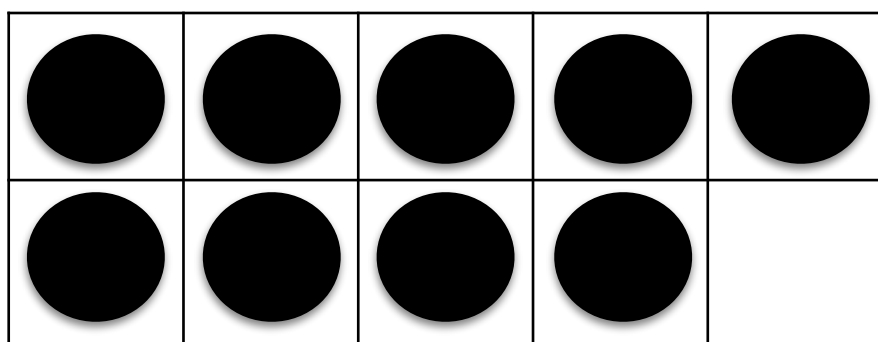
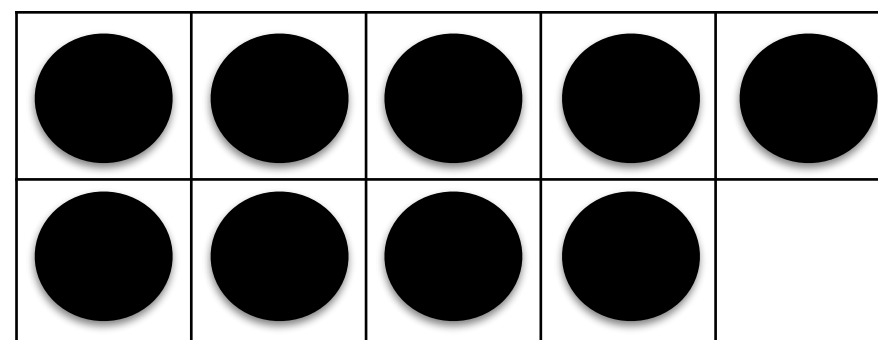
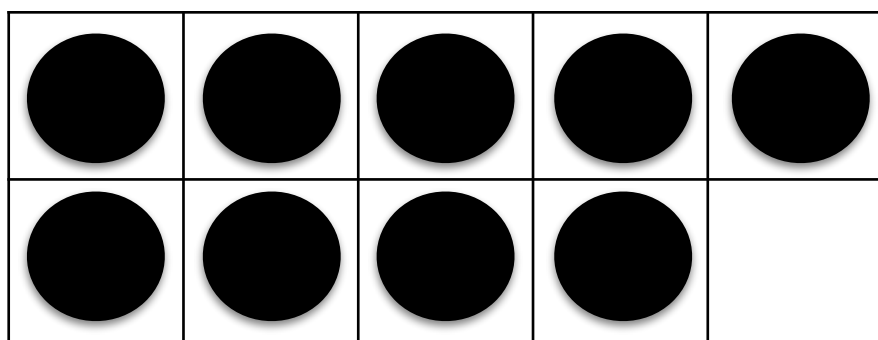
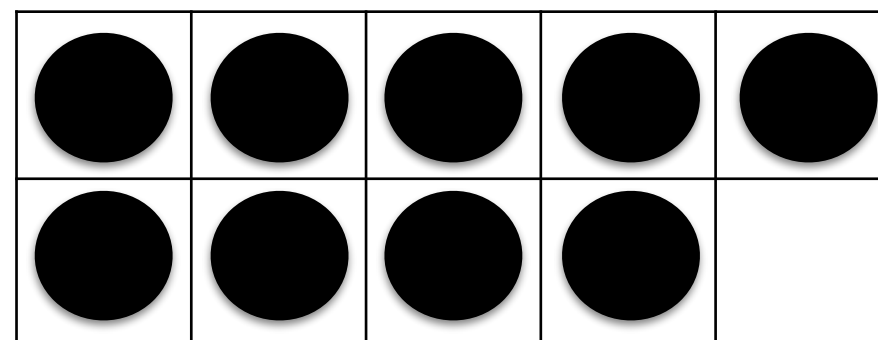
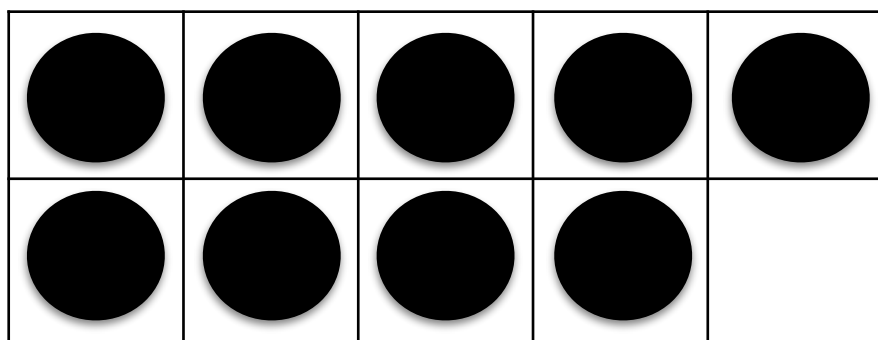
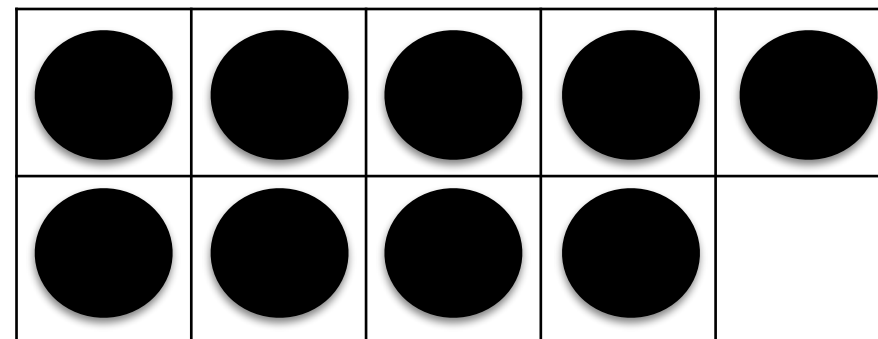
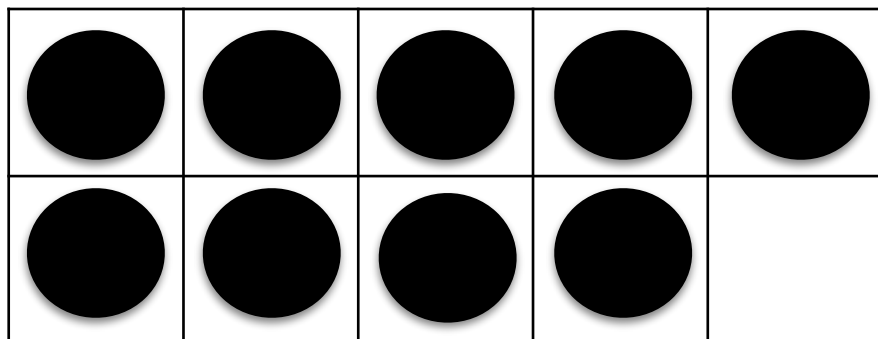


How many?

How did you see them?

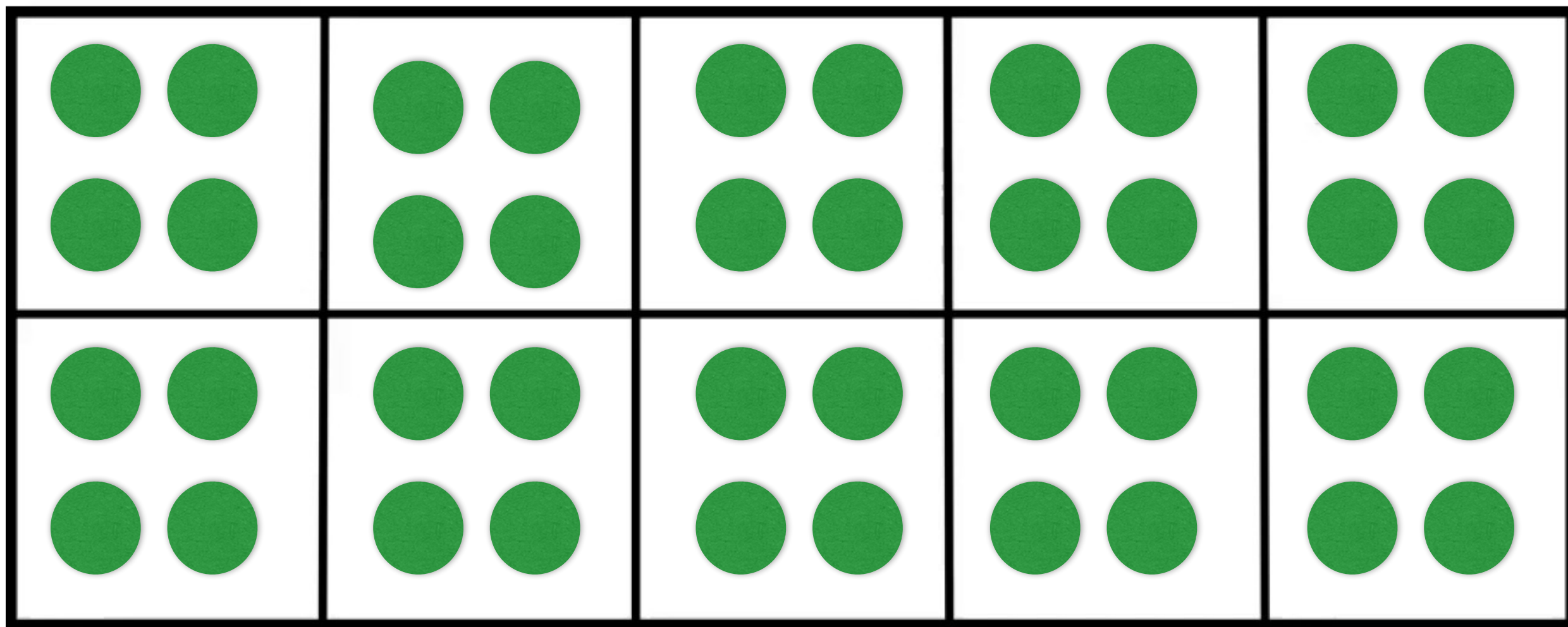
How might thinking about the previous
image help us with this question?





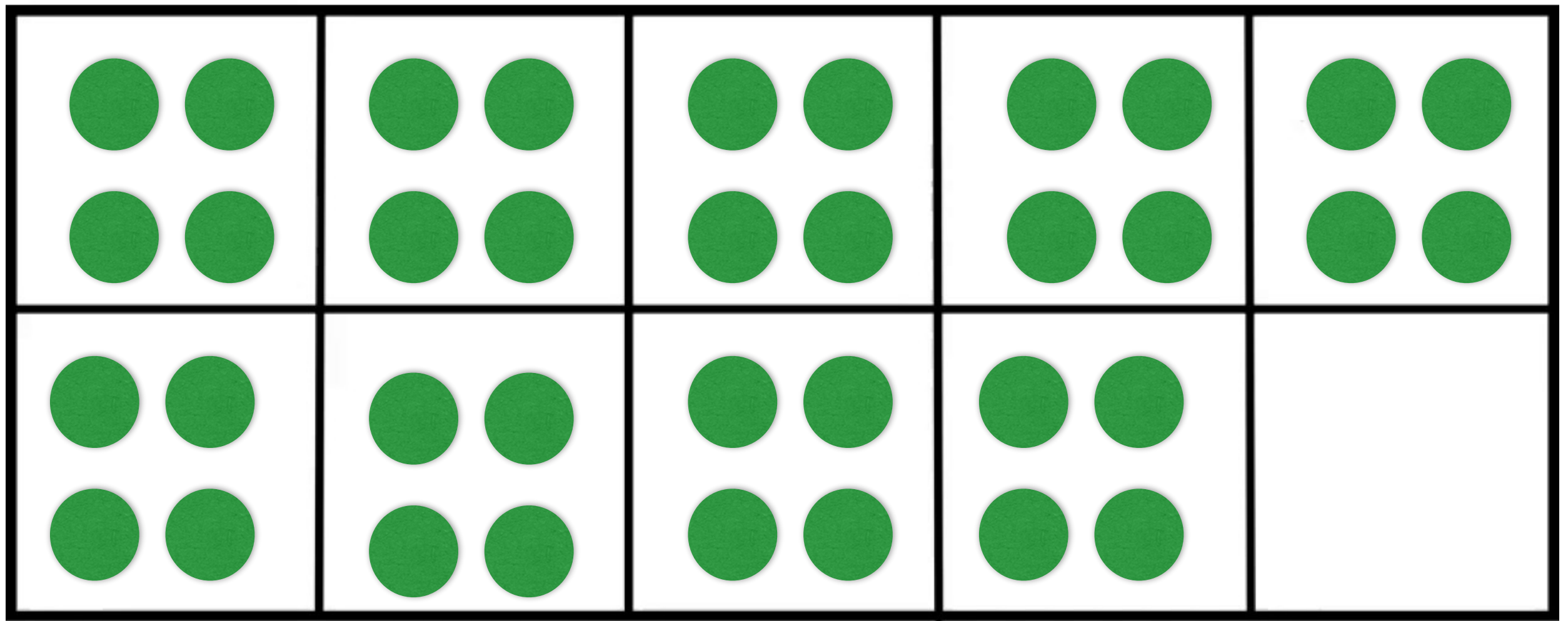
$$(8 \times 10) - 8 = 72$$





How many?

How did you see them?



How does thinking about the first image we saw help us with this new image?

Math Workshop Structures

TASK AND SHARE		FOCUS LESSON, GUIDED MATH, AND LEARNING STATIONS		GUIDED MATH AND LEARNING STATIONS	
5–10 minutes	NUMBER SENSE ROUTINE An engaging, accessible, purposeful routine to begin your math class that promotes a community of positive mathematics discussion and thinking.	5–10 minutes	NUMBER SENSE ROUTINE An engaging, accessible, purposeful routine to begin your math class that promotes a community of positive mathematics discussion and thinking.	5–10 minutes	NUMBER SENSE ROUTINE An engaging, accessible, purposeful routine to begin your math class that promotes a community of positive mathematics discussion and thinking.
30 minutes	MATH TASK A problem that students work on in small groups. The teacher circulates and probes students' thinking through questions. The task typically has multiple entry points, allowing for all students to have access to the problem.	15 minutes	FOCUS LESSON A well-planned, small-group lesson focused on the day's target and accessible to all levels of learners.	45 minutes	GUIDED MATH AND LEARNING STATIONS Small-group activities in which instruction is differentiated so students engage in meaningful mathematics and learn more about students' understandings and misconceptions. In this structure, the focus lesson is addressed in guided math groups and differentiated for each group.
20–25 minutes	TASK SHARE AND STUDENT REFLECTION A math share in which students come together as a whole class and discuss the various strategies they used to solve the problem. Students ask questions, clarify their thinking, and add to their collection of strategies.	5–10 minutes	STUDENT REFLECTION A deliberate and meaningful time for students to consolidate new learning.	5–10 minutes	STUDENT REFLECTION A deliberate and meaningful time for students to consolidate new learning.



“How many do you see?”

“How did you know so quickly?”

“How did you see them?”

Number Routines: How Many?



Turn and talk to a partner about what you see!

LEARNING STATIONS

FOCUS LESSON, GUIDED MATH, AND LEARNING STATIONS			GUIDED MATH AND LEARNING STATIONS	
5–10 minutes	NUMBER SENSE ROUTINE An engaging, accessible, purposeful routine to begin your math class that promotes a community of positive mathematics discussion and thinking.		NUMBER SENSE ROUTINE An engaging, accessible, purposeful routine to begin your math class that promotes a community of positive mathematics discussion and thinking.	
15 minutes	FOCUS LESSON A planned, whole-group lesson focused on a learning target and accessible to all levels of learners.		45 minutes	GUIDED MATH Small-group instruction that allows the teacher to support and learn more about students' understandings and misconceptions. In this structure, the focus lesson is addressed in guided math groups and is differentiated for each group.
30 minutes	GUIDED MATH Small-group instruction that allows the teacher to support and learn more about students' understandings and misconceptions.	LEARNING STATIONS Activities in which students engage in meaningful mathematics and are provided with purposeful choices.		LEARNING STATIONS Activities in which students engage in meaningful mathematics and are provided with purposeful choices.
5–10 minutes	STUDENT REFLECTION A deliberate and meaningful time for students to consider new learning.		5–10 minutes	STUDENT REFLECTION A deliberate and meaningful time for students to consider new learning.

ROUTINES & PROCEDURES



Structuring the Classroom So It Runs Smoothly

Routines and Procedures

Where do students go?

- Do they need to stay where the station is located, or can they take the materials to another place in the room?
- Where can they get the materials they need
- How do they clean up?



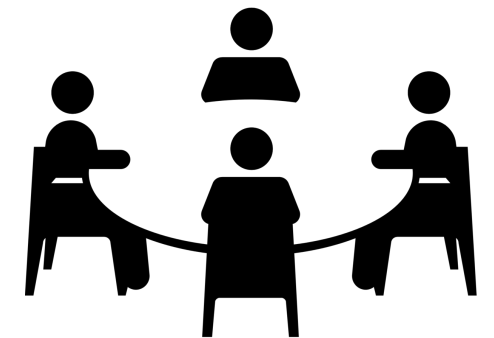
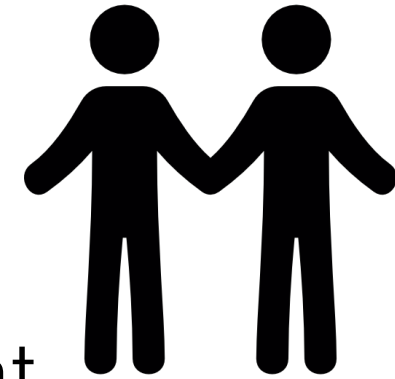




Routines and Procedures

Who can students work with?

Knowing your students and their needs, what options will work best? Partners or small groups and their choice or yours? Or both?



Working with a partner

- Option One: They choose partners or work by themselves
- Option Two: Teacher selects their learning partner but make changes from day to day, or weekly

Working with a small group

- Option One: Teacher determines the groups
- Option Two: groups are determined by individual student station selection

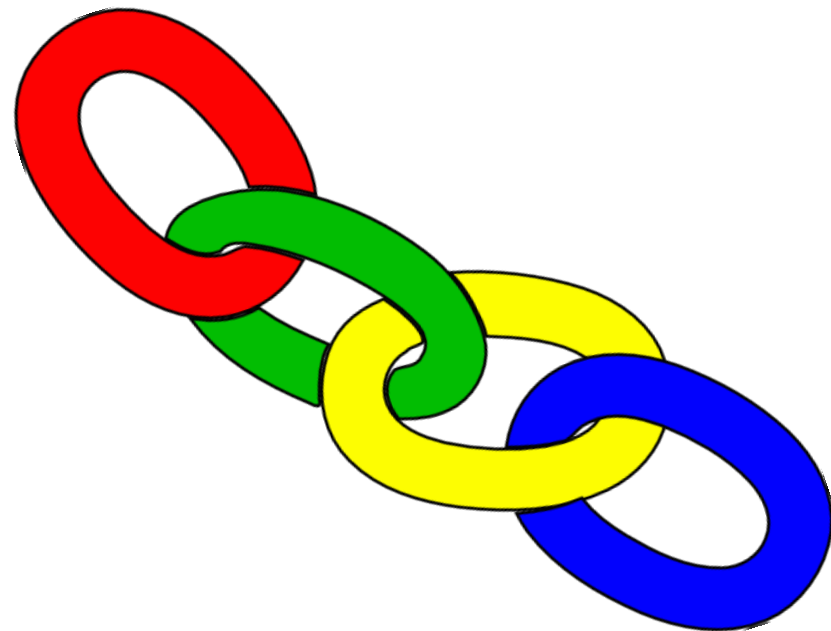


Learning Station groups are **NOT** ability based but heterogeneous!

Routines and Procedures

What can students do?

- What are the options for learning stations?
- Use a system (e.g., Menu)
- Can students choose their station?
- What are the benefits of choice?
- If needed, where do students record their work?



Working independently
Working with a partner
Working with a small group

Math Menu: List It

Math Menu: List It Template

Name: _____

--	--	--	--	--

 My favorite learning station: _____

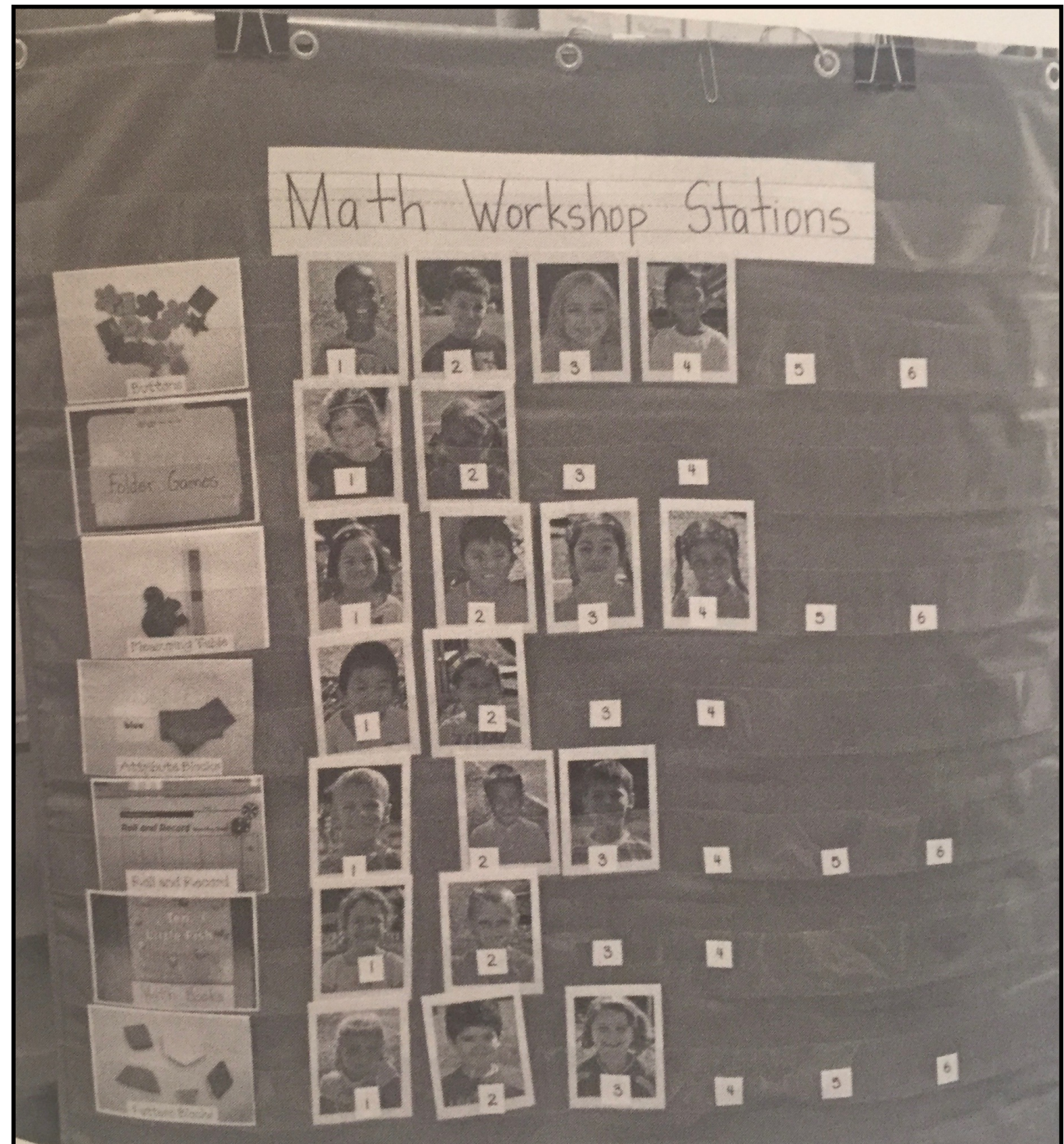
 My least favorite learning station: _____

From Math Workshop: Five Steps to Implementing Guided Math, Learning Stations, Reflection, and More by Jennifer Lempp. Copyright © 2017 by Houghton Mifflin Harcourt Publishing Company. All rights reserved. www.mathsolutions.com. Downloadable from mathsolutions.com/mathworkshopleproducibles.

Working with a small group

- Option Two: groups are determined by individual student station selection

Math Menu: Pocket Chart



Working with a small group

- Option One: Initially teacher determines the groups
- Option Two: Then groups are determined by individual student station selection.

Math Menu: Must Do /Can Do

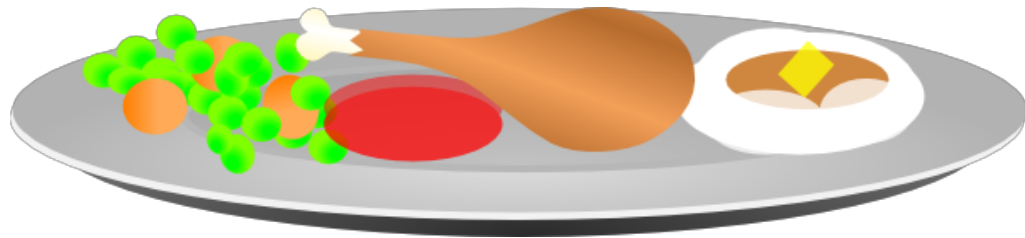
Math Menu: Must Do/Can Do Template	
Student Name: _____	
Due: _____	
Must Do: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Can Do: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Something that I really enjoyed doing this week:	
Something that I struggled with this week:	
Something that made me think differently this week:	

From *Math Workshop: Five Steps to Implementing Guided Math, Learning Stations, Reflection, and More* by Jennifer Lempp. Copyright © 2017 by Houghton Mifflin Harcourt Publishing Company. All rights reserved. www.mathsolutions.com. Downloadable from mathsolutions.com/mathworkshopreproducibles.

Working with a small group

- Option Two: groups are determined by individual student station selection

Math Menu: Dining Out



Math Menu: Dining Out Template

Appetizers (choose 2) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Write about it:
Entrée (choose 1) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Write about it:
Side Dish (choose 2) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Write about it:
Dessert (choose 1) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Write about it:

From *Math Workshop: Five Steps to Implementing Guided Math, Learning Stations, Reflection, and More* by Jennifer Lempp.
Copyright © 2017 by Houghton Mifflin Harcourt Publishing Company. All rights reserved. www.mathsolutions.com.
Downloadable from mathsolutions.com/mathworkshopreproducibles.

Working with a partner

- Option One: They choose partners or work by themselves
- Option Two: Teacher selects students' learning partner but makes changes from day to day, or weekly

Math Menu: Tic-Tac-Toe

Math Menu: Think-Tac-Toe Template

My favorite activity this week was _____

because _____

The most challenging activity this week was _____

because _____



Working with a small group

- Option Two: groups are determined by individual student station selection



Where will students keep their menu?

Where will they place any written work?

Routines and Procedures

How long do I do it?

- Some learning stations may take less time than others... how will you plan for this?
- What is a reasonable amount of time for one rotation? 15 minutes or ?

Timed Rotations



OR

Open Station Choice



Routines and Procedures

What do I do if I have a question?

- When can you ask the teacher?
- What do you do when the teacher is busy?



Routines and Procedures

What do I do when I am finished?

- Are there extensions for each activity?
- How can they clean up?
- How do you move to another station?
- What will transitions will look and sound like?



Why are Learning Stations Important?

- Students need ***daily opportunities*** to engage with mathematical ideas in ***purposeful and playful ways***.
- They give students ***choice***, which increases ***motivation***
- They give teachers an opportunity to meet with students one-on-one or in small groups to provide ***explicit instruction, engage in guided math, and/or have conferences***.
- They allow students to ***revisit concepts***. Learning takes patience and time.



How do I plan Learning Stations?

BIG IDEAS

Numbers describe quantities that can be represented by equivalent fractions.

Computational **fluency** and flexibility with numbers extend to operations with larger (multi-digit) numbers.

Identified regularities in number **patterns** can be expressed in tables.

Closed shapes have **area and perimeter** that can be described, measured, and compared.

Data represented in graphs can be used to show many-to-one correspondence.

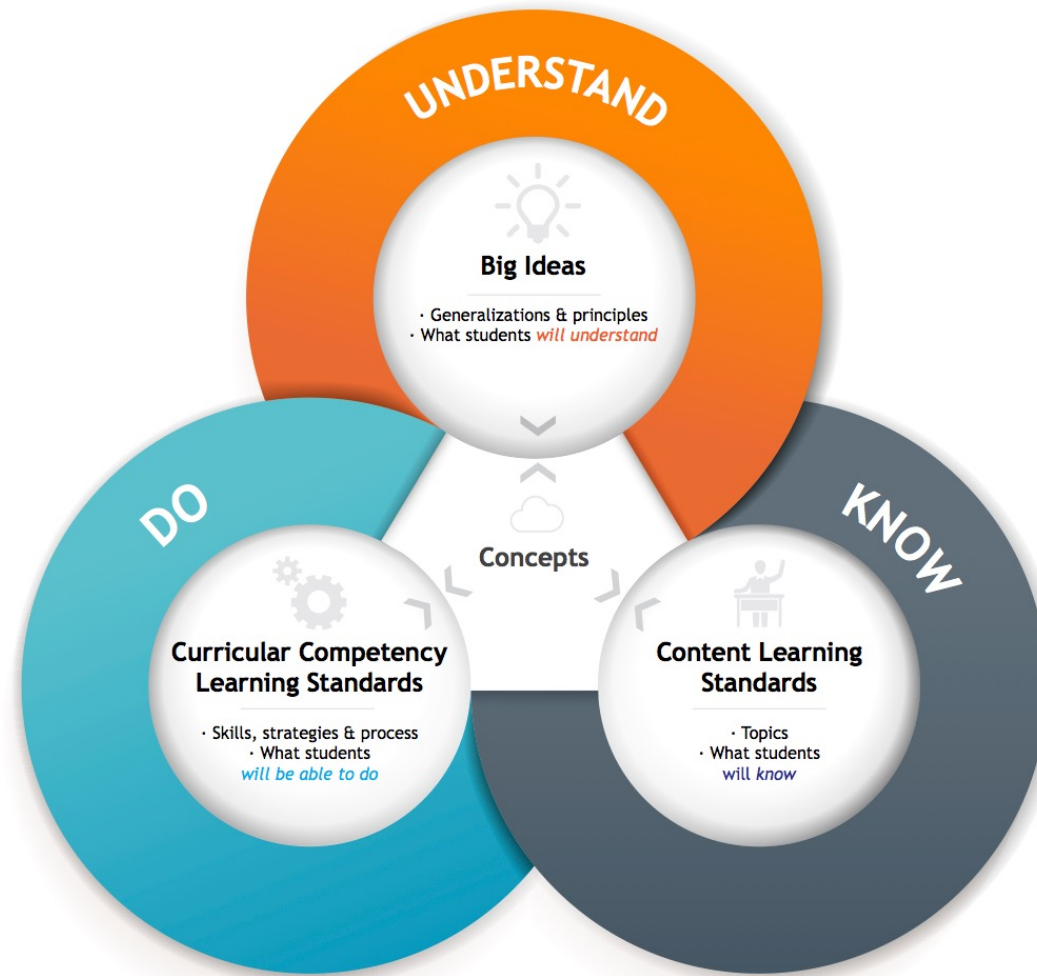
Learning Standards

Curricular Outcome	Content
<p>Students are expected to demonstrate the following:</p> <p>Reasoning and problem solving</p> <ul style="list-style-type: none"> Use reasoning to make connections Estimate results of calculations Develop mental math strategies and abilities to make sense of quantities Use technology to explore mathematical concepts Model mathematics in contextual situations <p>Understanding and solving</p> <ul style="list-style-type: none"> Develop, demonstrate, and apply mathematical understanding through problem inquiry, and problem solving Visualize to explore mathematical concepts Develop and use multiple strategies to engage in problem solving Engage in problem-solving experiences that reflect cultural practices, and perspectives relevant to the local community, and other cultures <p>Communicating and representing</p> <ul style="list-style-type: none"> Communicate mathematical thinking in mathematical language Use mathematical vocabulary and language to engage in discussions Explain and justify mathematical ideas and decisions Represent mathematical ideas in concrete, pictorial, and symbolic forms 	<p>Students are expected to know the following:</p> <p>Number concepts to 1 000 000</p> <ul style="list-style-type: none"> equivalent fractions whole-number, fraction, and decimal benchmarks addition and subtraction of whole numbers to 1 000 000 multiplication and division to three digits, including division with remainders addition and subtraction of decimals to thousandths addition and subtraction facts to 20 (extending computational fluency) multiplication facts to 100 (emerging computational fluency) increasing and decreasing patterns with words, numbers, symbols, and variables simple equations with one variable measures of area and perimeter classification of prisms and pyramids single transformations one-to-one correspondence and many-to-one

What does this mean for me?

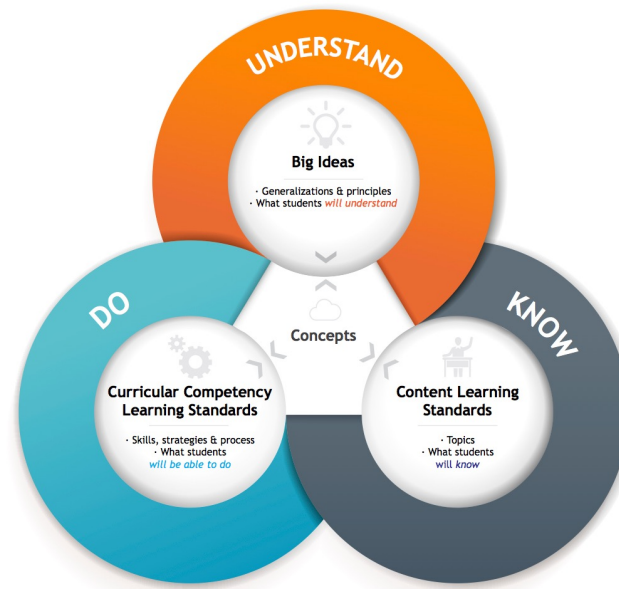


We must design learning experiences that foster both
DOING and **KNOWING!**
to develop **UNDERSTANDING!**



Learning standards must including the **DOING** and KNOWING!

_____ is able (is beginning to, needs support) to add and subtract to 1000



Learning standards must including the **DOING** and **KNOWING**!

~~_____ is able (is beginning to, needs support) to add and subtract to 1000~~

_____ **communicates** their understanding of **addition** and subtraction to **1000** in many ways

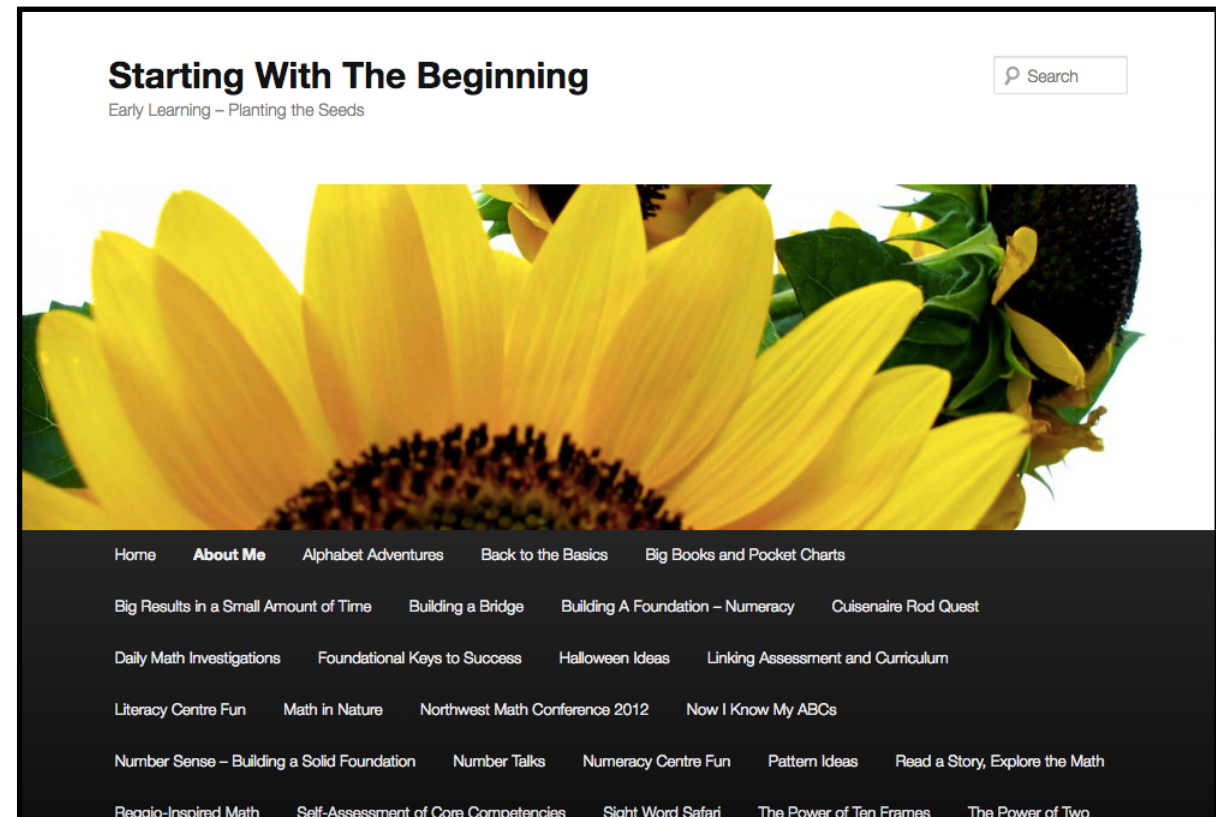
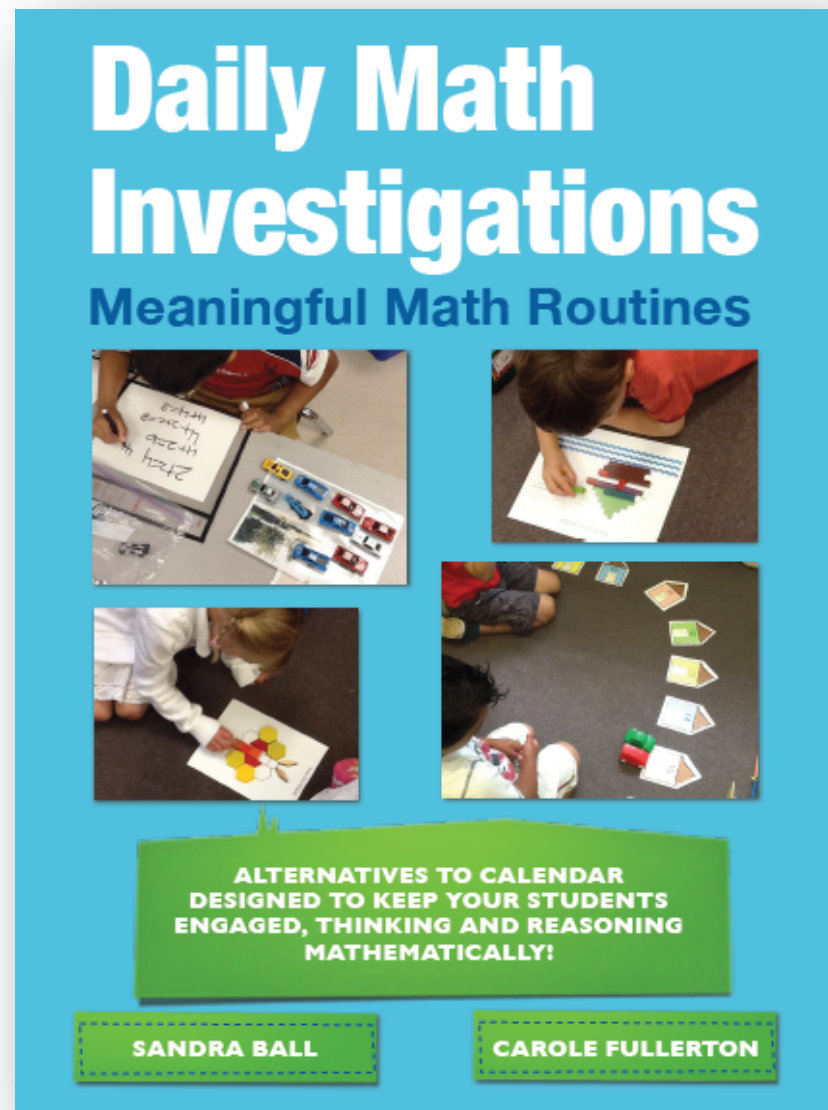
_____ **applies** their understanding of **addition** and subtraction to 1000 through play, inquiry, and problem solving

Types of Learning Stations

- Exploring Stations
- Current concept being studied
- Computational Fluency - games
- Problem Solving
- Digital apps
- Concepts I intentionally want to spiral back to



Where do I find ideas for Learning Stations?



Sandra Ball's website has a TON of ideas!!!
See handout for link


Independent and/or Partner Games

Let it Snow

Materials: game board, 3 dice, 8 chips for each player

Directions: Players take turns rolling the dice and finding the sum. Cover the sum. Be the first to cover all your boxes to win the game.

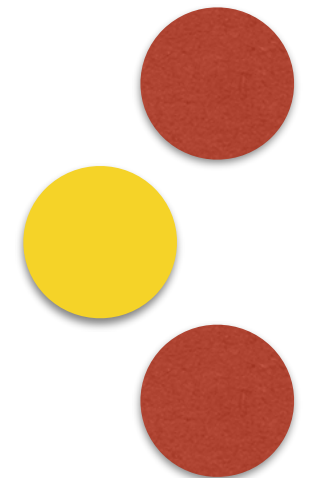
4	3
17	16
8	11
12	7
15	14
9	10
10	9
6	18



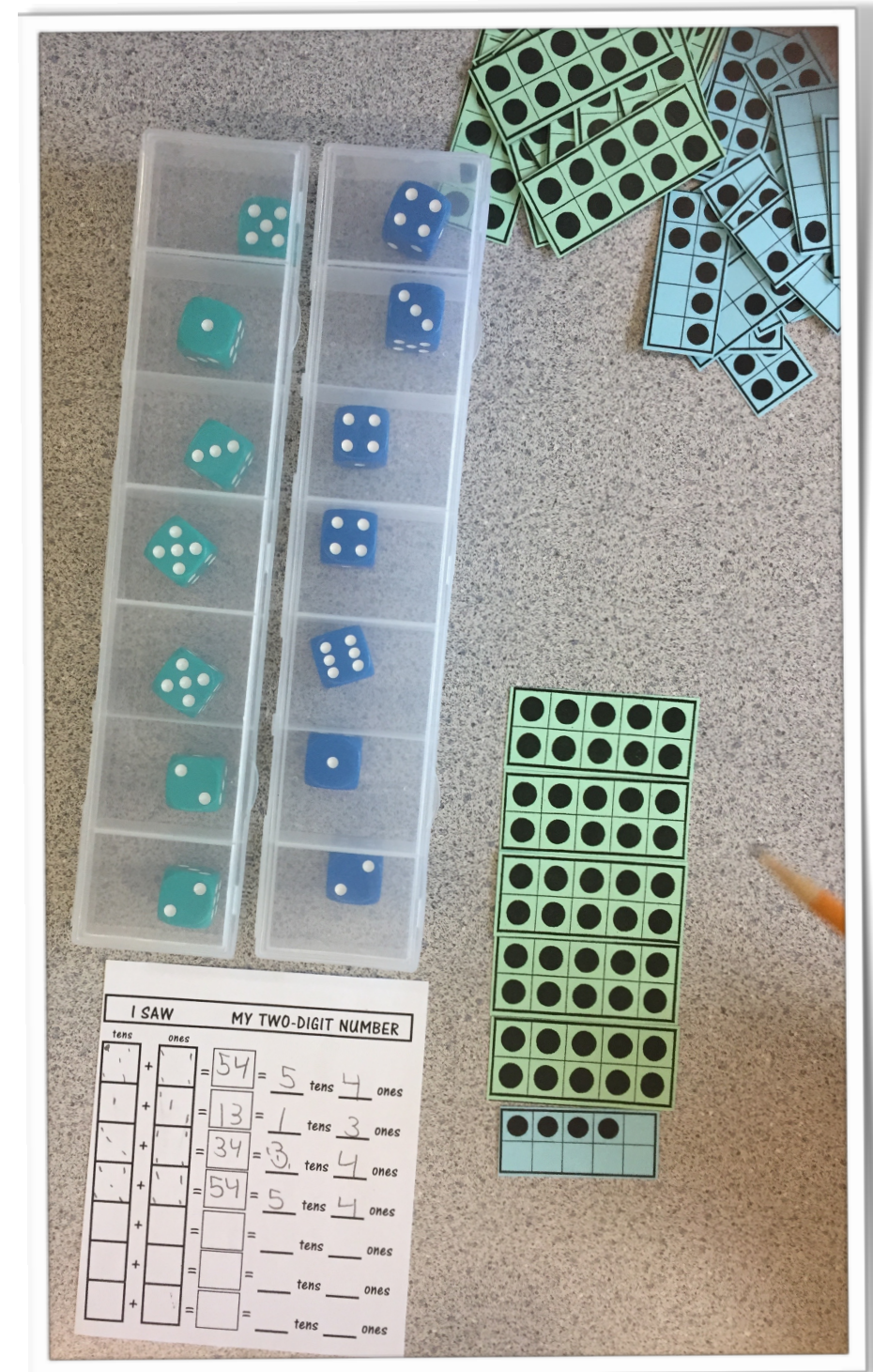
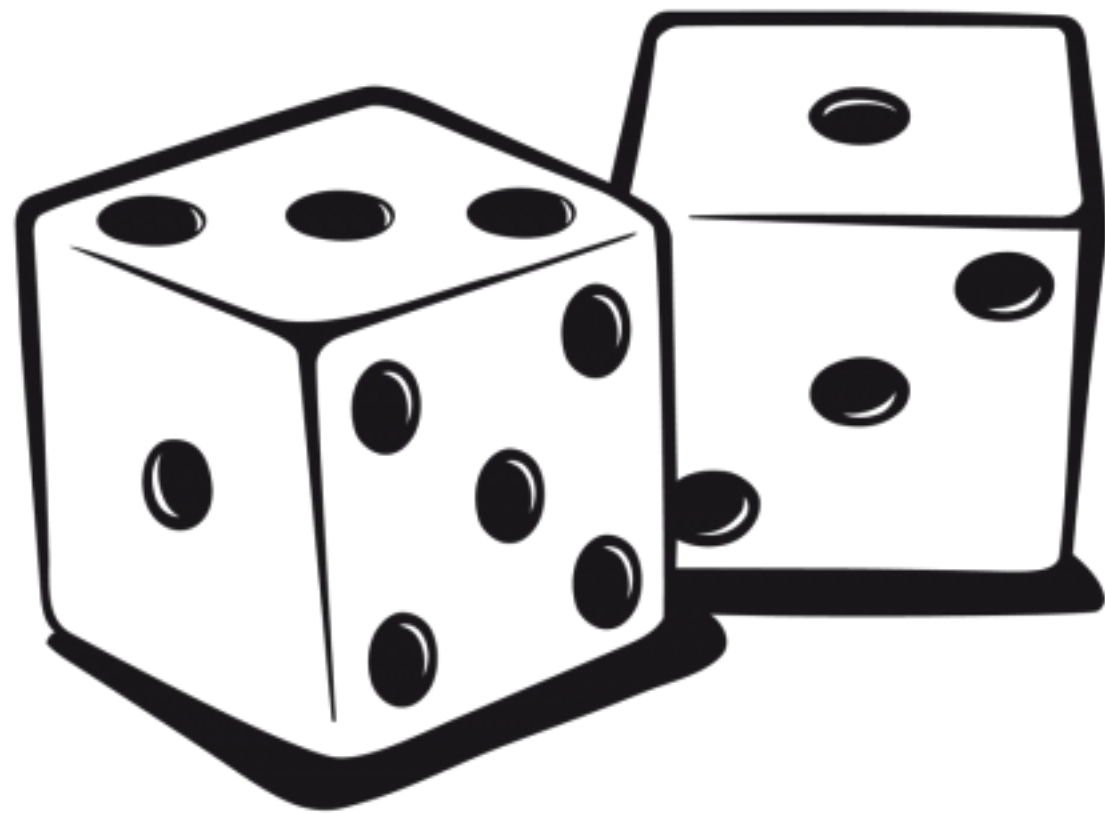
Ten More



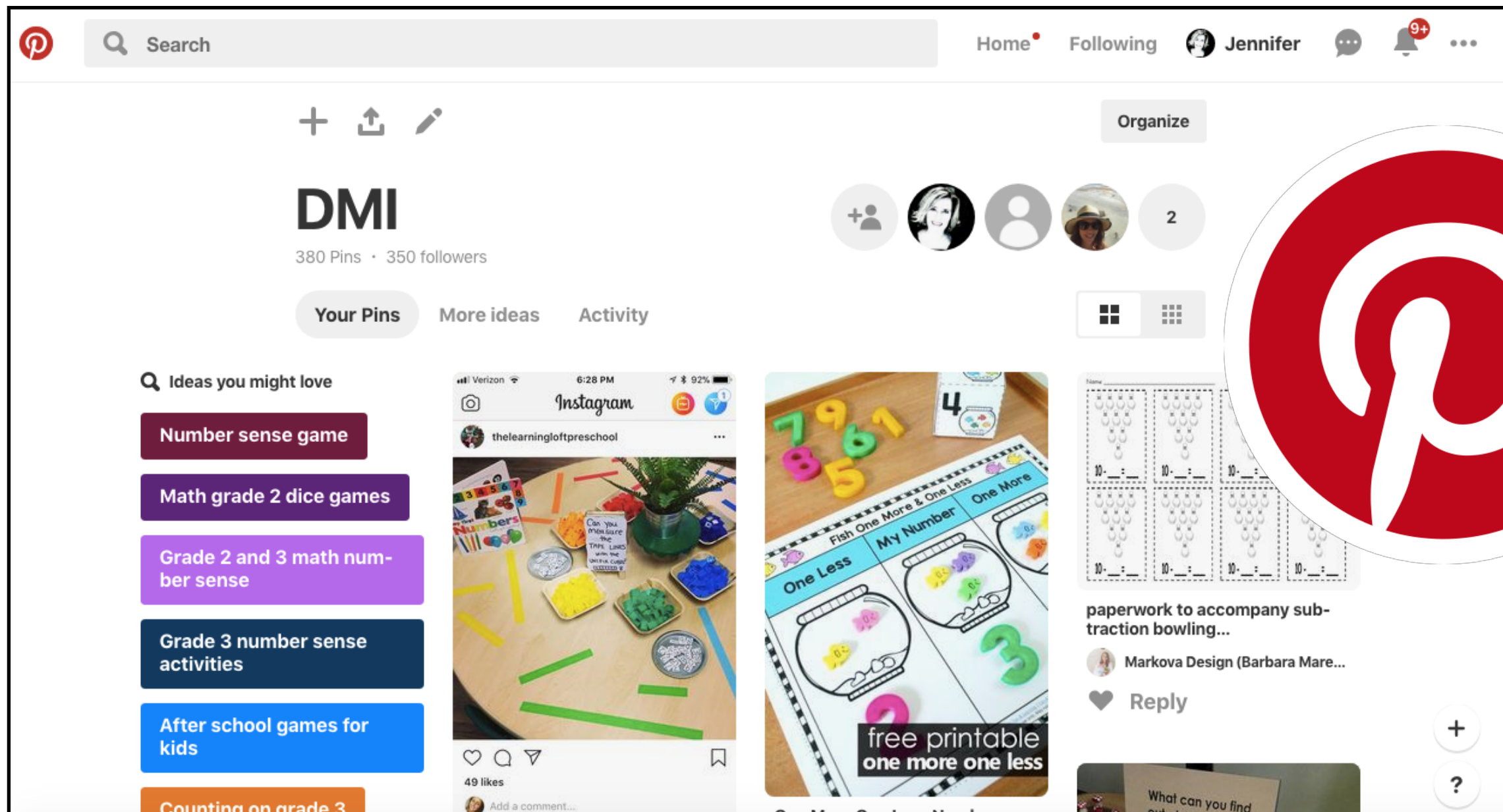
12	16	13	14	11	13
15	11	16	12	16	14
14	15	12	16	15	11
13	14	16	12	15	13
11	13	11	16	12	14
15	11	16	12	14	11



Box Cars and One Eyed Jacks



Follow Jennifer Barker's DMI Pinterest Board curated with Jennifer Tammen, Barb Matson and Kristen Pennington



My site has some ideas...

www.meaningfulmathmoments.com



Open Questions

What resources are available?



Each book spans several Grades (e.g., K - 3, 4 - 6, and 7 - 9.)
Currently only the Number Strand is aligned to our BC Curriculum.
The other strands are coming in Spring 2018.

Fractions:

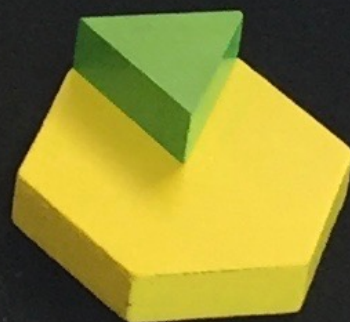
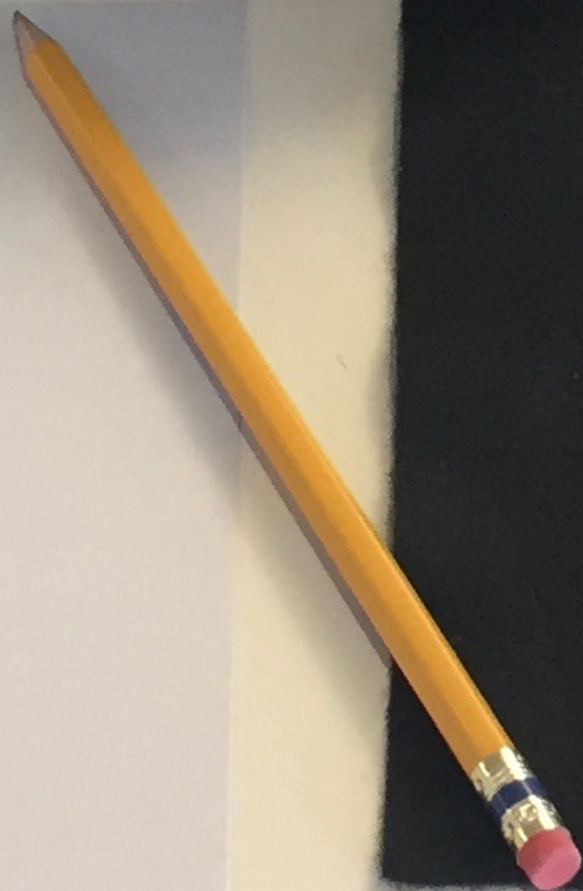
If a hexagon represents a whole,
do the other pieces represent?



$$\triangle = \frac{1}{6}$$

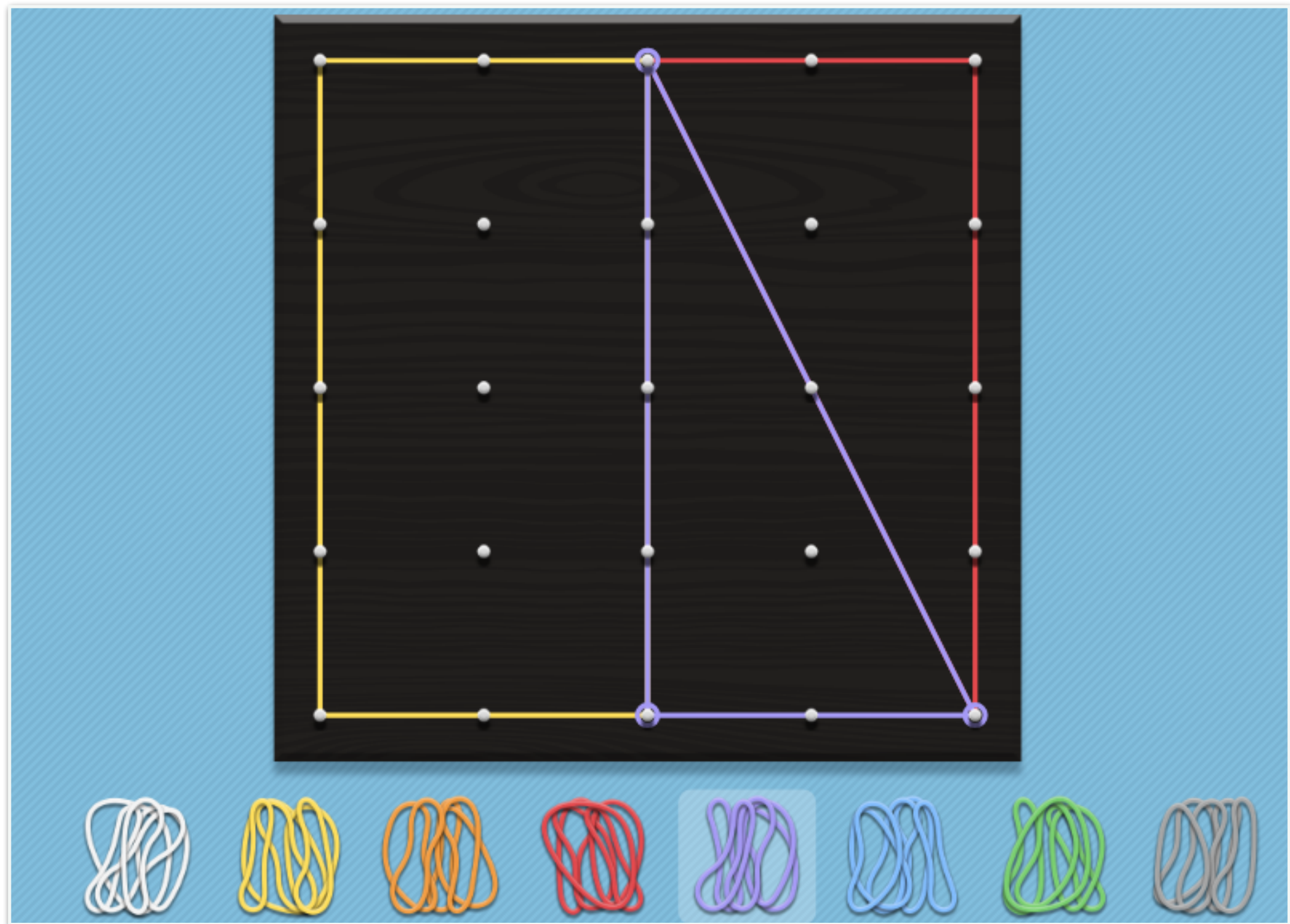


$$= \frac{1}{2}$$



How might you describe your design using fractions?

www.mathlearningcenter.org



0

$1/4$



$3/4$

1

Fractions:

How might you compare and order these numbers?

$3/6$

$2/4$

$1/2$

$2/6$

$1/6$

2

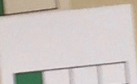
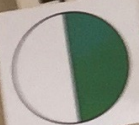
$2/3$

$4/6$

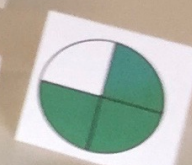
$1/3$

$3/3$

$6/6$



$5/6$



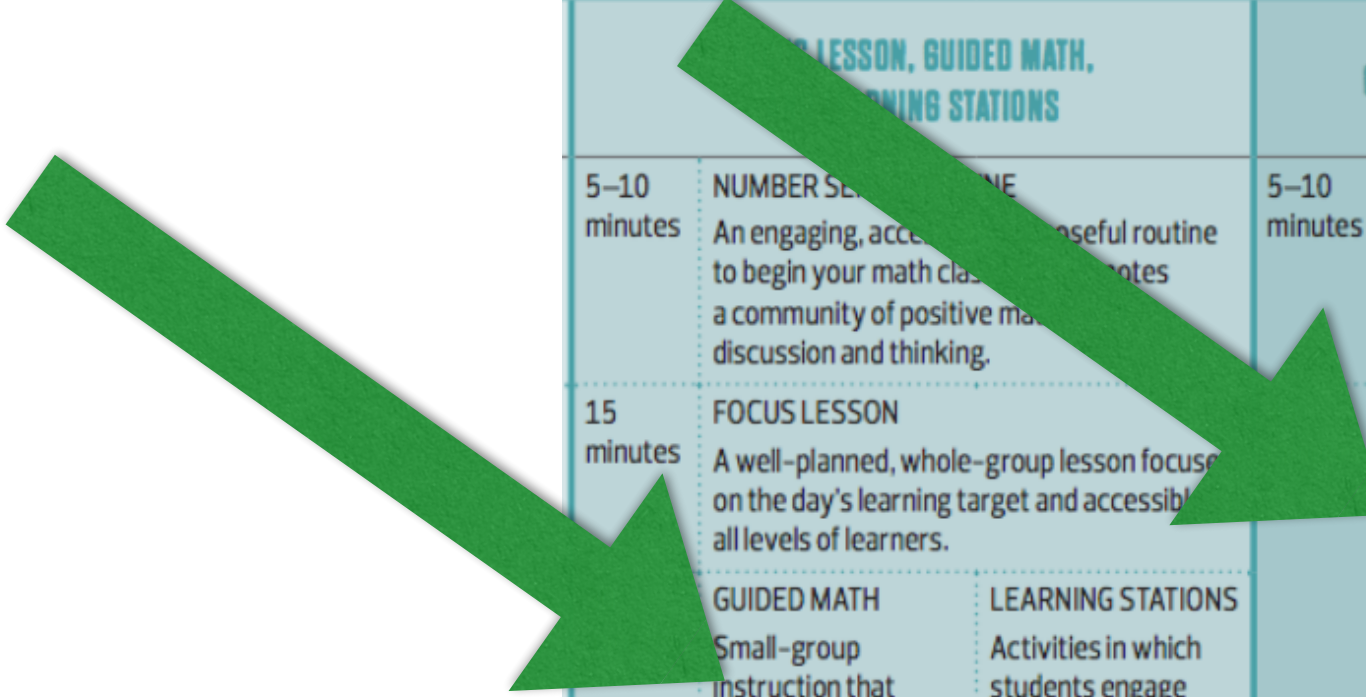
What should I consider when designing Learning Stations?

- Is this experience going to **ACTIVELY ENGAGE** your students?
- Are there entry points for **ALL** students?
- Can the experience be **DIFFERENTIATED** so each student can work to their fullest potential?
- Are there opportunities for the students to make **CHOICES**?
- Are they activities **PURPOSEFUL**, as well as **PLAYFUL**?
- What **QUESTIONS** will I ask to move the learning forward

- Are there opportunities for **COLLABORATION**?
- Have you woven in your students' **INTERESTS**?
- Are you providing opportunities for students to revisit/
SPRIAL concepts throughout the year
- How will I be **RESPONSIVE** to misconception
and gaps of understanding?
- How will I **RECORD OBSERVATIONS**?
- How will I provide opportunities for
STUDENT REFLECTION?
- How will I **COMMUNICATE**
STUDENT LEARNING?



GUIDED MATH



LESSON, GUIDED MATH, LEARNING STATIONS			GUIDED MATH AND LEARNING STATIONS	
5–10 minutes	NUMBER SENSE ROUTINE An engaging, accessible, purposeful routine to begin your math class that promotes a community of positive mathematics discussion and thinking.		5–10 minutes	NUMBER SENSE ROUTINE An engaging, accessible, purposeful routine to begin your math class that promotes a community of positive mathematics discussion and thinking.
15 minutes	FOCUS LESSON A well-planned, whole-group lesson focused on the day's learning target and accessible to all levels of learners.		GUIDED MATH Small-group instruction that allows the teacher to support and learn more about students' understandings and misconceptions. In this structure, the focus lesson is addressed in guided math groups and is differentiated for each group.	LEARNING STATIONS Activities in which students engage in meaningful mathematics and are provided with purposeful choices.
5–10 minutes	GUIDED MATH Small-group instruction that allows the teacher to support and learn more about students' understandings and misconceptions.	LEARNING STATIONS Activities in which students engage in meaningful mathematics and are provided with purposeful choices.		
5–10 minutes	STUDENT REFLECTION A deliberate and meaningful time for students to consider new learning.		5–10 minutes	STUDENT REFLECTION A deliberate and meaningful time for students to consider new learning.

Guided Group Instruction

What could this look like?



- Groups are **FLEXIBLE** and composition changes according to the needs of the students.
- The number of groups you meet with vary, depending on needs.
- Sometimes teachers work one-on-one with students.
- The amount of time spent with each group varies but generally not ever more than 15 minutes. Fair does not meet equal!
- Names are **NEVER** posted.

Types of Groupings

Readiness Groupings

- students who have a similar strength or need
- groups based on collected formative assessment

Heterogeneous Groupings

- combines strengths, struggles, learning styles, interests
- everyone benefits
- we are more likely to get a variety of strategies
- students learn from each other

Random Groupings:

- call the table playing “Make Ten”
- great for data collection.



Why is Guided Math so important?

“It is through small group instruction that differentiation can happen; as teacher we can gather a great deal of information on each student...

When we work with students in small groups, providing the instruction they need when they need it, we are better able to address individual needs, keep students engaged, understand their strengths and struggles, and ultimately foster a growth mindset, building not only students' mathematics knowledge but also their confidence.”


– Lempp (2017), p.g. 184

What could a Rich Open Math Task look like? Another session!

TASK AND SHARE		FOCUS LESSON, GUIDED MATH, AND LEARNING STATIONS		GUIDED MATH AND LEARNING STATIONS			
5–10 minutes	NUMBER SENSE ROUTINE An engaging, accessible, purposeful routine to begin your math class that promotes a community of positive mathematics discussion and thinking.	5–10 minutes	NUMBER SENSE ROUTINE An engaging, accessible, purposeful routine to begin your math class that promotes a community of positive mathematics discussion and thinking.		5–10 minutes	NUMBER SENSE ROUTINE An engaging, accessible, purposeful routine to begin your math class that promotes a community of positive mathematics discussion and thinking.	
30 minutes	MATH TASK A problem-solving task that students work on in small groups. The teacher circulates and probes student thinking through questions. The task typically has multiple entry points, allowing for all students to have access to the problem.	15 minutes	FOCUS LESSON A well-planned, whole-group lesson focused on the day’s learning target and accessible to all levels of learners.		45 minutes	GUIDED MATH Small-group instruction that allows the teacher to support and learn more about students’ understandings and misconceptions. In this structure, the focus lesson is addressed in guided math groups and is differentiated for each group.	LEARNING STATIONS Activities in which students engage in meaningful mathematics and are provided with purposeful choices.
		30 minutes	GUIDED MATH Small-group instruction that allows the teacher to support and learn more about students’ understandings and misconceptions.	LEARNING STATIONS Activities in which students engage in meaningful mathematics and are provided with purposeful choices.			
20–25 minutes	TASK SHARE WITH STUDENT REFLECTION A math share in which students come together as a whole class and discuss the various strategies they used to solve the problem. Students ask questions, clarify their thinking, modify their work, and add to their collection of strategies.	5–10 minutes	STUDENT REFLECTION A deliberate and meaningful time for students to consider new learning.		5–10 minutes	STUDENT REFLECTION A deliberate and meaningful time for students to consider new learning.	

Begin by developing
expectations with your students:

MINI LESSONS:

- 
- I will be an active listener.
 - I will talk about my thinking.
 - I will use different strategies to solve problems.
 - I will do my best whether working independently or collaboratively.
 - I use math tools and manipulatives responsibly to help my thinking.
 - I will represent by thinking visually.
 - I will give my best effort and be respectful to my classmates.
 - I will persevere through challenges.
 - I will reflect on my learning.

MINI LESSON:

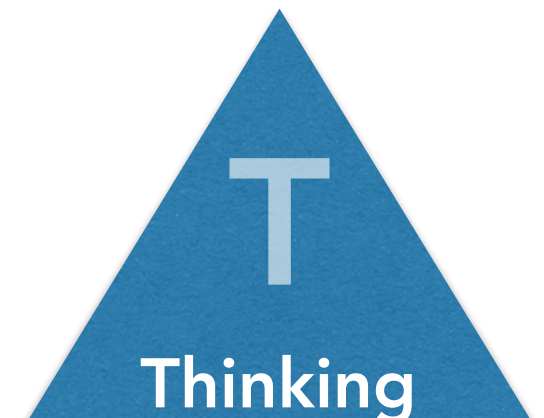
Talking About Your Thinking

It is important we take time to learn from each other. We must remember to give each other time to think, followed by times to talk. We are always respectful of each other's ideas.

- Pose problem. Give independent thinking time. Take turns in your group sharing how you solved the problem.
- Add to anchor chart **I will talk about my math thinking.**

I have \$36 in my pocket. What coins or bills might I have?

Can you explain _____'s strategy?
I agree with _____.
I thought about it a different way.

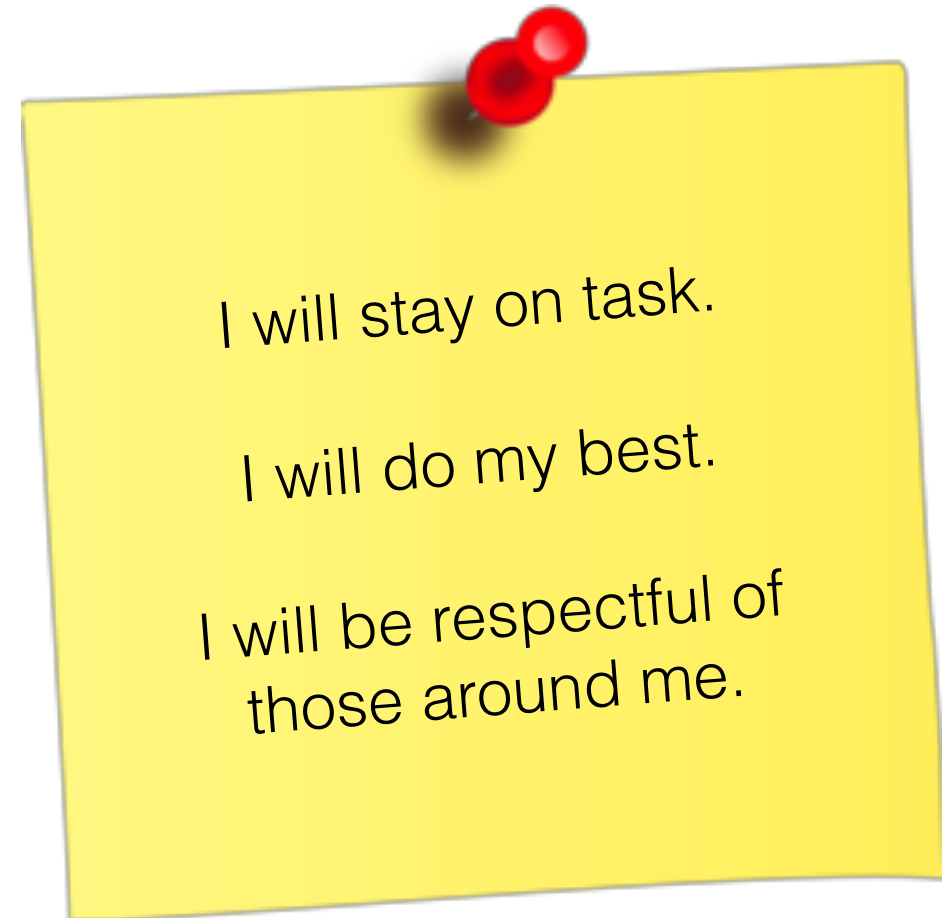


MINI LESSON:

Working Independently

Through practiced independent work, students gain confidence in their own math ability.

- Think about a time that you worked independently. What did it look like? What are some ways you represented your thinking? How were your classmates acting that helped you to work independently?
- Have students brainstorm ideas, then share ideas with a partner. Have the partner share each other's ideas, not their own.
- Add to anchor chart **I will do my best work whether working collaboratively or independently.**



MINI LESSON:

Being an Active Listener

It is important not just to listen to the teacher but also to each other.

- What is an “active listener”?
Brainstorm what it looks and sounds like?
- Ask for someone to volunteer to share aloud in front of the class a favourite thing they like to do. Using talk moves have ensure that the students have actively listened to their classmate.
- Begin an anchor chart called “Guidelines for Math Workshop” and add **I will be an active listener.**

Math Talk Moves	
	Revoicing "So you're saying that _____. Do I have that right?"
	Repeating "Can you restate or rephrase what _____ just said?"
	Reasoning "Do you agree or disagree, and why?"
	Adding On "Would someone like to add on?"
	Waiting "Take your time...we'll wait..."
	Turn & Talk "Partner turn and talk or think-pair-share"

*Summary Tables of Productive Talk Moves" from Classroom Discussions in Math: A Teacher's Guide for Using Talk Moves to Support the Common Core and More, Grades K-6 by Suzanne H. Chapin, Catherine O'Connor, and Nancy Canavan Anderson. Copyright © 2013 by Scholastic Inc. All rights reserved. Item # 5B4882.

Thinking

Communication

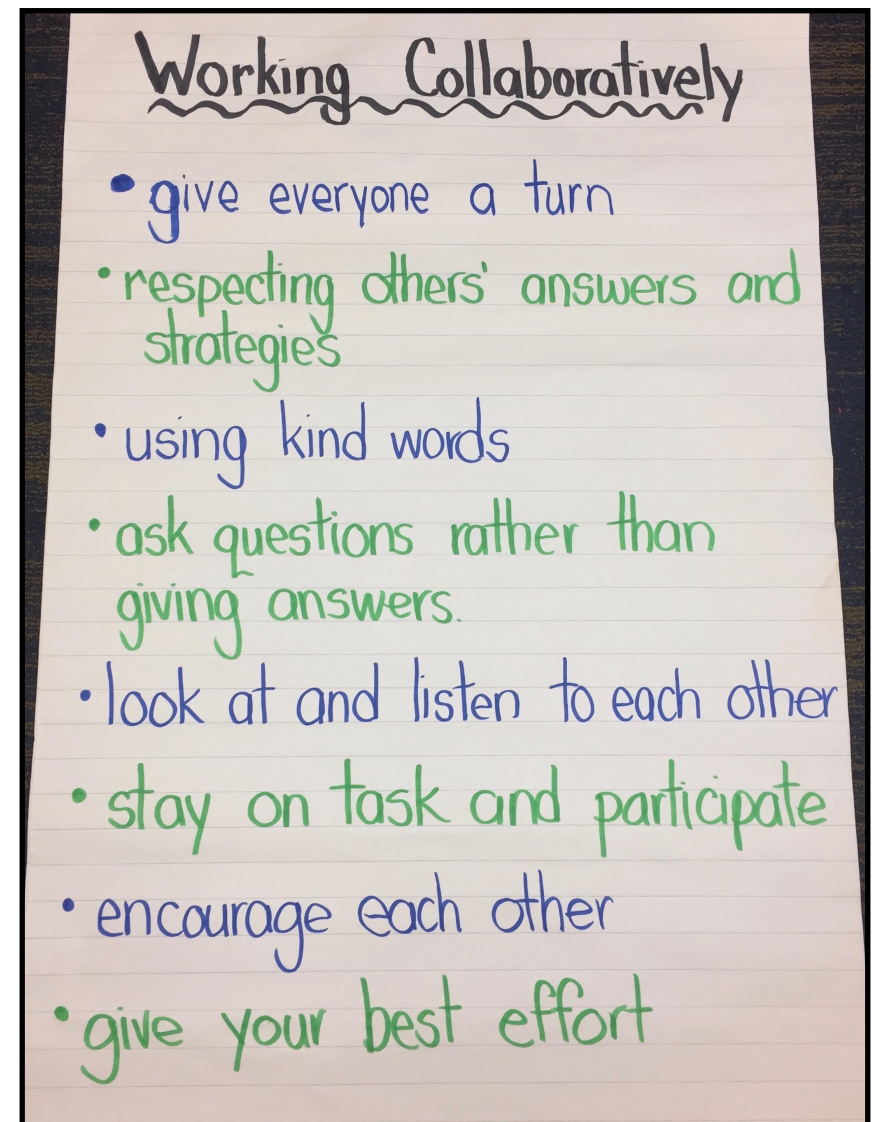
Math Solutions. | mathsolutions.com

MINI LESSON:

Working Collaboratively

Working together helps students clarify their thinking, share their thought process, respect others' thinking, deepen their understanding, stay focused, and justify math solutions.

- Provide stickies for students to brainstorm what it looks and sounds like.
- Create an anchor chart called "Working Collaboratively"
- Provide a problem for students to work on in collaborative groups and have them practice expectations and reflect on how it went.



MINI LESSON:

Using Manipulatives

Manipulatives are items that help children construct understanding. They also assist children in representing their thinking. It is tempting to play with manipulatives but when used responsibly they can help you learn.

- Provide students with a manipulative and ask them to take 5 min to explore. Ask them what they notice, what they wonder, and how they think they could use the manipulative.
- Add to anchor chart **I will use tools and manipulatives responsibly to help my thinking.**

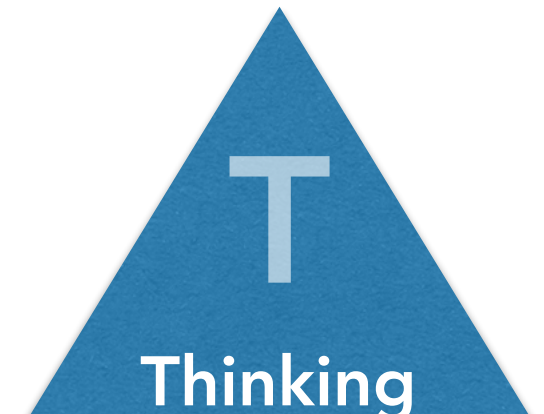
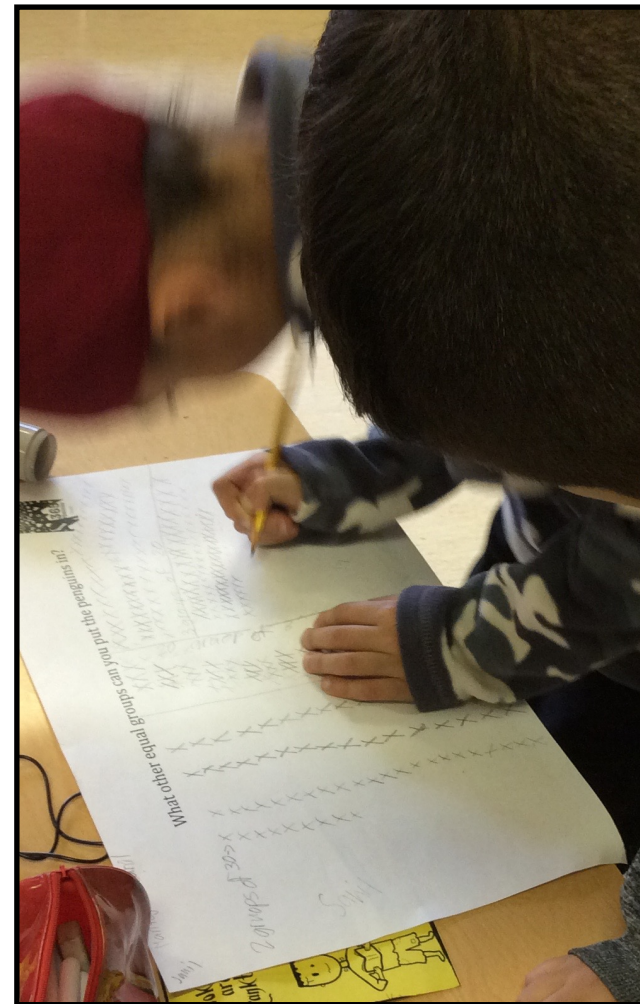


MINI LESSON:

Representing Your Thinking

Drawing pictures is a problem solving strategy. Sometimes drawing pictures helps us to represent our math thinking and make sense of the question. Pictures help us visualize and can represent numbers.

- Today, as we learn about _____, practice drawing pictures to represent your math thinking. Share a problem with students and have them draw pictures to represent their mathematical thinking .
- Add to anchor chart **I will represent my thinking visually when it is helpful.**

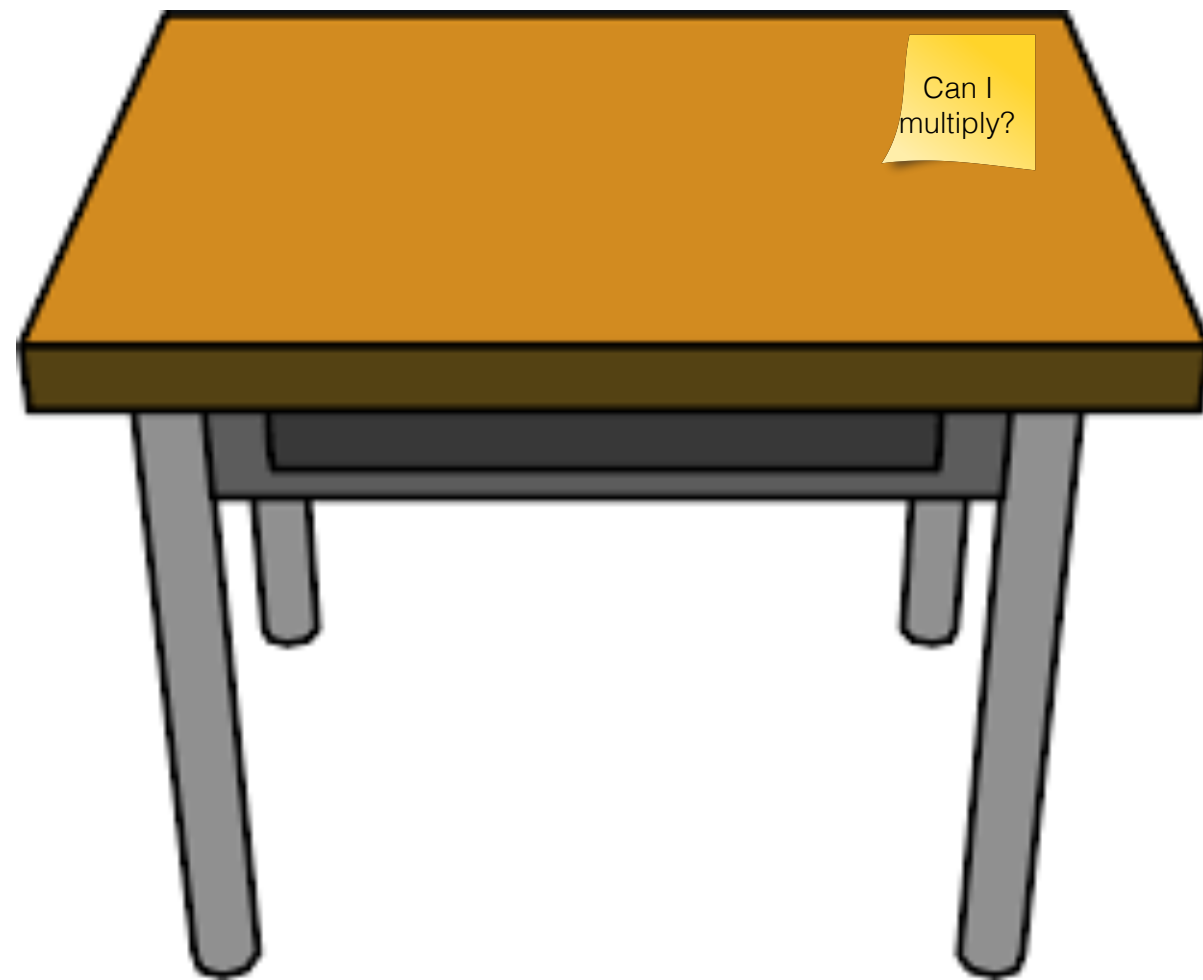


MINI LESSON:

Asking Questions

We want to promote an environment where students feel free to ask questions, challenge one another, and look for justification for answers. We also want to promote perseverance and avoid asking for help before giving our best effort.

- Provide students with a problem. Ask them to solve it themselves. Use sticky notes to write down any questions you have. “Park” your questions on the corner of your desk for now. In the end, check your questions to see if you answered them on your own. For the unanswered questions, check with a friend. Walk around the room and review the questions. Select and share strong examples of good questions.
- Add to anchor chart **I will persevere through challenges and believe in myself.**

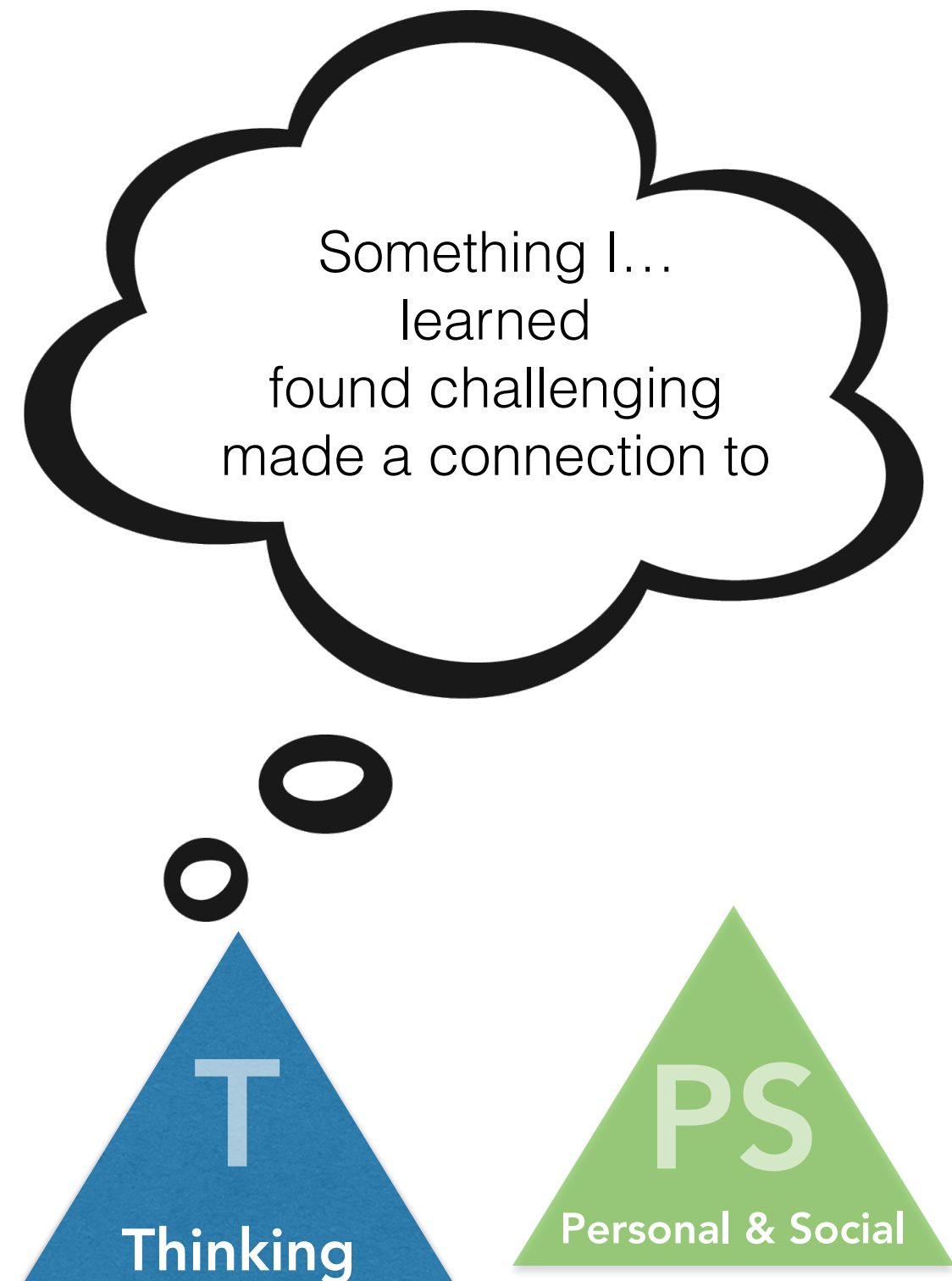


MINI LESSON:

Reflecting and Sharing

Reflecting on what we've learned is key in everything we do. It can be done formally and informally.

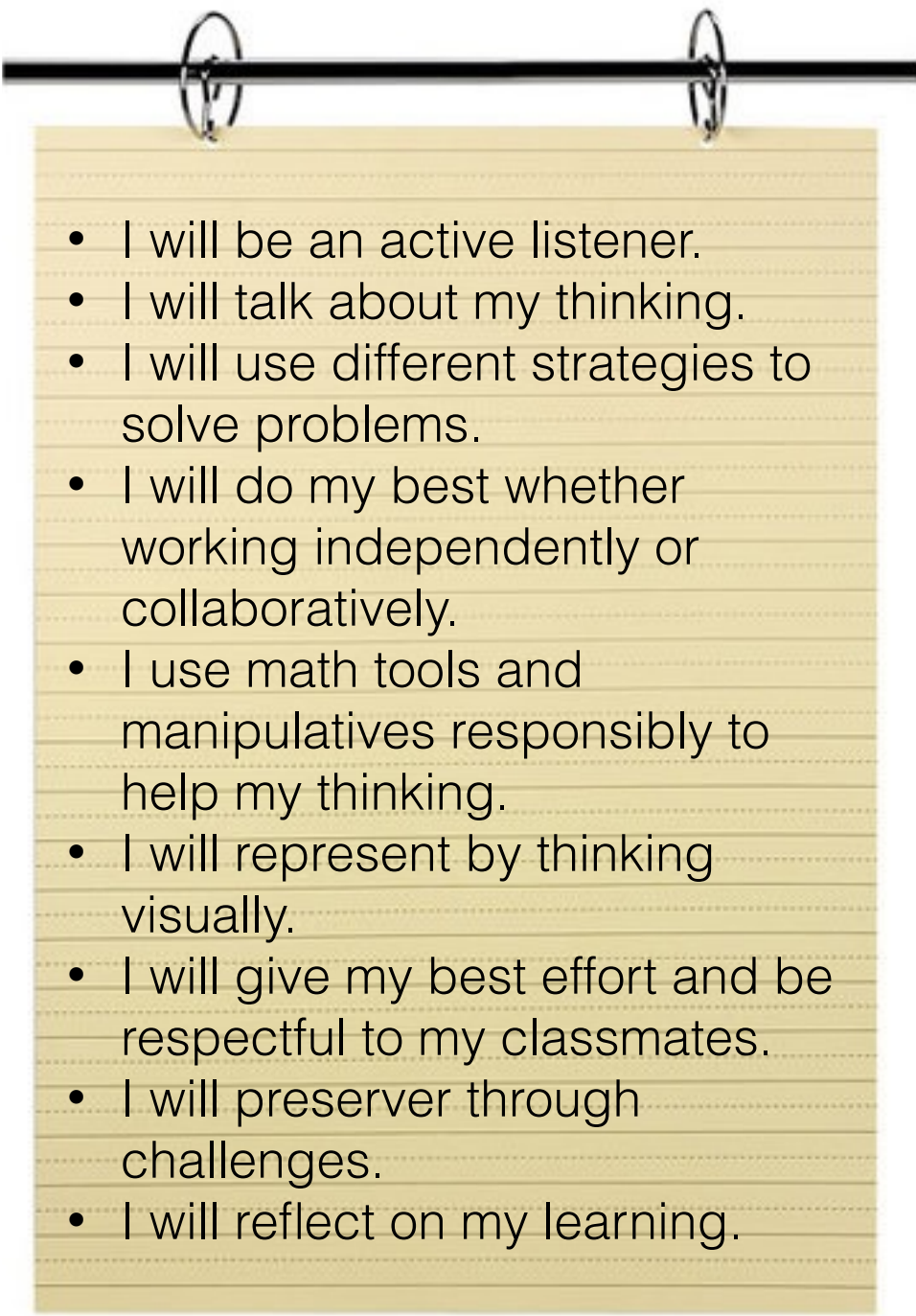
- Provide an open ended problem. Anticipate the ways students will solve. Monitor and determine a sequence you will ask students to share. The sequencing you determine is intentional so that you can assist students in making connections between strategies, etc.
- Ask students to reflect upon the learning experience.
- Begin an anchor chart called Guidelines for Math Workshop. Add **I will reflect on my learning.**



MINI LESSON:

Understanding Guidelines for Math Workshop

- Give students time to discuss with each other and share with the whole class what they understand about each of the guidelines on the anchor chart.
- Anytime you find students are struggling with these guidelines, return to the chart and corresponding mini-lesson.

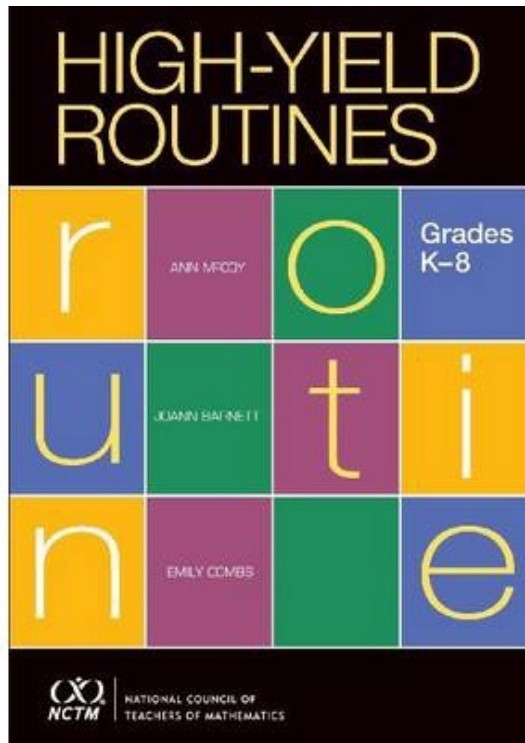
- 
- I will be an active listener.
 - I will talk about my thinking.
 - I will use different strategies to solve problems.
 - I will do my best whether working independently or collaboratively.
 - I use math tools and manipulatives responsibly to help my thinking.
 - I will represent by thinking visually.
 - I will give my best effort and be respectful to my classmates.
 - I will persevere through challenges.
 - I will reflect on my learning.

The next few weeks:

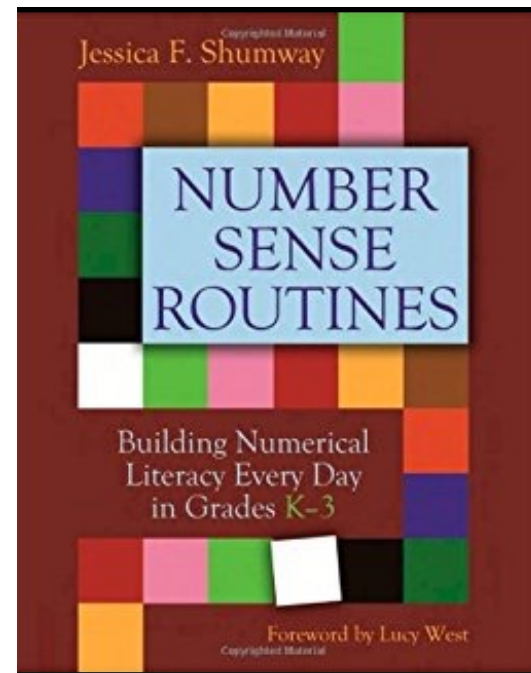
- Establish and practice routines and procedures
 - Where do I go?
 - What can I do?
 - Who can I work with?
 - How long do I do it?
 - What do I do if I have a question?
 - What do I do when I am finished?
- Begin with one learning station
 - Move to two stations
 - As students are comfortable with the learning stations, begin to pull one small group per day. Watch and intently listen. Find out what they know.
- Teach one Number Routine - then a second
- **Go SLOW to go fast!!!**

SEPTEMBER 2018						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

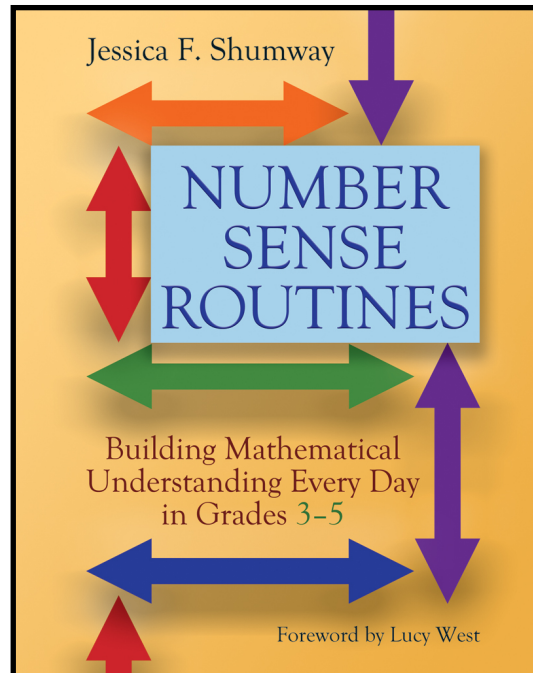
Recommended Resources:



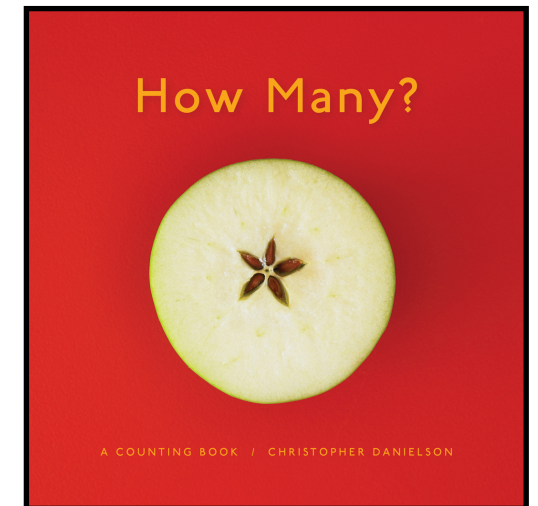
LRS #173445



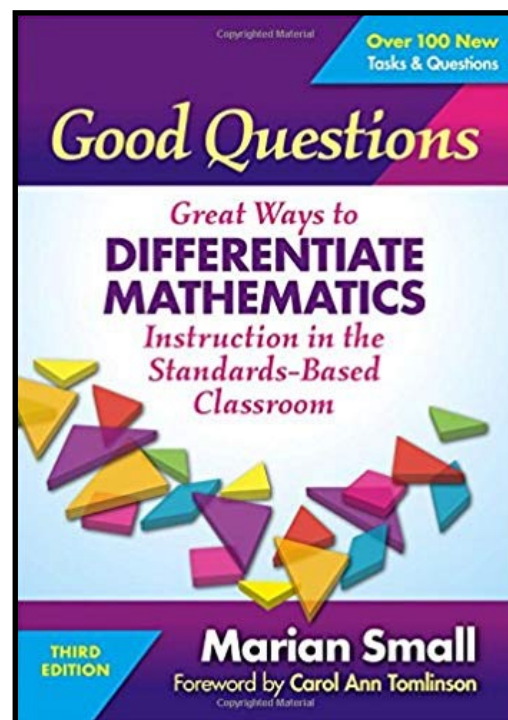
LRS #164962



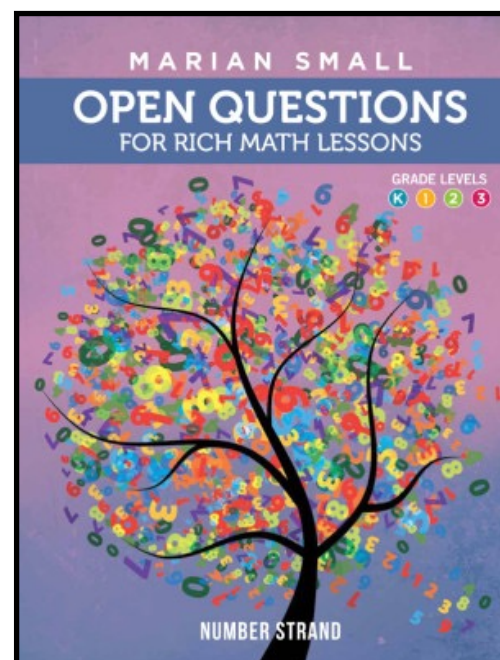
LRS #178936



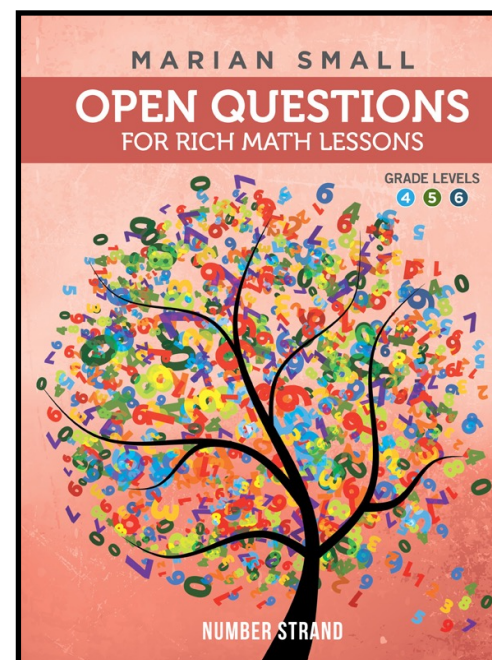
LRS #179551



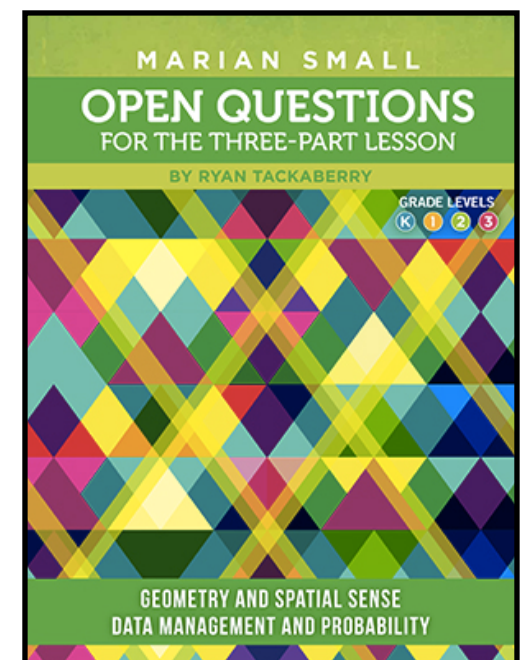
LRS #177529



LRS #173627



LRS #173628



Coming Soon

Thank you for spending your morning with me!

Math Program

