Welcome to Hidden Sparks Without Walls.
We will be starting at 8:30pm.

To alleviate background noise and ensure a quiet session, your audio connection has been muted.

Chat: Asking Questions & Sharing Thoughts
You are encouraged to ask questions and share your thoughts on the chat.
Please activate the chat feature on the bottom of the screen. You may choose to chat to panelists and all attendees or just panelists.

Audio:
If you would like to call in via phone for audio, please look up the call in number, webinar id, and passcode information on your webinar invite.
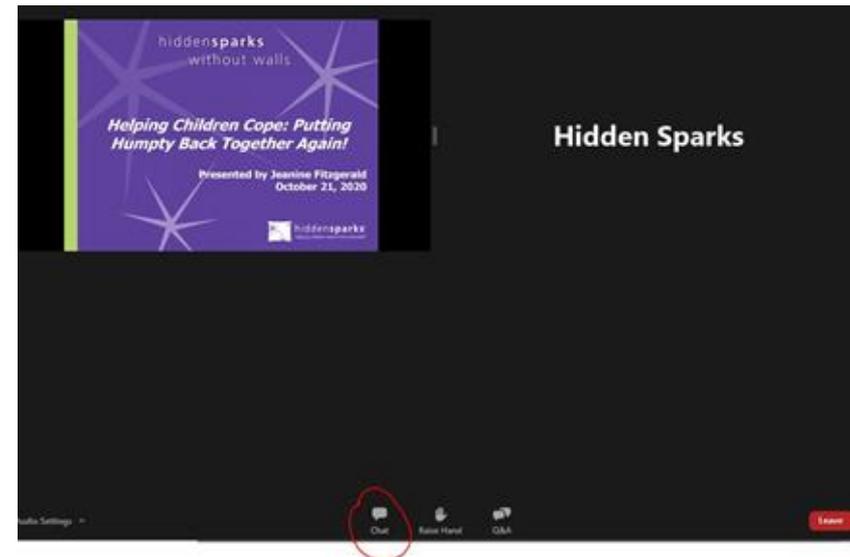
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Hidden Sparks helps educators and Jewish day schools nurture the Hidden Spark within each student, facilitating professional development to increase understanding and support for the broad range of learners in the classroom.

Offerings include:

- award-winning **Learning Lenses** course on understanding learning and behavior
- 1:1 **coaching** for teachers
- **Internal** and **Peer Coach mentoring** within schools
- workshop on **Differentiating Instruction**
- **Hidden Sparks Without Walls** webinar series
- **Parent Learning Center** (PLC)

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without walls

Using Literacy Strategies to Gain Deep Mathematical Understanding

Presented by Kateri Thunder
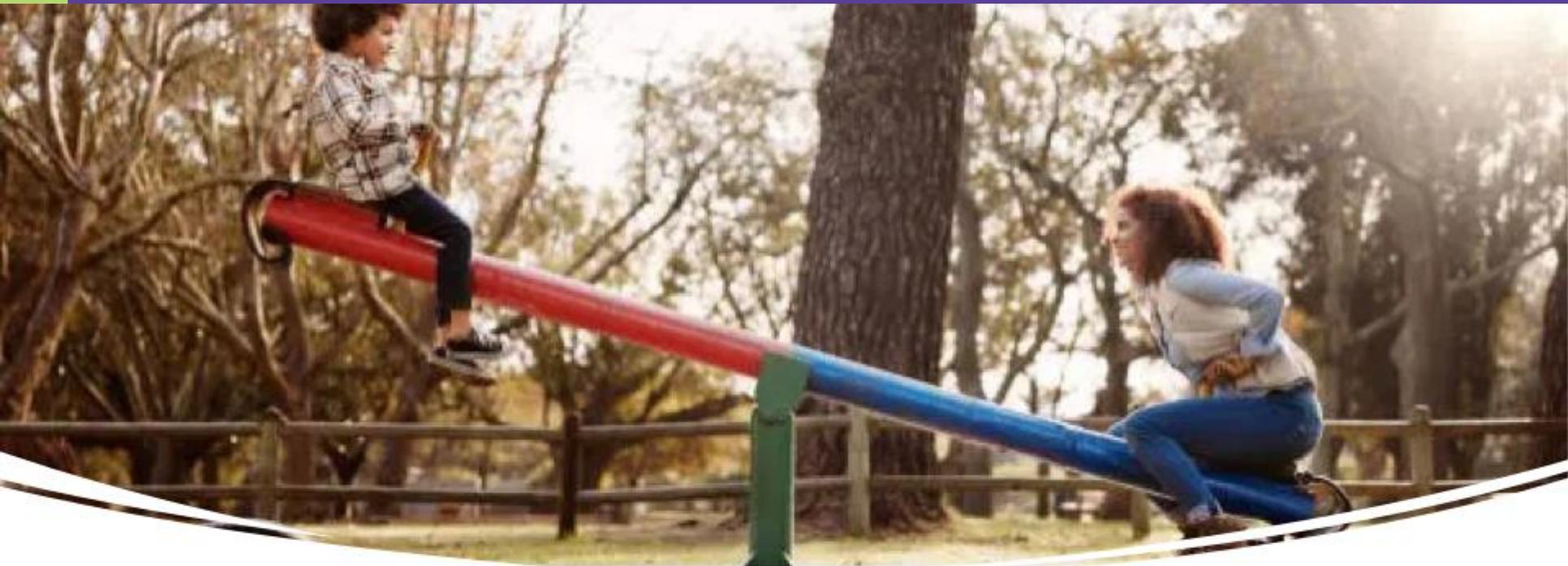### Monday, February 9, 2026

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helping children reach their potential®

Our Guest: Kateri Thunder

Kateri Thunder, Ph.D. is an educator, researcher, author, and coach who collaborates with learners and educators around the world to translate research into practice. Kateri has had the pleasure of being a classroom teacher in early childhood through high school math, a math specialist, an assistant professor of math education at James Madison University, and Site Director for the Central Virginia Writing Project. Kateri researches, writes, and presents on equity and access in education and the intersection of literacy and mathematics for teaching and learning. She has partnered with thousands of educators to catalyze change in their classrooms and schools. Kateri serves on the board for Barrett Early Learning Center, the oldest daycare in Virginia, and on the Learning Care Group Education Advisory Board. She has played a pivotal role in the creation of Sadlier PreK with Wiley Blevins as well as Sadlier's Progress in Mathematics series. Kateri is a best-selling author for Corwin's Teaching Mathematics in the Visible Learning Classroom Series, The Success Criteria Playbook, Visible Learning in Early Childhood, The Early Childhood Education Playbook, and The Mathematics Playbook.

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We are learning ways to **leverage literacy strategies** to also develop learners' conceptual understanding and procedural knowledge in **mathematics** so that we can create a cohesive experience of teachers and learners.

We'll know we've learned this when we can:

- **Reenvision** the PreK-8 mathematics curriculum through a literacy lens,
- **Identify** ways literacy practices can deepen mathematical understanding and create cohesion and continuity for learners, and
- **Walk away with** instructional strategies and activities that you can immediately implement in your classroom.

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You will need...

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Agenda

- **Comprehension Strategies**
- **Self-monitoring**
- **Vocabulary**

Language Comprehension **x** Word Recognition **=** Reading Comprehension

The Simple View of Reading

(Gough & Tunmer, 1986)

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SCARBOROUGH'S READING ROPE (2001)

LANGUAGE COMPREHENSION

BACKGROUND KNOWLEDGE
(facts, concepts, etc.)

VOCABULARY
(breadth, precision, links, etc.)

LANGUAGE STRUCTURE
(syntax, semantics, etc.)

VERBAL REASONING
(inference, metaphor, etc.)

LITERACY KNOWLEDGE
(print concepts, genres, etc.)

WORD RECOGNITION

PHONOLOGICAL AWARENESS
(syllables, phonemes, etc.)

DECODING
(alphabetic principle, spelling–sound correspondences)

SIGHT RECOGNITION
(of familiar words)

THE MANY STRANDS WOVEN INTO SKILLED READING

INCREASINGLY STRATEGIC

INCREASINGLY AUTOMATIC

SKILLED READING

Fluent execution and coordination of word recognition and text comprehension.

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PRACTICE GUIDE

Improving Reading Comprehension in Kindergarten Through 3rd Grade

Released: September 2010

📄 **Full Guide (5.1 MB)**

Recommendations | Details | Panel | Related Resources

Students who read with understanding at an early age gain access to a broader range of texts, knowledge, and educational opportunities, making early reading comprehension instruction particularly critical. This guide recommends five specific steps that teachers, reading coaches, and principals can take to successfully improve reading comprehension for young readers.

1 Teach students how to use reading comprehension strategies.

▾ Show More

STRONG EVIDENCE | TIER 3 PROMISING

2 Teach students to identify and use the text's organizational structure to comprehend, learn, and remember content.

▾ Show More

MODERATE EVIDENCE | TIER 3 PROMISING

3 Guide students through focused, high-quality discussion on the meaning of text.

▾ Show More

MINIMAL EVIDENCE | TIER 4 HAS RATIONALE

4 Select texts purposefully to support comprehension development.

▾ Show More

MINIMAL EVIDENCE | TIER 4 HAS RATIONALE

5 Establish an engaging and motivating context in which to teach reading comprehension.

▾ Show More

MODERATE EVIDENCE | TIER 3 PROMISING

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This list shows the weight of three vegetables Frank bought.

- The potatoes weighed $3\frac{7}{8}$ pounds.
- The green beans weighed $1\frac{1}{4}$ pounds.
- The peppers weighed $2\frac{1}{2}$ pounds.

The total weight of the vegetables Frank bought is —

A $1\frac{1}{8}$ pounds

B $1\frac{5}{8}$ pounds

C $6\frac{5}{8}$ pounds

D $7\frac{5}{8}$ pounds

STRATEGY	MATHEMATICS
Visualizing Creating an image in your mind that serves to enhance the text.	"I can picture weighing each item on a scale at the grocery store. The scale shows each weight and points between two whole numbers."

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This list shows the weight of three vegetables Frank bought.

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B $1\frac{5}{8}$ pounds

C $6\frac{5}{8}$ pounds

D $7\frac{5}{8}$ pounds

STRATEGY	MATHEMATICS
Making Connections *Relating what you read to personal experiences (text-to-self), to information from other text (text-to-text) and to information about the world (text-to-world) in order to better understand self, the text and life.*	*"This reminds of another problem I've solved before. In that problem I found the sum of fractions by adding them together. This problem is similar because I am finding the total weight by adding the fractions."*

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○ **D** $7\frac{5}{8}$ pounds

STRATEGY	MATHEMATICS
<u>Making Use of Prior Knowledge and Predicting</u> Using what you already know to anticipate and prepare for what is coming next.	"I estimate that the total weight will be more than 6 pounds. If I only add the whole numbers, I have 3+1+2=6. I also have fractional amounts for each weight so that will give me a total more than 6 pounds."

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D $7\frac{5}{8}$ pounds

STRATEGY	MATHEMATICS
Questioning Asking questions about the text and author's purpose in order to better understand what is being read, clarify information, and extend thinking.	*"Did Frank buy three vegetables or three types of vegetables? Does that mean the same thing?"*

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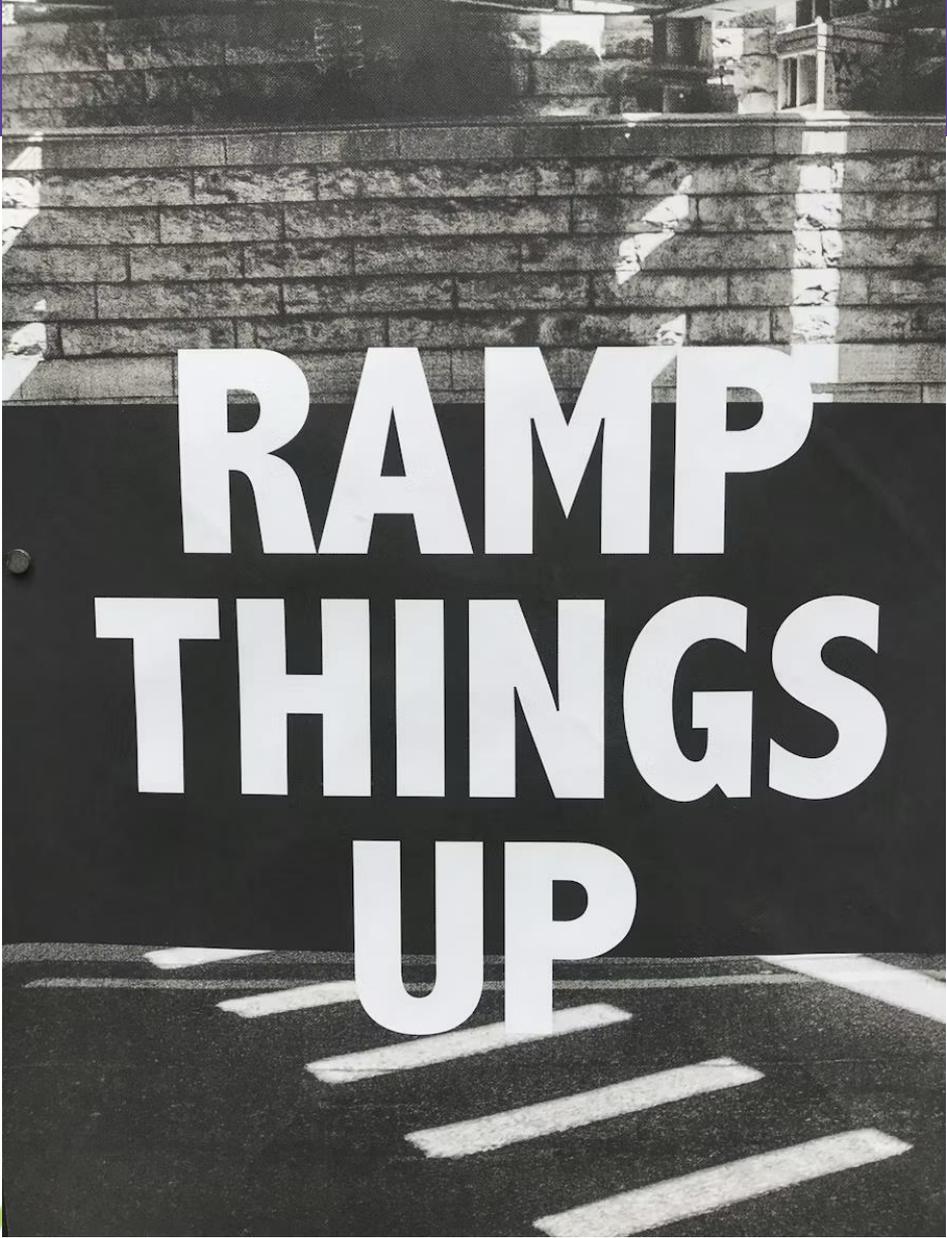| STRATEGY	MATHEMATICS
Summarizing Identify key ideas and consolidate important information into your own words after reading to further understanding.	"Frank weighed three types of vegetables separately on his scale. He found the weight of each in pounds. I need to figure out the total weight of all three vegetables by finding the sum of those weights."

Dora bought a total of 48 cupcakes. Each cupcake cost $0.55, including tax. Of the cupcakes she bought, $\frac{3}{8}$ were vanilla cupcakes. What was the total cost of only the vanilla cupcakes?

○ **A** $26.40

○ **B** $16.50

○ **C** $9.90

○ **D** $6.60

STRATEGY	MATHEMATICS
Visualizing Creating an image in your mind that serves to enhance the test.	"I can picture a box of 48 cupcakes. Some of them are vanilla cupcakes and the rest are other flavors."

Dora bought a total of 48 cupcakes. Each cupcake cost $0.55, including tax. Of the cupcakes she bought, $\frac{3}{8}$ were vanilla cupcakes. What was the total cost of only the vanilla cupcakes?

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<u>Making Connections</u> Relating what you read to personal experiences (text-to-self), to information from other texts (text-to-text), and to information about the world (text-to-world) in order to better understand self, the text, or life.	"This reminds me of another problem I've solved before. In that problem, I found the total cost by multiplying the number of items by the price. This problem is similar because I am finding the total cost based on the price of just one. But I am not finding the total cost of all cupcakes, just a part of the order."

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Dora bought a total of 48 cupcakes. Each cupcake cost $0.55, including tax. Of the cupcakes she bought, $\frac{3}{8}$ were vanilla cupcakes. What was the total cost of only the vanilla cupcakes?

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STRATEGY	MATHEMATICS
Making Use of Prior Knowledge and Predicting Using what you already know to anticipate and prepare for what is coming next.	"I estimate that the cost of only the vanilla cupcakes will be more than $6 but less than $12. I know $\frac{2}{8}$ is the same as $\frac{1}{4}$ and $\frac{1}{4}$ of 48 is 12. 50¢ times 12 is $6, but this is too little. I know $\frac{4}{8}$ is equivalent to $\frac{1}{2}$ and $\frac{1}{2}$ of 48 is 24. 50¢ times 24 is $12, but this is too much."

Dora bought a total of 48 cupcakes. Each cupcake cost $0.55, including tax. Of the cupcakes she bought, $\frac{3}{8}$ were vanilla cupcakes. What was the total cost of only the vanilla cupcakes?

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STRATEGY	MATHEMATICS
Questioning Asking questions about the text and author's purpose in order to better understand what is being read, clarify information, and extend thinking.	"Is $\frac{3}{8}$ of the cupcakes the same as $\frac{3}{8}$ of the total cost?"

Dora bought a total of 48 cupcakes. Each cupcake cost $0.55, including tax. Of the cupcakes she bought, $\frac{3}{8}$ were vanilla cupcakes. What was the total cost of only the vanilla cupcakes?
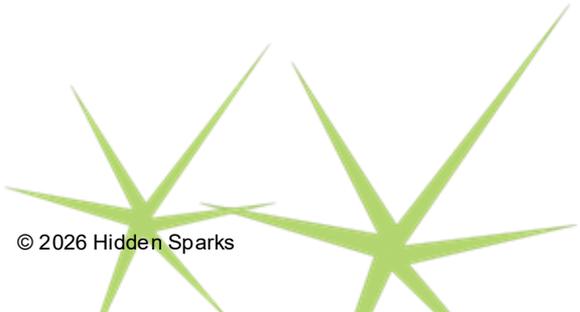
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STRATEGY	MATHEMATICS
Summarizing Identify key ideas and consolidate important information into your own words after reading to further understanding.	"Dora bought 48 cupcakes and $\frac{3}{8}$ are vanilla. Each cupcake costs 55¢. I need to figure out the total cost of the vanilla cupcakes."

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"BOLD! EXPLOSIVE! . . . I LOVE *THE CROSSOVER*. EVERYONE WILL." —NIKKI GIOVANNI

THE CROSSOVER

BY KWAME ALEXANDER

Jump!

From the Life of Michael Jordan

FLOYD COOPER

hiddensparks

Waiting for weeks
for this night
to watch my team.

Played hoops all week,
Michael Jordan
making my last second shot.

Get there early
gobble down a hotdog
and a fizzy soda.

Stomach full
bright lights
dim
to total
darkness.

Booming music
v i b r a t e s
my whole body.

Announcer's deep bellowing voice
bounces
off the rafters.

"And now
YOOOOOOOOUR
Chicago Bulls."

The noise
makes my ears ache,
I yell louder.

There they are.
    Pippen
        Rodman
           Longley
              Harper
                 and Jordan
jogging out to center court
one
at a time
as they are called

slap
high fives
to each other player.

Lost my voice,
game hasn't even started.

hiddensparks

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How many high fives did the starting players exchange?

Demchak & Thunder, www.mathplusliteracy.com

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How many high fives did the starting players exchange?

* **Visualizing**

* **Making Connections**

* **Making Use of Prior Knowledge and Predicting**

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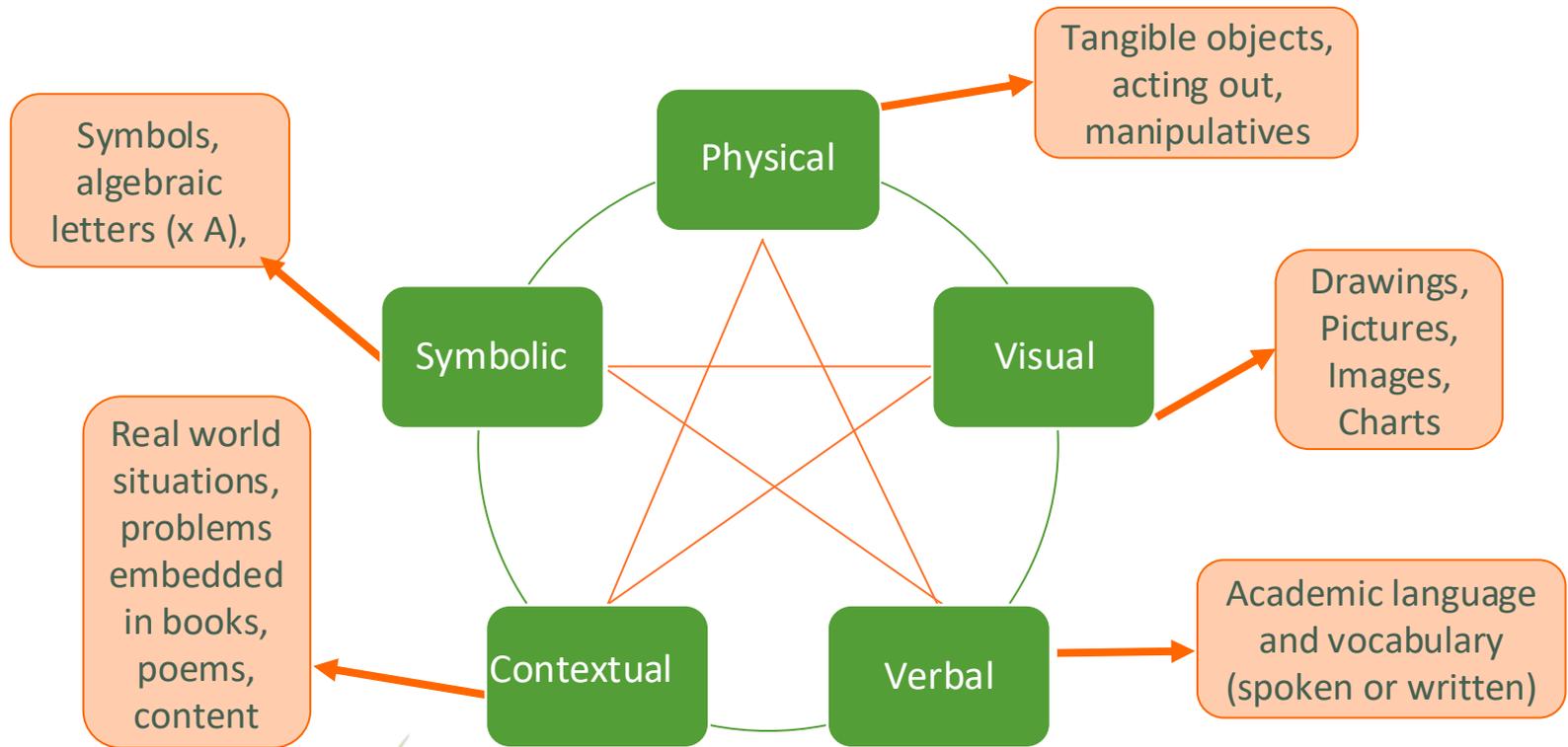to each other player.

Lost my voice,
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Anchor Problem: How many high fives did the starting players exchange?

* **Extension Problem 1:**
  How many high fives would be exchanged among all 15 of the Bulls players?

* **Extension Problem 2:**
  How many high fives would be exchanged at the end of the game among the opposing teams (30 players)?

* **Extension Problem 3:**
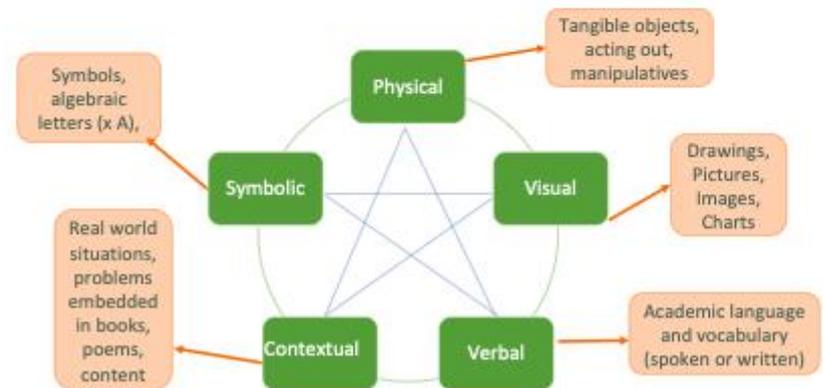 How many high fives would be exchanged among any number (n) of people?

Representations

Physical → Tangible objects, acting out, manipulatives

Symbolic → Symbols, algebraic letters (x A),

Visual → Drawings, Pictures, Images, Charts

Verbal → Academic language and vocabulary (spoken or written)

Contextual → Real world situations, problems embedded in books, poems, content
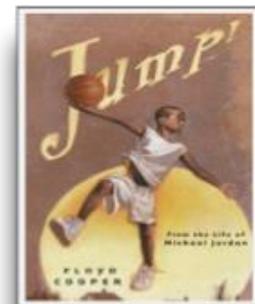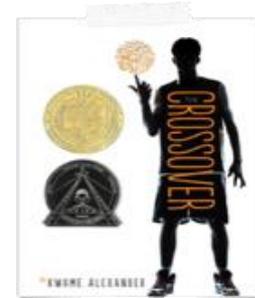
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Anchor Problem:

How many high fives did the starting players exchange?

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Show your thinking using multiple representations:

Representations

Symbols, algebraic letters (x A),

Physical — Tangible objects, acting out, manipulatives

Symbolic

Visual — Drawings, Pictures, Images, Charts

Real world situations, problems embedded in books, poems, content

Contextual

Verbal — Academic language and vocabulary (spoken or written)

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How did you use the comprehension strategies to help you comprehend the problem and solve?

* **Visualizing**

* **Making Connections**

* **Making Use of Prior Knowledge and Predicting**

* **Questioning**

* **Summarizing**

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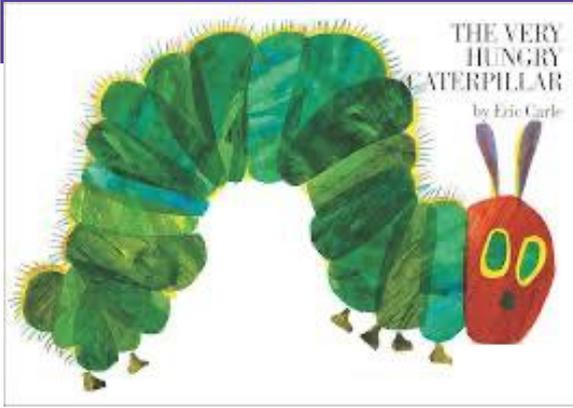   Longley
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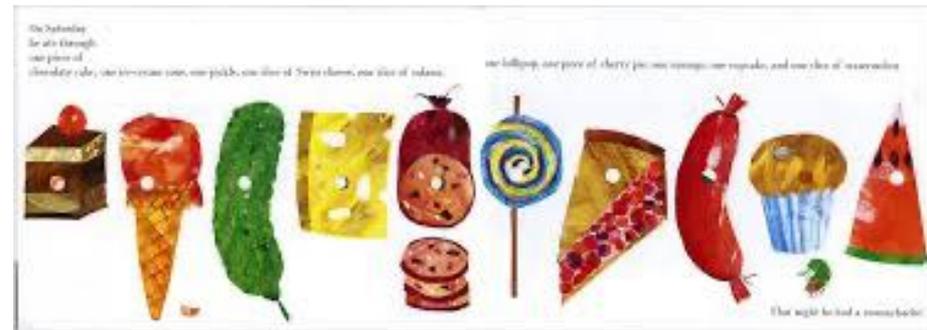as they are called

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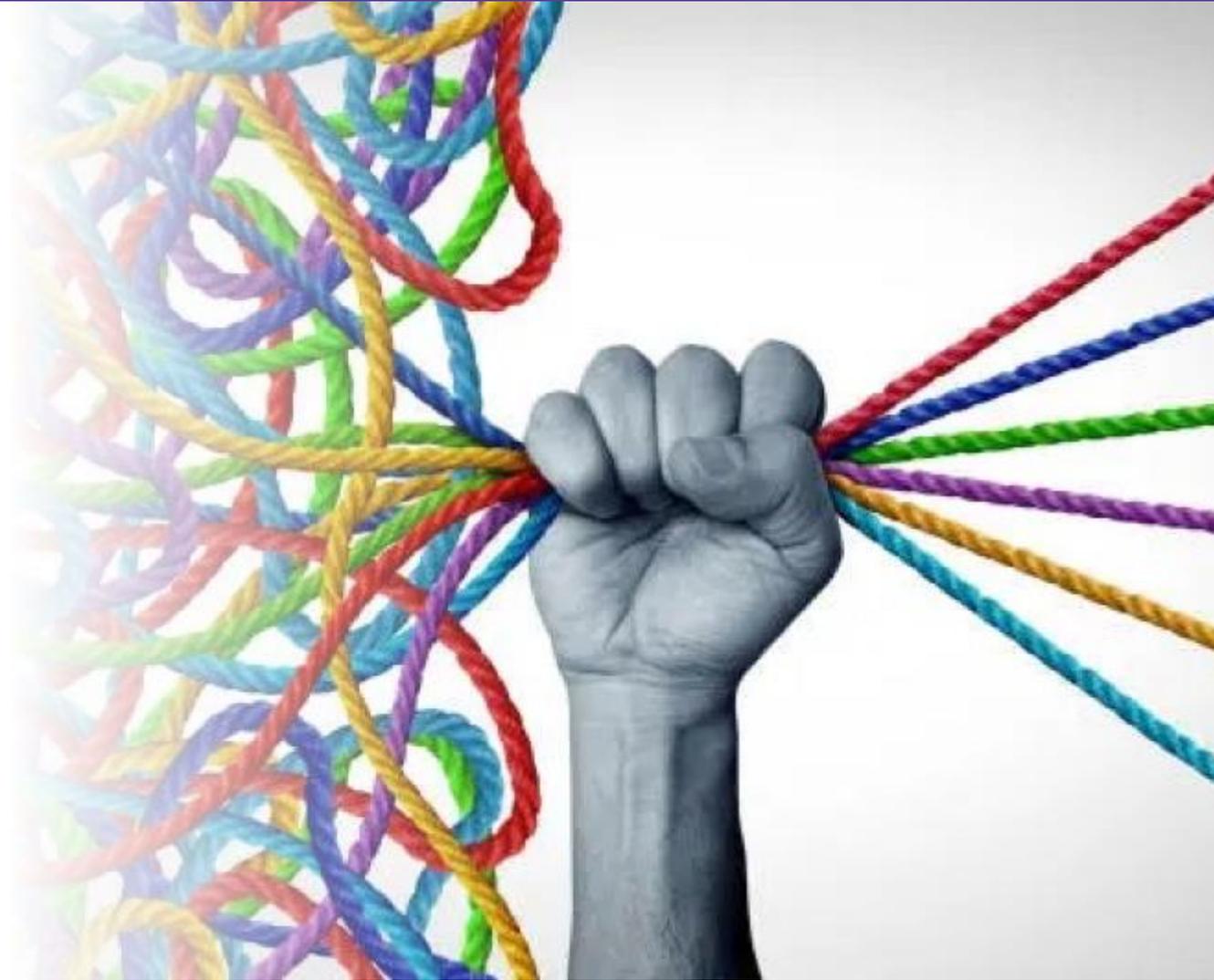
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How much did the very hungry caterpillar eat?

Visualizing * Making Connections * Questioning *Summarizing
*Making Use of Prior Knowledge and Predicting

Agenda

- Comprehension Strategies
- Self-monitoring
- Vocabulary

Before Reading	During Reading	After Reading
What do I know about this topic? Are there any words that I do not know? What predictions can I make? Why am I reading this?	What is happening in the book? Do I understand what is going on? Do I need to reread any sections? What connections have I made? Have I figured out any of the unknown words? How have I adjusted my predictions?	What is the summary of the book? What connections can I make between this text and myself, other texts, or the world? How have I adjusted my predictions? Would I recommend this text to someone else to read?

Literacy: Self-Monitoring Strategies

What do effective readers do?

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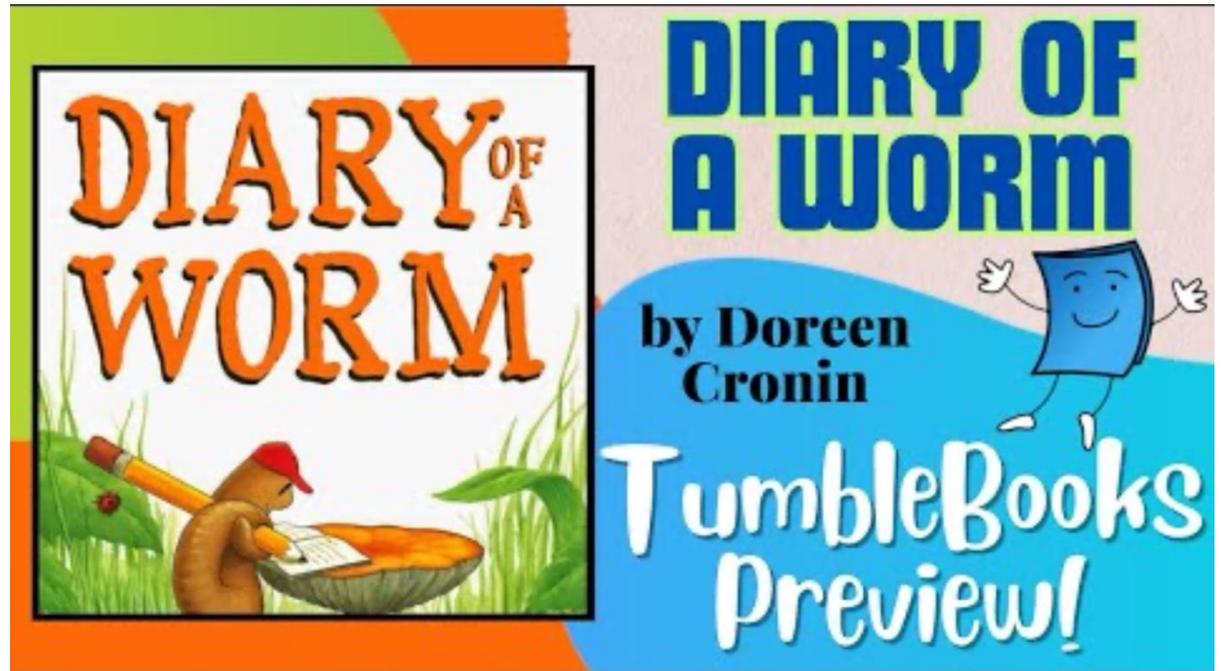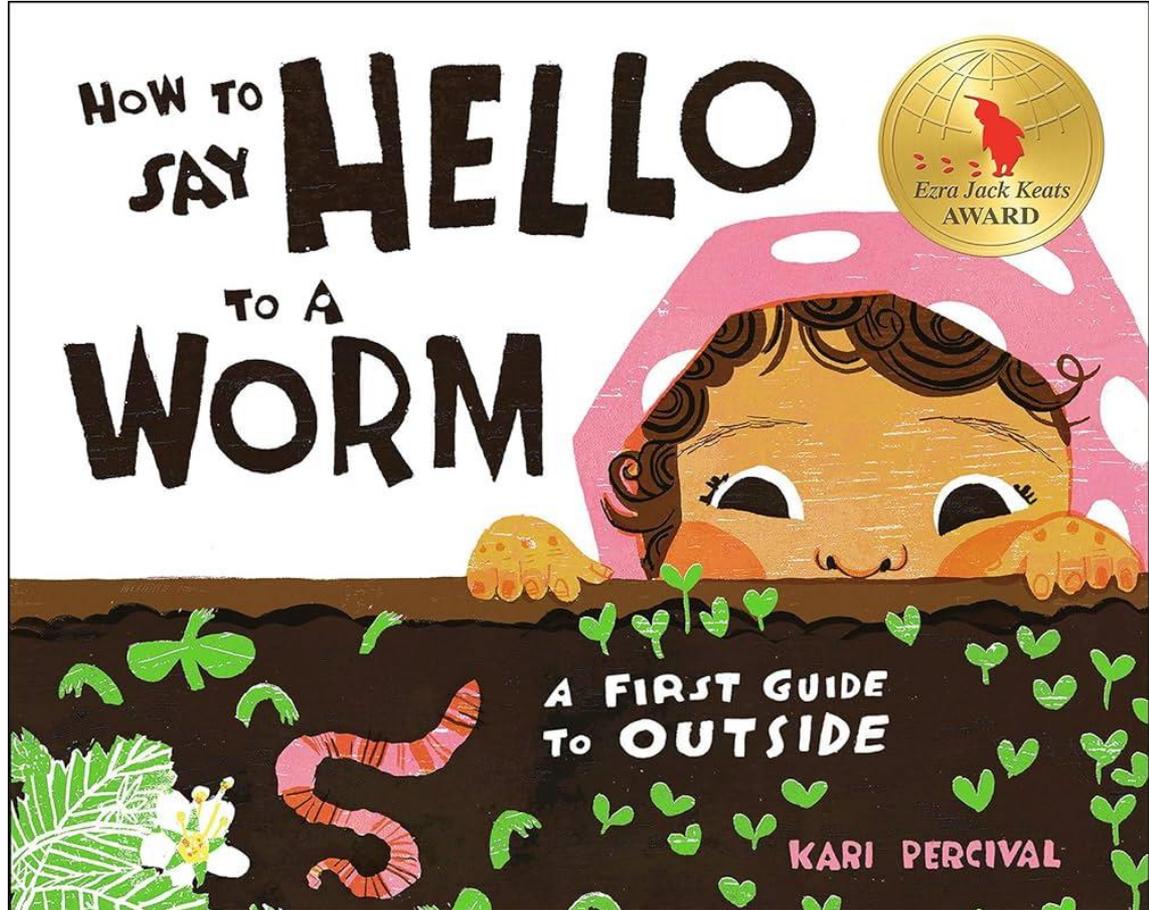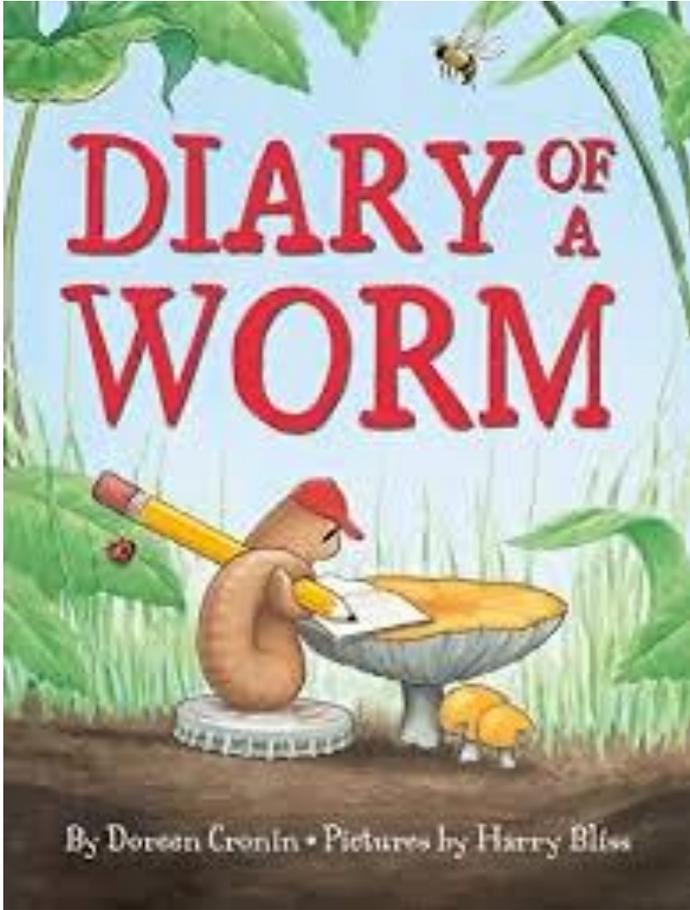| Before Problem Solving	During Problem Solving	After Problem Solving
What do I know about this problem? Are there any words that I do not know? Do I understand what this problem is asking? What is my plan? What do I predict is a reasonable solution? Why am I solving this problem?	Do I understand what is going on thus far? Do I need to reread any parts of the question? What connections have I made? How has my plan changed?	What is the summary of my process? Does the solution make sense? What connections can I make? Have I made any new connections?

Mathematics: Self-Monitoring Strategies

What do effective mathematicians do?

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Math Problems from Read Alouds

Before Problem Solving	During Problem Solving	After Problem Solving
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The Worm Problem

This is a picture of a worm as it grows. The worm's head is blue. The worm's body has red and green segments. There is a picture of the worm on Day 1, Day 2, and Day 3.

Anchor Problem:
Describe how the worm is growing.
What will the worm look like on Day 4?

Extension Problem 1:
What will the worm look like on Day 10?

Extension Problem 2:
What will the worm look like on Day 100?

Extension Problem 3:
What will the worm look like on Day D?

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Before Problem Solving	**During Problem Solving**	**After Problem Solving**
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Before Problem Solving	**During Problem Solving**	**After Problem Solving**
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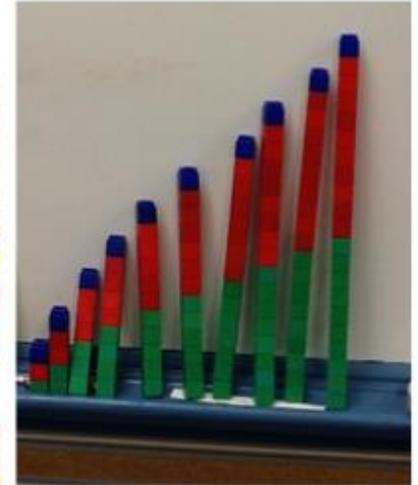What will the worm look like on Day 10?

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24 teenagers are forced to enter the Hunger Games

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The Hunger Games – Anchor Problems

Here are the eligibility rules for the reaping:

> You become eligible for the reaping the day you turn twelve. That year, your name is entered once. At thirteen, twice. And so on and so on until you reach the age of eighteen, the final year of eligibility, when your name goes into the pool seven times. That's true for every citizen in all twelve districts in the entire country of Panem.
>
> But here's the catch. Say you are poor and starving as we were. You can opt to add your name more times in exchange for tesserae. Each tessera is worth a meager year's supply of grain and oil for one person. You may do this for each of your family members as well. So, at the age of twelve, I had my name entered four times. Once, because I had to, and three times for tesserae for grain and oil for myself, Prim, and my mother. In fact, every year I have needed to do this. And the entries are cumulative. So now, at the age of sixteen, my name will be in the reaping twenty times. Gale, who is eighteen and has been either helping or single-handedly feeding a family of five for seven years, will have his name in forty-two times.

Prim is 12 years old and has never entered for tesserae because her older sister, Katniss, always does it for her. How many times is Prim's name entered this year?

What is the probability that Katniss will be selected for the Hunger Games? What is the probability that Prim will be selected? What is Gale's probability?

Effie Trinket's famous line before selecting names is, "And may the odds be *ever* in your favor?" Are the odds in Katniss' favor this year? How will her odds change next year?

Total Entries from District 12	
Boys	Girls
5440	5090

Before Problem Solving	During Problem Solving	After Problem Solving
What do I know about this problem? Are there any words that I do not know? Do I understand what this problem is asking? What is my plan? What do I predict is a reasonable solution? Why am I solving this problem?	Do I understand what is going on thus far? Do I need to reread any parts of the question? What connections have I made? How has my plan changed?	What is the summary of my process? Does the solution make sense? What connections can I make? Have I made any new connections?

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The Hunger Games – Extension Problems

What is the age of most of your students? (Circle one.)
12, 13, 14, 15, 16, 17, 18
This will be your age for the task.

Flip a coin. What did you flip? _____

- *If you flipped heads, your family is not starving and you did not have to submit extra entries in exchange for food resources (or tesserae) each year.*
- *If you flipped tails, your family is starving, and you always had to submit the maximum number of extra entries each year since you were 12 to feed your family (all members in your household, including yourself).*

How many people are in your family? *(Count all members in your household, including yourself.)* _____

Total Entries from Workshop	
Boys	Girls

How many entries would you have in the reaping lottery this year?

Given the grand total number of entries at our workshop and for your gender, what is the probability that your name would be selected?
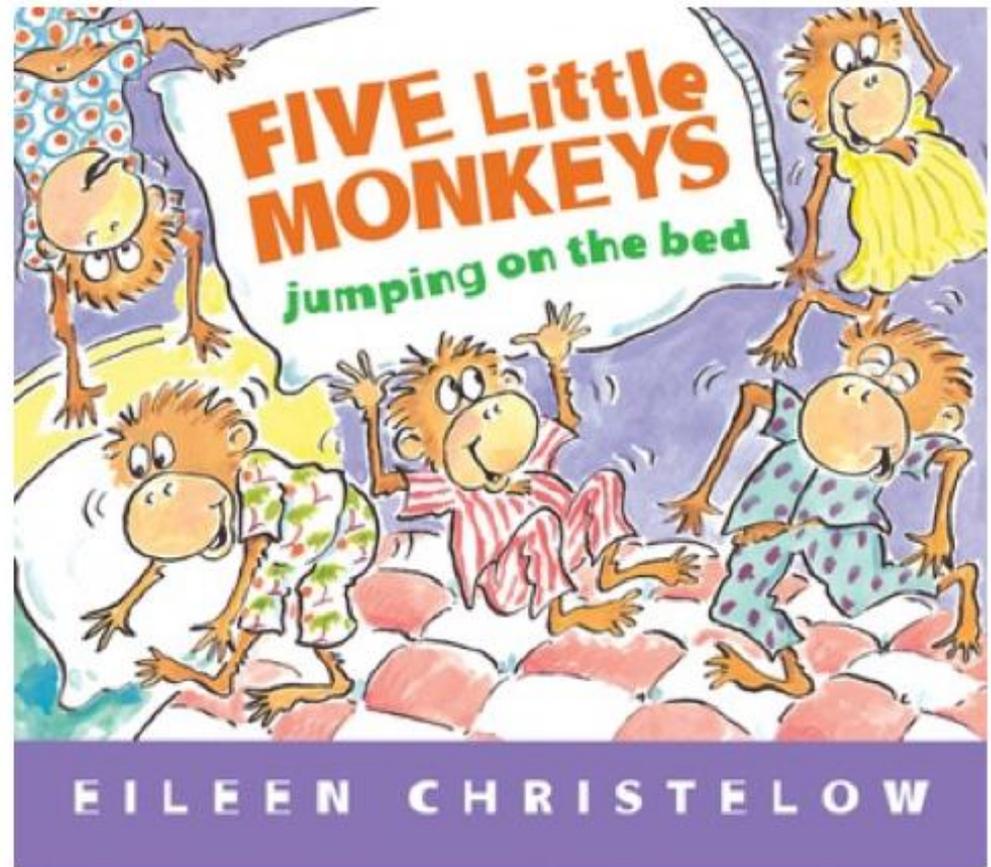
Suppose you were living in District 12. Would your chances (or probability) of being selected for the Hunger Games be the same? Why or why not?

Write an algebraic equation representing a person's total number of entries for a given year. Define all possible variables.
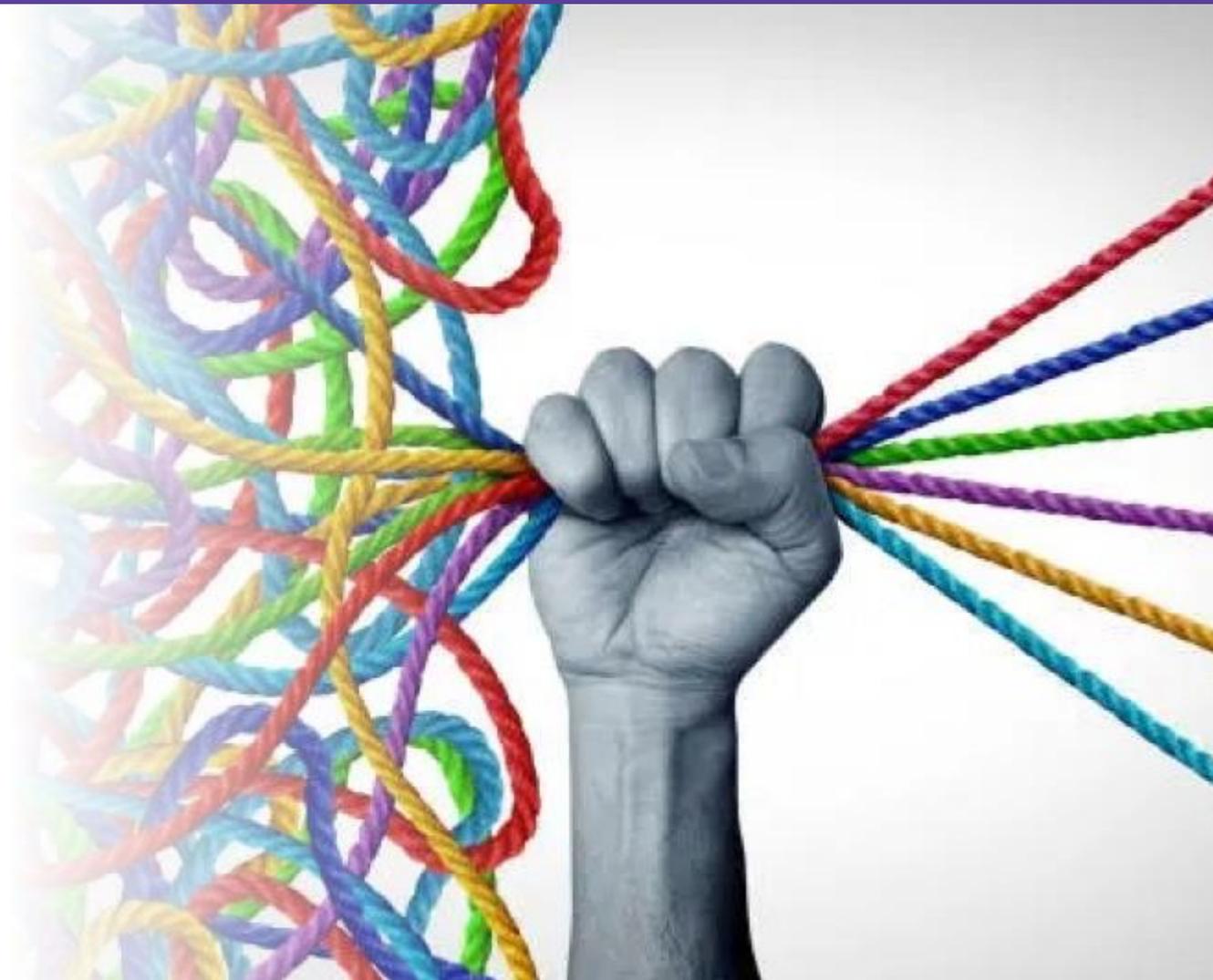
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A jacket has an original price of $80. It is on sale for 25%off. After the discount, a 7% sales tax is applied to the sale price. What is the final cost of the jacket?

FIVE Little MONKEYS jumping on the bed

EILEEN CHRISTELOW

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Agenda

- **Comprehension Strategies**
- **Self-monitoring**
- **Vocabulary**

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TRAUMA RESOURCE
INSTITUTE

Language Comprehension **x** Word Recognition **=** Reading Comprehension

The Simple View of Reading

(Gough & Tunmer, 1986)

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SCARBOROUGH'S **READING ROPE**
(2001)

LANGUAGE COMPREHENSION

BACKGROUND KNOWLEDGE
(facts, concepts, etc.)

VOCABULARY
(breadth, precision, links, etc.)

LANGUAGE STRUCTURE
(syntax, semantics, etc.)

VERBAL REASONING
(inference, metaphor, etc.)

LITERACY KNOWLEDGE
(print concepts, genres, etc.)

WORD RECOGNITION

PHONOLOGICAL AWARENESS
(syllables, phonemes, etc.)

DECODING
(alphabetic principle,
spelling–sound correspondences)

SIGHT RECOGNITION
(of familiar words)

THE MANY
STRANDS
WOVEN INTO
SKILLED
READING

INCREASINGLY STRATEGIC

INCREASINGLY AUTOMATIC

SKILLED READING

Fluent execution
and coordination of
word recognition and
text comprehension.

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Vocabulary

What?

- Knowledge of words and word meanings
- Oral vocabulary
- Reading vocabulary

Why?

- Communication – speaking, reading, writing
- Comprehension of individual word meanings

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Selecting Words

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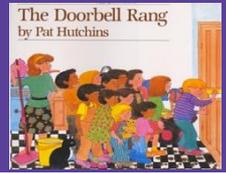# Vocabulary

Tier 3 – Domain Specific, Low Frequency

Tier 2 – Multiple Meanings, High-Frequency

Tier 1 – Words of Everyday Speech

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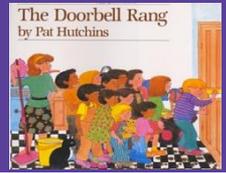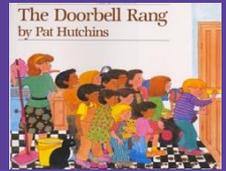Tier 3 – Domain Specific

Tier 2 – High-Frequency

Tier 1 – Words of Everyday Speech

STARE

Tier 3 – Domain Specific

Tier 2 – High-Frequency

Tier 1 – Words of Everyday Speech

PLENTY

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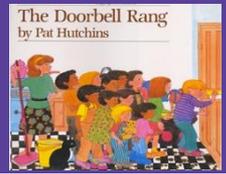
Tier 3 – Domain Specific

Tier 2 – High-Frequency

Tier 1 – Words of Everyday Speech

DOORBELL

Tier 3 – Domain Specific

Tier 2 – High Frequency
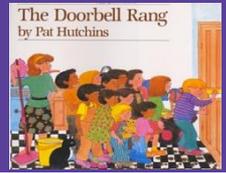
Tier 1 – Words of Everyday Speech

STARVING

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Tier 3 – Domain Specific

Tier 2 – High-Frequency

Tier 1 – Words of Everyday Speech

ENORMOUS

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Tier 3 – Domain Specific

Tier 2 – High-Frequency

Tier 1 – Words of Everyday Speech

COUSINS

Semantic Networks

Taxonomically related words or words organized into hierarchical categories.

Support the brain's desire to categorize and to notice the relationship between big ideas and details.

Foster a conceptual organization of words so that learners can make inferences.

As new words are encountered, learners are more likely to make sense of related words and "hook" the new words to familiar categories for easy retrieval .

(Hadley et al., 2018)

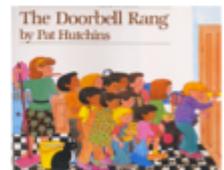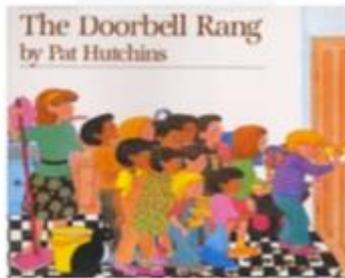hidden**sparks**

Semantic Network for Fair Shares

Fair share

Equal

Each

Divide between

Split among

Divvy up

The Doorbell Rang
by Pat Hutchins

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Extension Problems:
Everyone has to have an equal amount of cookies.
How many cookies does each kid receive?

• **Ma made a 3 cookies to share.**   **There were two kids.**
• **Ma made a 5 cookies to share.**   **There were four kids.**
• **Ma made a dozen cookies to share.**   **There were eight kids.**

Anchor Problem:

Ma made a dozen cookies to share. There were six kids.
Everyone has to have an equal amount of cookies.
How many cookies does each kid receive?
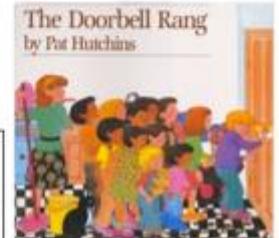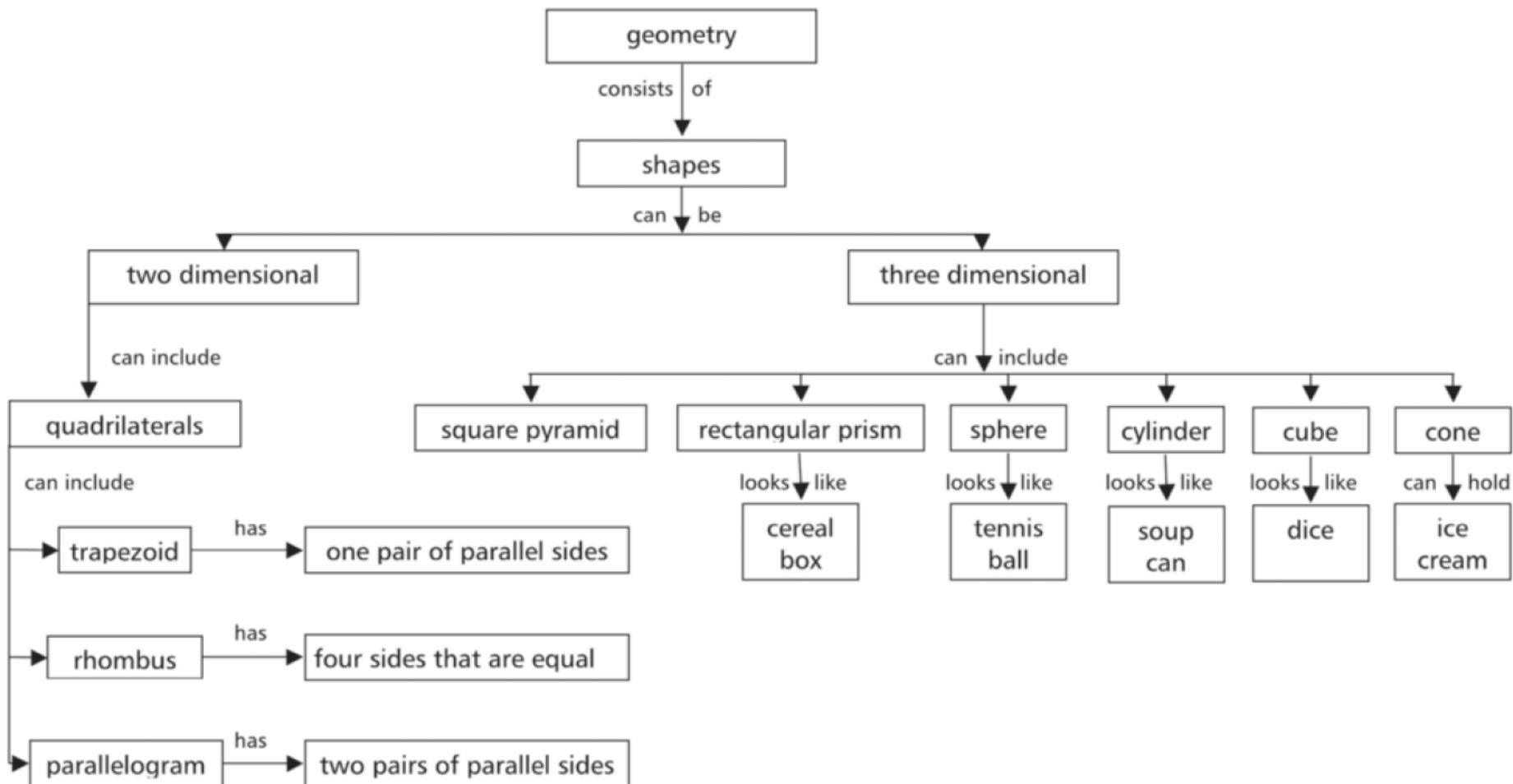
What vocabulary should I directly teach?

- Look at **standards** for an upcoming math unit.
- Create <u>one concept</u>'s Semantic Network:
  - **List-Group-Label**
  - **Mind Map**
  - **Semantic Gradient**
- Use math language AND daily language

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rhythmic

color

size

shape

position/ arrangement

other attributes

design

core increases or decreases in a predictable way

Growing and Shrinking Patterns

can be reprsented physically and visually using

Patterns

Repeating Patterns

core repeats in a predictable way

Arithmetic Sequences

Geometric Sequences

same amount is added to each term

same amount is multiplied by each term

can be represented symbolically using

Numeric Patterns

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Concept Map of Geometric Shapes

geometry

consists of

shapes

can be

two dimensional | three dimensional

can include (two dimensional) → quadrilaterals

can include (quadrilaterals):
- trapezoid — has → one pair of parallel sides
- rhombus — has → four sides that are equal
- parallelogram — has → two pairs of parallel sides

can include (three dimensional):
- square pyramid
- rectangular prism — looks like → cereal box
- sphere — looks like → tennis ball
- cylinder — looks like → soup can
- cube — looks like → dice
- cone — can hold → ice cream

Gallenstein, March 2011, nctm.org

To show connections, students placed pictures and objects on top of the concept cards, next to them, and even between the cards and the three-dimensional shapes.

SARAH COLLINS

Gallenstein, March 2011, nctm.org

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Square Pools

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Square Pools

You have been asked to design square pools for Albemarle County. They have requested that each pool has a square area in the center with blue tiles. Around each pool is a border of white tiles.

Here are the designs of the first three square pools:
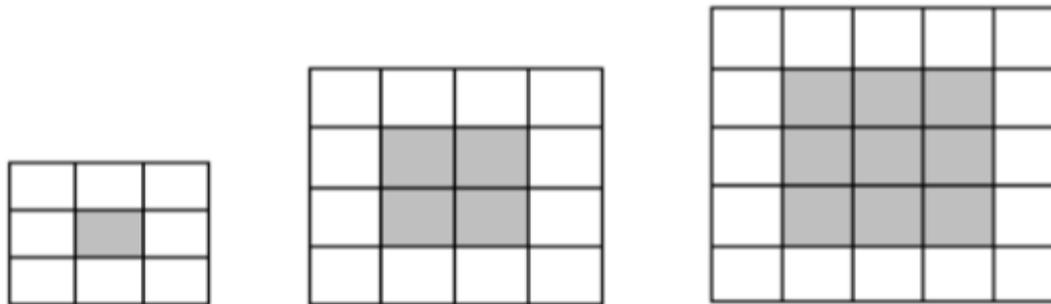
If the pattern continues, how many blue tiles and how many white tiles are needed to build the 10th pool? the 100th pool? the nth pool?

How are the numbers of blue and white tiles related? How can you represent this relationship?

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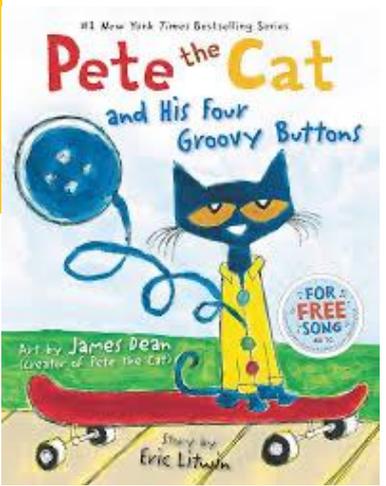
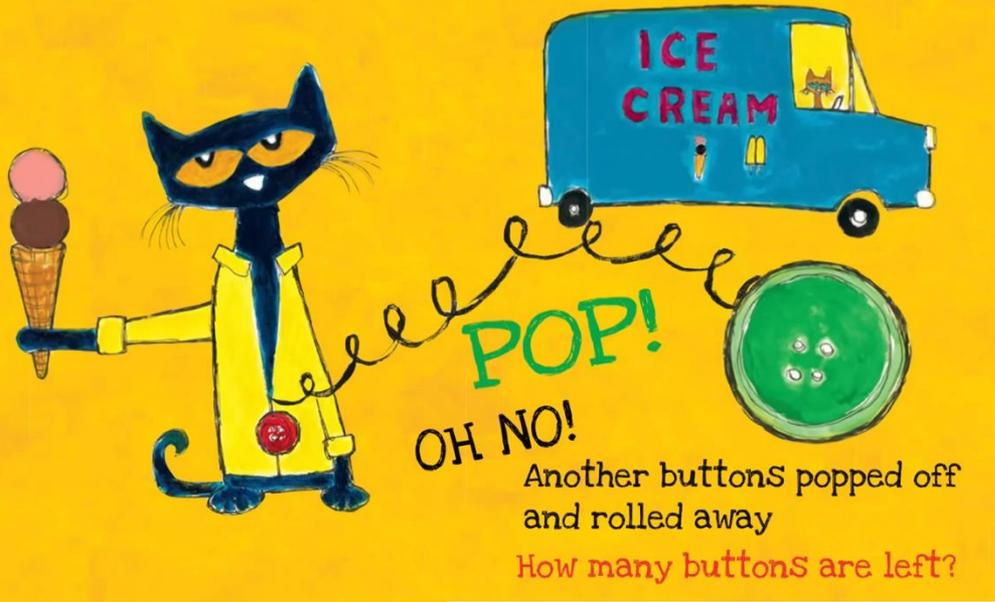Here are the designs of the first three square pools:

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ICE CREAM

POP!

OH NO!
Another buttons popped off
and rolled away
How many buttons are left?
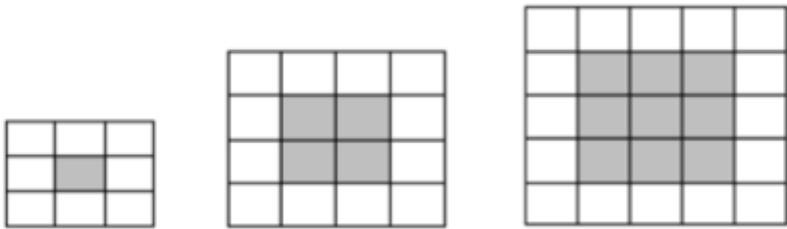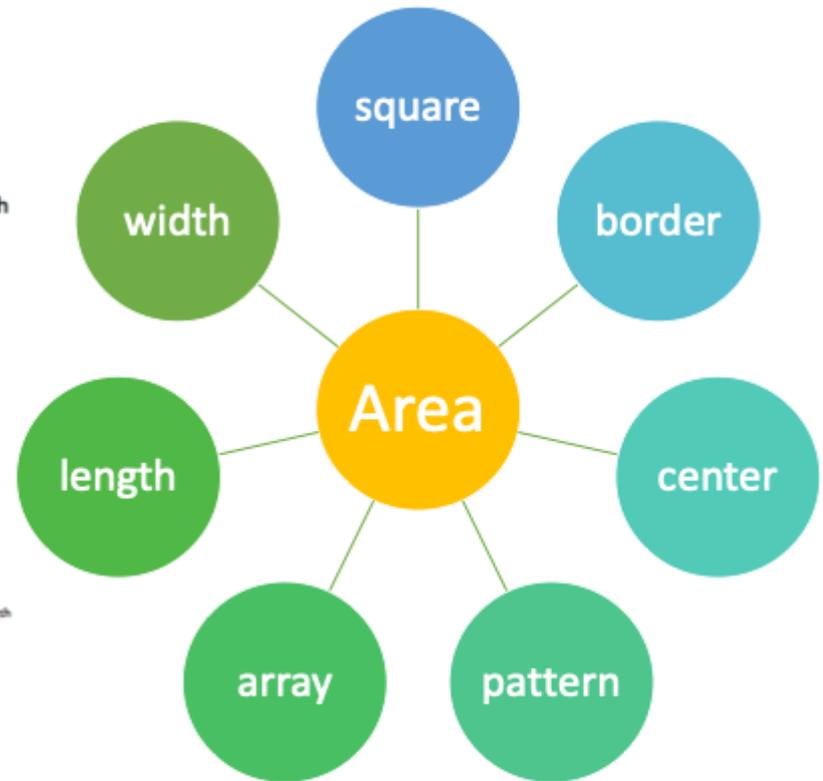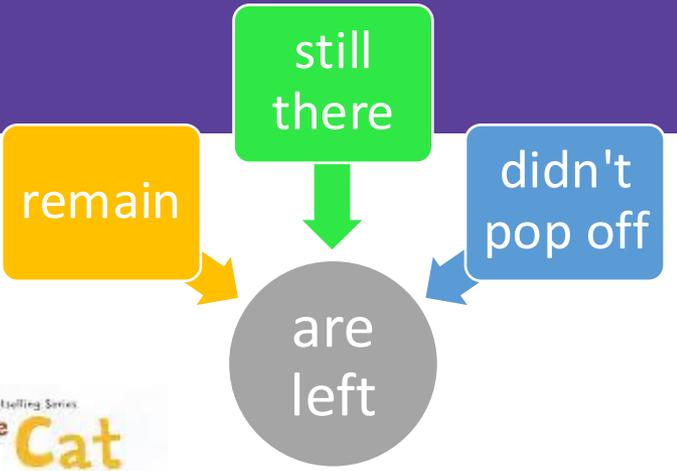
ONE
1
2-1=1

Did Pete cry?
Goodness, no!
Buttons come and buttons go.

He kept on sining his song:
"My buttons, my buttons,
my one groovy buttons.
"My buttons, my buttons
my one groovy buttons."

#1 New York Times Bestselling Series
Pete the Cat
and His Four
Groovy Buttons

FOR FREE SONG

Art by James Dean
(Creator of Pete the Cat)

Story by
Eric Litwin

still there

remain

didn't pop off

are left

Let's count!

How many?

How much?

What number?

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We are learning ways to **leverage literacy strategies** to also develop learners' conceptual understanding and procedural knowledge in **mathematics** so that we can create a cohesive experience of teachers and learners.

We'll know we've learned this when we can:

- **Reenvision** the PreK-8 mathematics curriculum through a literacy lens,
- **Identify** ways literacy practices can deepen mathematical understanding and create cohesion and continuity for learners, and
- **Walk away with** instructional strategies and activities that you can immediately implement in your classroom.

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@katerithunder
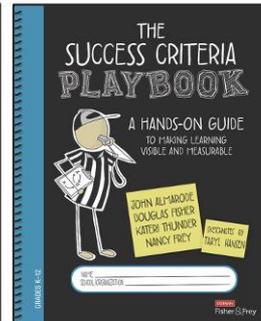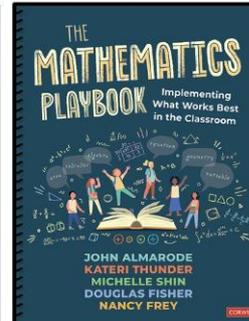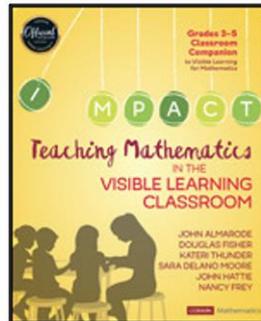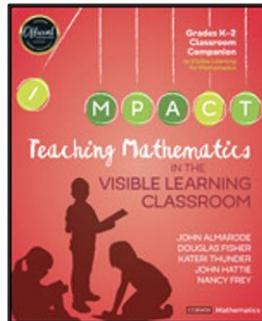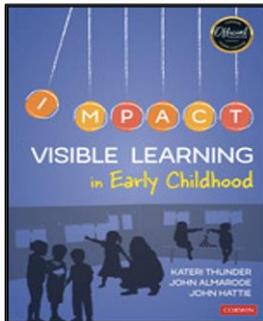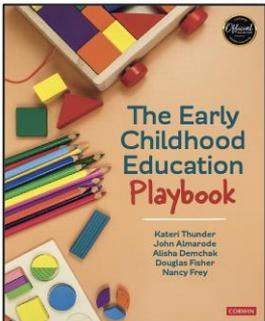
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Wednesday, February 25, 2026 For Teachers	**Strengthening Kriah – Building a Lasting Foundation in Hebrew Reading** Presented by Leah Zoimen
Wednesday, March 11, 2026 For Teachers	**Improving Student Engagement with Havruta Routines in the General and Judaic Studies Classrooms** Presented by Allison Cook and Dr. Orit Kent

If you are interested in bringing Hidden Sparks

to your school or city, please contact us:
212-767-7707 or rabbihus@hiddensparks.org

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Contact Presenter:
Sarah Gord0n

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