Empower Students with Routines Along the Route of Learning

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Welcome & Introductions

- Introduce yourself:
  - Name
  - Role
  - Grade level
- What are you hoping to learn today?


Getting Connected

GoSoapBox Event Code:
543-469-165

- app.gosoapbox.com

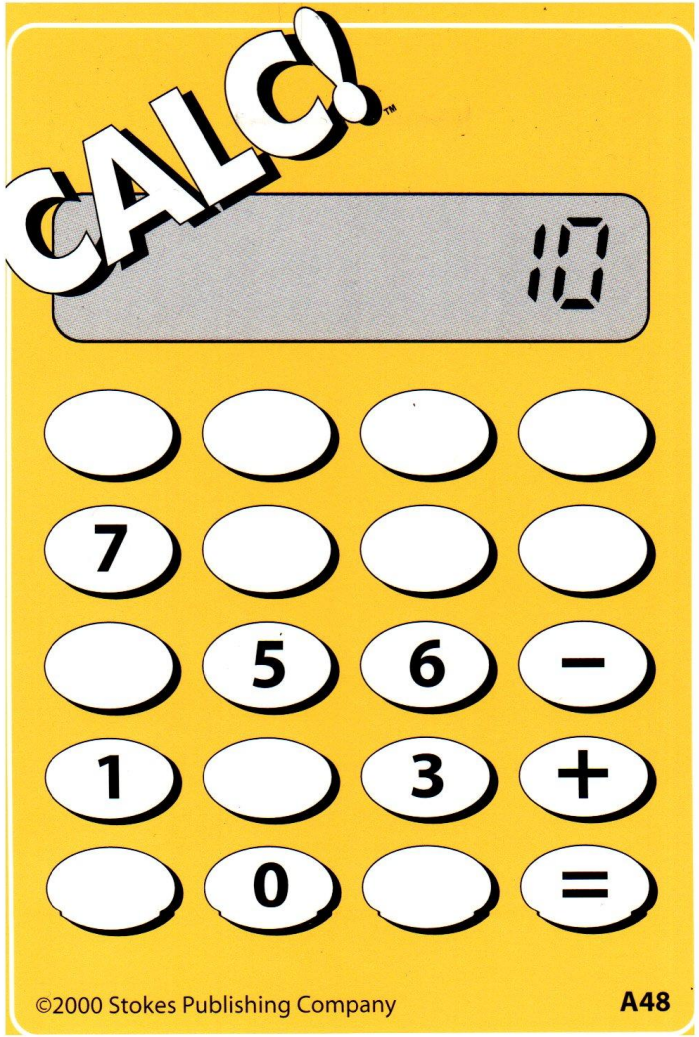
MY MATH TALK	Record a (✓) when you complete any of the talk moves.	Partner Talk	Asked a Question	Answered a Question	Asked for something to be repeated	Explained your thinking during small/whole class	Repeated someone else's thinking	Added on to someone else's thinking	Agreed/ disagreed with someone else's thinking
Week of: Oct 2-6		Samantha	Samantha	Samantha		Great			
Week of: Oct 9-13		Samantha	Samantha	Samantha		Great		Keep Trying	
Week of: Oct 16-20		G. R	G. R	G. R		G. R	Keep Trying		
Week of: Oct 23-27									

MY MATH TALK	Record a (✓) when you complete any of the talk moves.	Partner Talk	Asked a Question	Answered a Question	Asked for something to be repeated	Explained your thinking during small/whole class	Repeated someone else's thinking	Added on to someone else's thinking	Agreed/ disagreed with someone else's thinking
Week of: Oct 2-6		Justine V.	P.S	Justine V.					
Week of: Oct 9-13		Jaycelen	Justine V.	Justine V.					
Week of: Oct 16-20		EP	Jessie	EP					
Week of: Oct 23-27									

CAL

Rules

- Mu (only once)
- Ca to create a 2 mber
- Mu given
- Fin



Why Routines?

- Develop fluency & deepen understanding
- Create interest in the future study of math
- Communicate using mathematical models
- Develop logical thinking
- Apply math to real situations

Routines that Support . . .

1. Number Line Concepts & Number Sense
2. Developing Understanding Over Time
3. Patterns, Patterns, Everywhere!
4. Questioning & Justifying through Writing

How I Use Routines

- Daily
- 7 - 10 minutes
- Cycle of common routines
- Individual work time
- Class discussion

1

Number Line Concepts & Number Sense

Exploring number concepts through number lines

Number Line Concepts & Number Sense

- Understand relationships between numbers
- Develop fluency (efficiency, accuracy, & flexibility)
  - Efficiency - can use strategy easily
  - Accuracy - knows number facts and relationships
  - Flexibility - knows multiple strategies

Number Line

- Explore numbers in multiple forms: fractions, decimals, exponents, etc.
- Place the numbers on a number line correctly
- Variations:
  - Create their own number(s) & add to a class number line
  - Give students an incorrect number line & have them correct the mistakes

Number of the Day

- Choose a number of the day
- Students use that number to do specific tasks such as:
  - Create an +, -, x, ÷ problem with the # as the result
  - Put # on a number line
  - Create a visual representation
  - Find the square root
  - Graph a point with #
  - Create a pattern with # as its growth
  -

Let's Try It!

Number of the Day is...

1

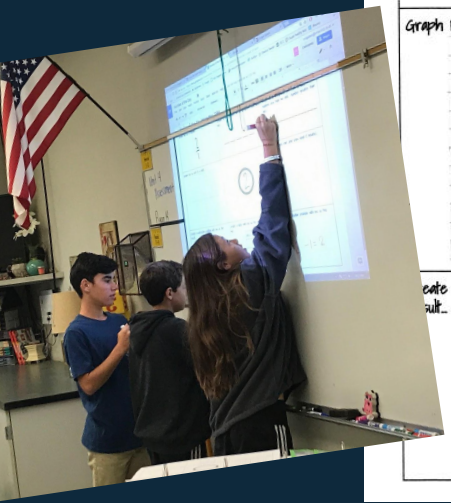
***Can use Desmos, Padlet, or GoSoapBox

Let's Try It!

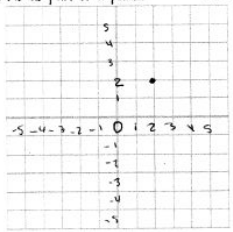
Number Lines

- Choose 2 different numbers
  (in different forms - ex: fraction,decimal, mixed number)
- Write each number on a Post-It-Note
- Add your Post-Its to the class number line

Student Work



Number of the Day Interesting Tidbit: I was (2) years old when I broke my

Write me as a fraction. $\frac{2}{1}$	Create a pattern with me as its growth (and label me). 0, 2, 4, 6, 8 +2 +2 +2 +2	Write me on a number line (a number less than me and a number more than me). 0 1 (2) 3 4 5 6 7 8 9 10
Graph me as part of a point. (2,2) 		Find my square root (and show what it means). $\sqrt{2} \approx 1.41$
Create a subtraction problem with me as the result. 28-26=2	Create a table with me as the growth (and label me). in(x) | out(y) 0 | 2 1 | 4 2 | 6 +2 growth +2	Create a multiplication problem with me as the result. $1.41 \cdot 1.41 \approx 2$

2

Developing Understanding Over Time

Desmos Exit Tickets and SBAC Target Cards

Developing Understanding Over Time

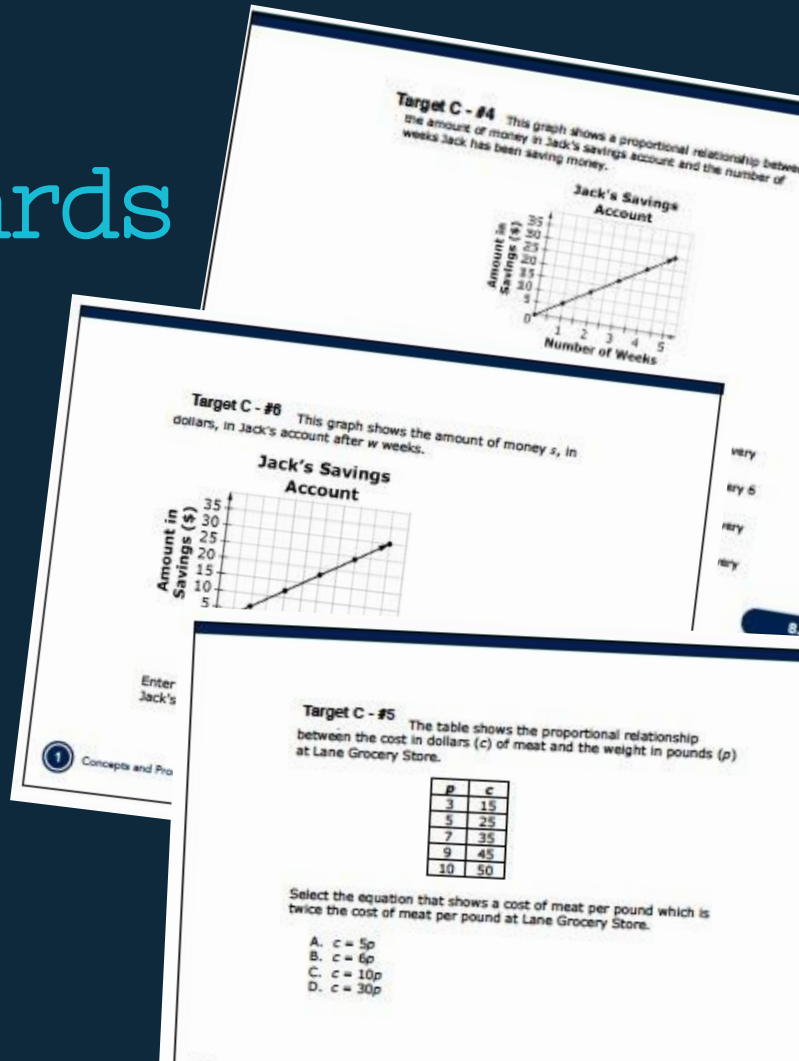
- Desmos Exit Tickets
- SBAC Target Cards

Desmos Exit Tickets

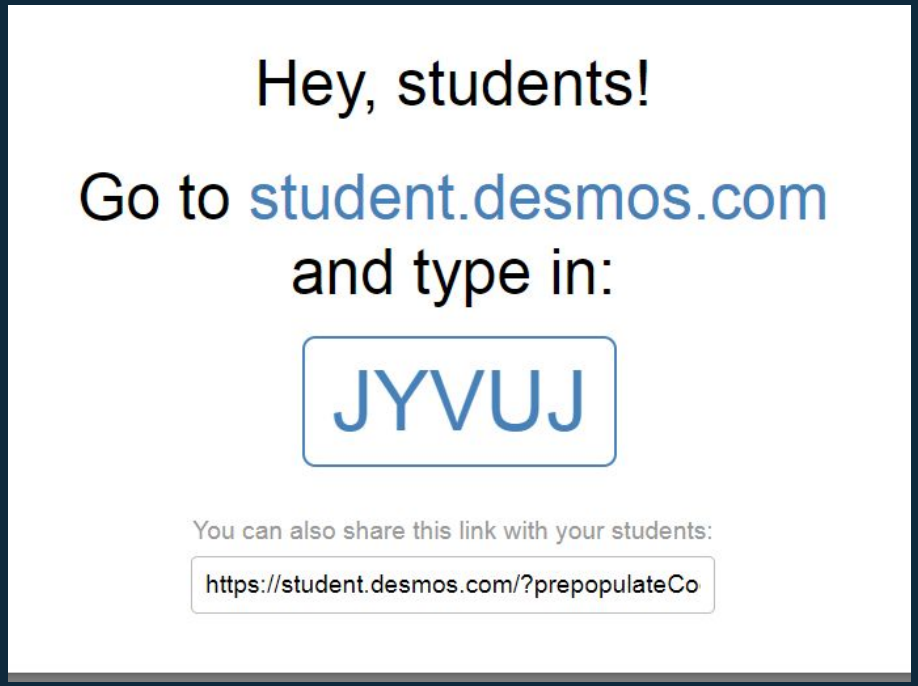
- Given to students at the end of a lesson or 2
- Short assessment (1-4 problems)
- Reviewed the next class if needed

SBAC Target Cards

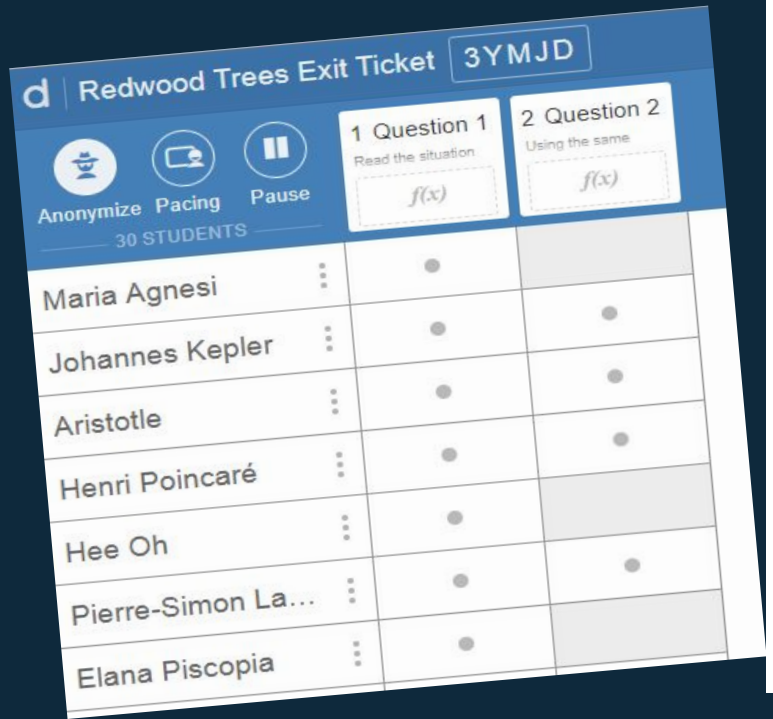
- Students grouped by area of greatest need
- Groups work together on 1 card at a time



Let's Try It!


Hey, students!
Go to student.desmos.com
and type in:
JYVUJ
You can also share this link with your students:
https://student.desmos.com/?prepopulateCo

Student Work



Question 1

Read the situation below and state the growth of the tree that occurs every year.

Mark's tree is 16 feet tall five years after he planted it.

Expression	Students
3.2	Hee Oh, Elana Piscopia, Gotthold Eisenstein, Mary Ross, Frances Kirwan, Mary Cartwright, John Urschel, Augustin Cauchy, Ingrid Daubechies
$x = 3.2$	Johannes Kepler, Sun-Yung Alice Chang
$3.2feet$	Shing-Tung Yau, Niels Abel
$3ft$	Peter Dirichlet, Hermann Minkowski
$3.2eachyear$	Maria Agnesi
$Youdonothaveenoughinf$	Aristotle
$3Feet$	Henri Poincaré

3

Patterns, Patterns, Everywhere!

Supporting students in looking for, exploring, and describing patterns

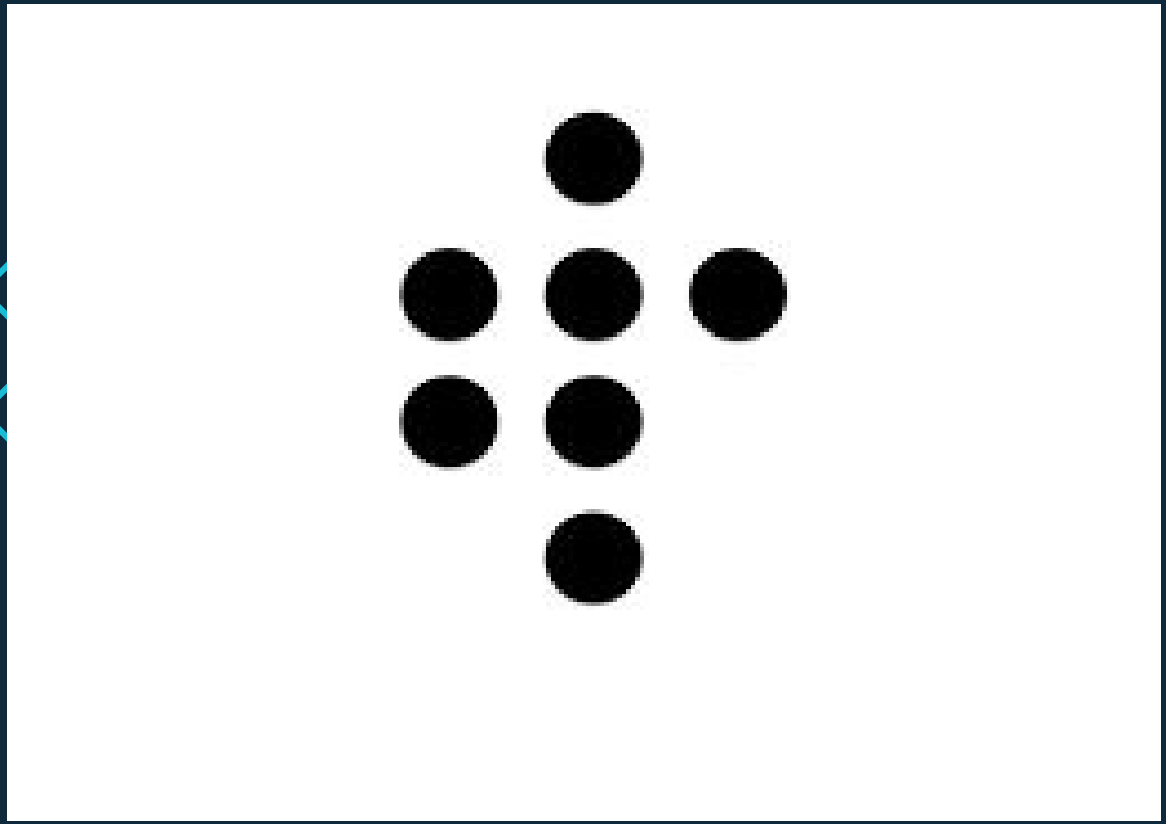
Patterns, Patterns, Everywhere!

- Visual Patterns
- Dot Cards

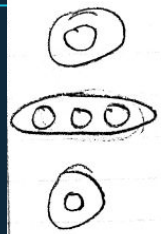
Let's Try Visual Patterns!

- How many candy corns are in step 1?
- How is the pattern growing?
- How many candy corns does the 6th, 7th, 15th figure have?
- Can you generalize the pattern to figure out the number in any figure of the pattern?

Pattern #146, from Andrew Stadel, Candy corns in step 43 = 946



Student



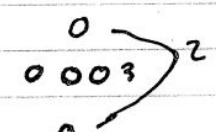
Total : 5. Saw 2 dots

Total : 7

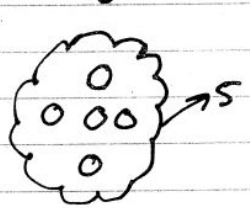
Saw a 2 boxes and

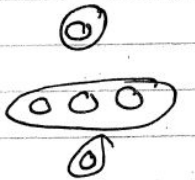
Total : 12

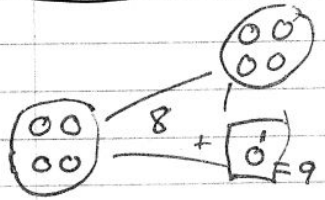
I saw a big box.



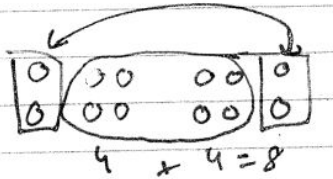
I see 3 then 2







I see 4, 4, and 1



2+2=4+8=12

4 + 4 = 8

I see 4,4,4

4

Questioning & Justifying through Writing

Developing students art of questioning and justifying skills

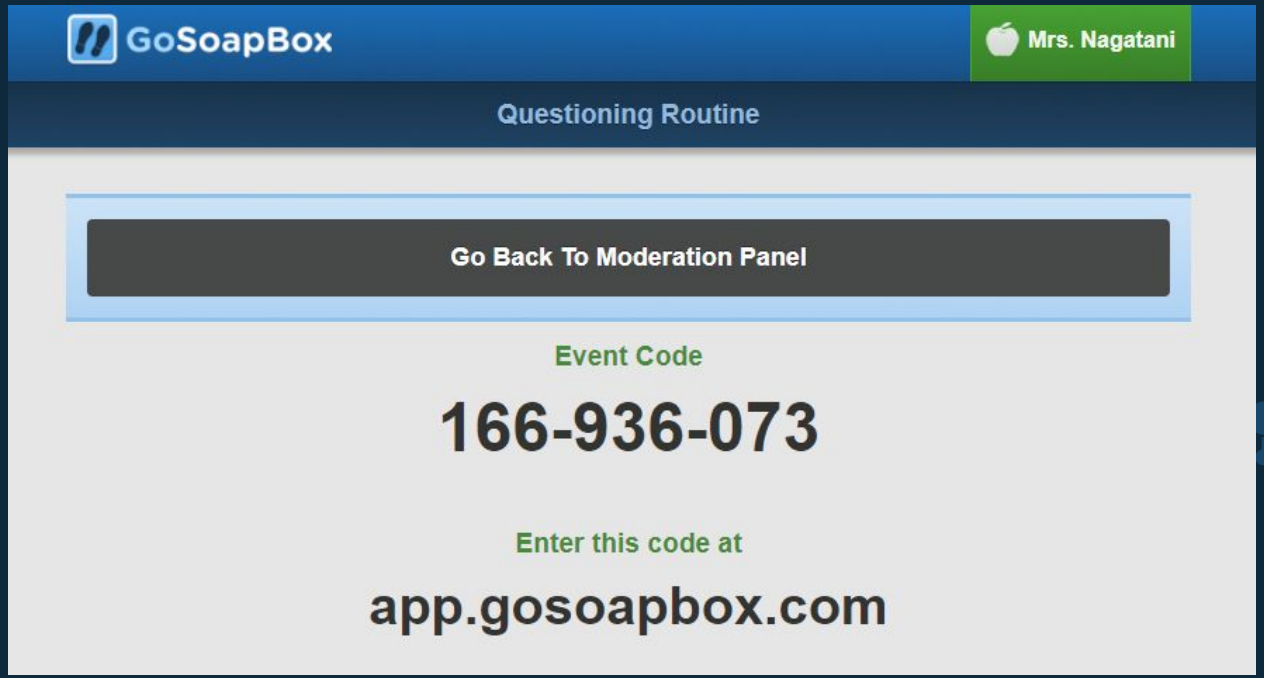
Questioning & Justifying through Writing

Let's Try It!

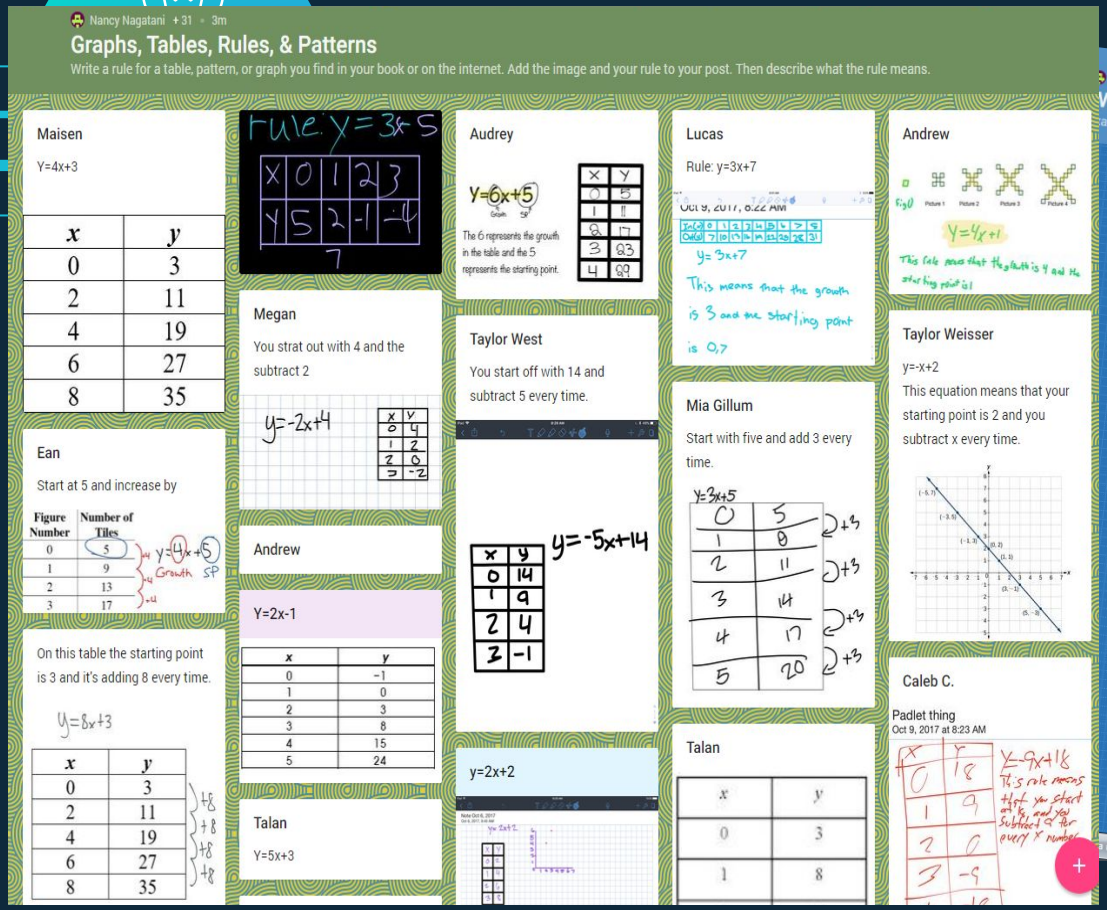
- Padlet - What is your favorite routine?

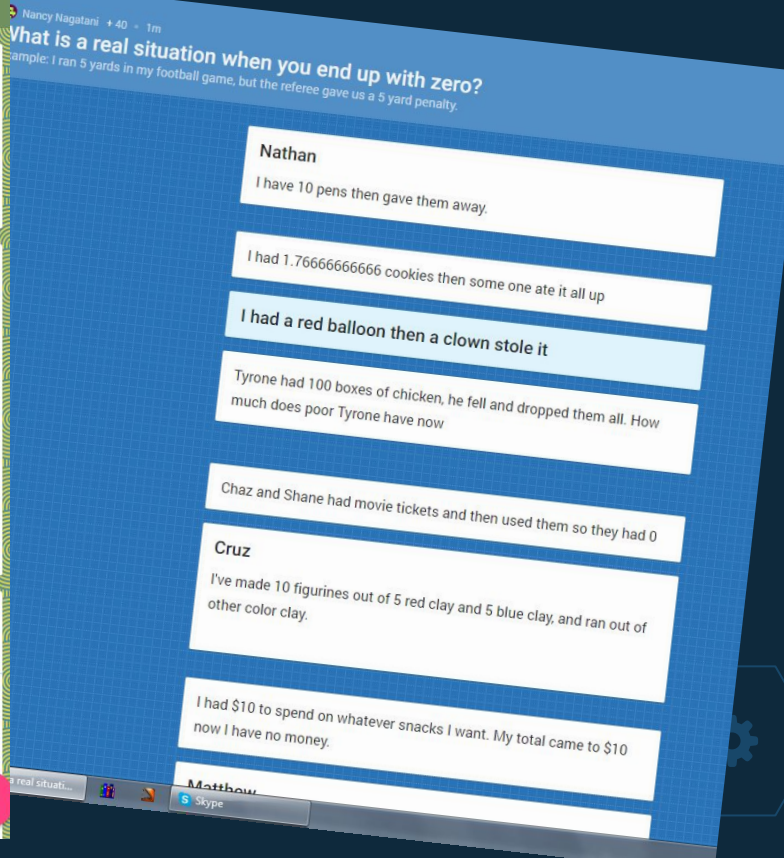
  http://bit.ly/padletroutine

Let's Try It!


GoSoapBox
Mrs. Nagatani
Questioning Routine
Go Back To Moderation Panel
Event Code
166-936-073
Enter this code at
app.gosoapbox.com

Student Work





Reflection & Wrap Up

Discuss, Share, and Next Steps

Routines that Support . . .

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Developing Mathematical Language

- Students share their ideas and their thinking using the language they have
- Focus on the math, not just the vocabulary
- Connect with everyday language
- Model proper use of vocabulary and clarify misuse

Looking for Multiple Solutions

- Interact with numbers daily
- Focus on exploration and number sense, not on memorization and algorithms
- Look for connections with multiple representations

Reinforcing Growth Mindset Messages

- Mistakes and challenges grow your brain
- Speed is not an indicator of knowledge
- Visualize and make connections
- Everyone can learn math at high levels
- Questions & discussions deepen your mathematical understanding

Routines as a Formative Assessment Tool

- Gauge student understanding and use this understanding to guide routine planning
- Uncover misunderstandings and provide opportunities to build understanding
- Introduce concepts in a fun and engaging way, connect these experiences to lessons

Discuss

What ideas do you have for using routines to increase student access to and engagement with mathematics?

Next Steps

- Identify 1-2 next steps.
- Write them down.
- Share them with a partner.

Thank you!

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