McAlpine Math Night

Grades PreK - 2

School Improvement Plan

E1.06: The school regularly communicates with parents/guardians about its expectations of them and the importance of the curriculum of the home (what parents can do at home to support their children's learning).

If you would like to be a member of the School Improvement Team, please reach out to Ms. Modine.

Math Mindset

Math is All Around Us

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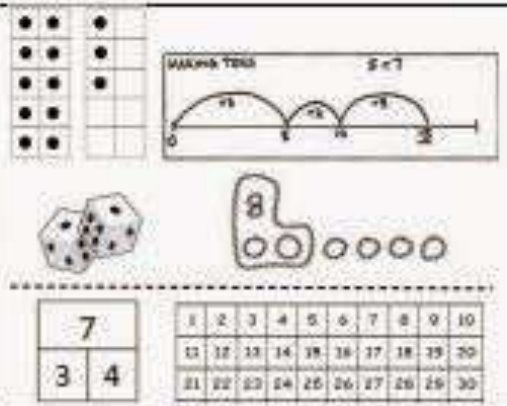
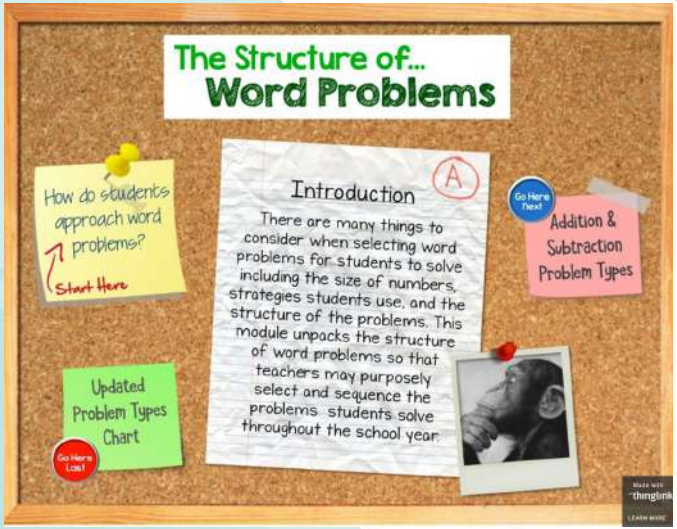
CONCEPTUAL UNDERSTANDING	PROCEDURAL UNDERSTANDING
The **knowledge** of math facts and properties that are **recognized** as being related in some way	The set of **rules** and **algorithms** used to solve math problems
• Use of Models to show understanding • Use of images to demonstrate perceptual knowledge • Explanation of how to solve	• Step-by-step solving • Ordered solving • Habitual understanding • Algorithm using learned steps

C-P-A

Concrete	Representational	Abstract
Students manipulate hands-on, concrete materials	Students draw and observe diagrams, or watch the teacher touching and moving hands-on materials	Numbers and mathematical symbols
		

Problem Solving K ➡ 1 ➡ 2

NC Video (link)



- Problem Type Chart
- 1st Grader vs Adult Thinking
- Explanations and Examples of Problem Types

Kindergarten

Within 10, using objects and drawings

Kindergarten Problem Types		
Action	**Add To- Result Unknown** Start - Change - Result Which is unknown?	Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now? 2 + 3 = ?
	Take From- Result Unknown	Five apples were on the table. I ate two apples. How many apples are on the table now? 5 – 2 = ?
No Action	**Put Together/Take Apart- Total Unknown** Part - Part - Whole Which is unknown?	Three red apples and two green apples are on the table. How many apples are on the table? 3 + 2 = ?
	Put Together/Take Apart- Both Addends Unknown	Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? 5 = 0 + 5, 5 = 5 + 0 5 = 1 + 4, 5 = 4 + 1 5 = 2 + 3, 5 = 3 + 2

1st - Within 20, using objects, drawings, equations and symbols

		Result Unknown	Change Unknown
Action	Add To	Two birds sat in a tree. Three more birds fly to the tree. How many birds are in the tree now? 2 + 3 = ? K	Two birds sat in a tree. Some more birds flew there. Then there were five birds in the tree. How many birds flew over to the first two? 2 + ? = 5 1
	Take From	Five birds were in a tree. Two birds flew away. How many birds are in the tree now? 5 – 2 = ? K	Five birds were in a tree. Some flew away. Then there were three birds in the tree. How many birds flew away? 5 - ? = 3 1

Start - Change - Result
Which is unknown?

		Total Unknown	Addend Unknown	Both Addends Unknown
No Action	Put Together/ Take Apart	Three red birds and two blue birds are in a tree. How many birds are in the tree? 3 + 2 = ? K	Five birds are in a tree. Three are red and the rest are blue. How many birds are blue? 3 + ? 5 5 – 3 = ? 1	Five birds are in a tree. They could either be blue birds or red birds. How many birds could be red and how many could be blue? 5 = 0 + 5 5 = 5 + 0 5 = 1 + 4 5 = 4 + 1 5 = 2 + 3 5 = 3 + 2 K

Part - Part - Whole
Which is unknown?

2nd - Within 100, using objects, drawings, equations and symbols

		Result Unknown	Change Unknown	Start Unknown
Action	Add To	Two birds sat in a tree. Three more birds fly to the tree. How many birds are in the tree now? 2 + 3 = ? K	Two birds sat in the tree. Some more birds flew there. Then there were five birds in the tree. How many birds flew over to the first two? 2 + ? = 5 1	In the morning, some birds were sitting in a tree. At lunch time, three more birds flew there. Then there were five birds. How many birds were in the tree in the morning? ? + 3 = 5 2
	Take From	Five birds were in a tree. Two birds flew away. How many birds are in the tree now? 5 - 2 = ? K	Five birds were in a tree. Some flew away. Then there were three birds in the tree. How many birds flew away? 5 - ? = 3 1	In the morning, some birds were in a tree. At lunch time, two birds flew away. Then there were three birds left. How many birds were in the tree in the morning? ? - 2 = 3 2

		Total Unknown	Addend Unknown	Both Addends Unknown
No Action	Put Together/ Take Apart	Three red birds and two blue birds are in a tree. How many birds are in the tree? 3 + 2 = ? K	Five birds are in a tree. Three are red and the rest are blue. How many birds are blue? 3 + ? = 5 5 - 3 = ? 1	Five birds are in a tree. They could either be blue birds or red birds. How many birds could be red and how could be blue? 5 = 0 + 5 5 = 5 + 0 5 = 1 + 4 5 = 4 + 1 5 = 2 + 3 5 = 3 + 2 K

	Difference Unknown	Bigger Unknown	Smaller Unknown
Compare	***"How many more?" version:*** Lara has two stickers. Jade has five stickers. How many more stickers does Jade have than Lara? ***"How many less?" version:*** Lara has two stickers. Jade has five stickers. How many fewer stickers does Lara have than Jade? 2 + ? = 5 5 - 2 = ? 1	***Version with "more":*** Jade has three more stickers than Lara. Lara has two stickers. How many stickers does Jade have? ***Version with "less":*** Lara has three fewer stickers than Jade. Lara has two stickers. How many stickers does Jade have? 2 + 3 = ? 3 + 2 = ? 2	***Version with "more":*** Jade has three more stickers than Lara. Jade has five stickers. How many stickers does Lara have? ***Version with "fewer":*** Lara has three fewer stickers than Jade. Jade has five stickers. How many stickers does Lara have? 5 - 3 = ? 2

2nd - Within 100, using objects, drawings, equations and symbols

Add To		
Result Unknown:	*Change* Unknown:	*Start* Unknown:
There are 29 students on the playground. Then 18 more students showed up. *How many students are there now?*	There are 29 students on the playground. *Some more students show up*. There are now 47 students. How many students came?	*There are some students on the playground*. Then 18 more students came. There are now 47students. How many students were on the playground at the beginning?
29 + 18 = □	29 + ☼ = 47	□ + 18 = 47
K	1	2

2nd - Within 1000, using objects, drawings, equations and symbols

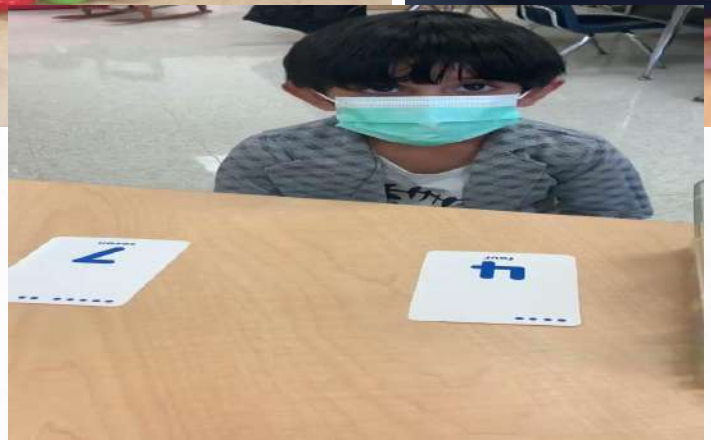
One-step word problems use one operation. Two-step word problems use two operations which may include the same operation or opposite operations.

One Step Word Problem *One Operation*	**Two-Step Word Problem** *Two Operations, Same*	**Two-Step Word Problem** *Two Operations, Opposite*
There are 15 stickers on the page. Cindy put some more stickers on the page. There are now 22 stickers on the page. How many stickers did Cindy put on the page? $15 + \square = 22$ $22 - 15 = \square$	There are 9 blue marbles and 6 red marbles in the bag. Maria put in 8 more marbles. How many marbles are in the bag now? $9 + 6 + 8 = \square$	There are 9 peas on the plate. Carlos ate 5 peas. Mother put 7 more peas on the plate. How many peas are on the plate now? $9 - 5 + 7 = \square$

Pre-K Thinking

- Rote Counting (1-10)
- Identifying numbers
- One to One Correspondence
- Creating Simple and Complex Patterns
- Comparing numbers (more/less)
- Sorting, Classifying, Counting
- Quantifying

Pre-K Thinking

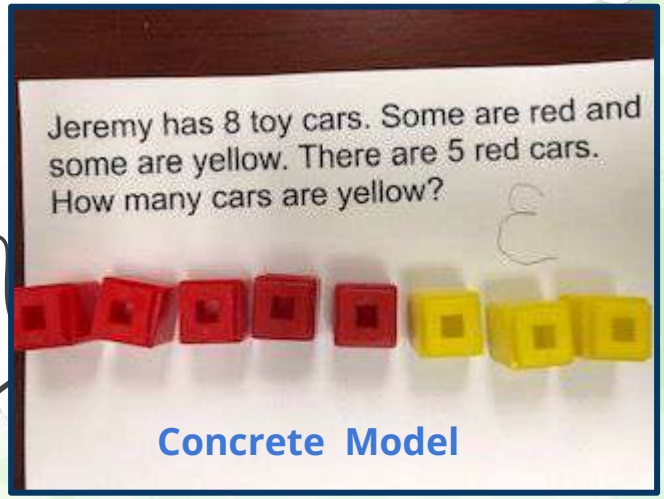


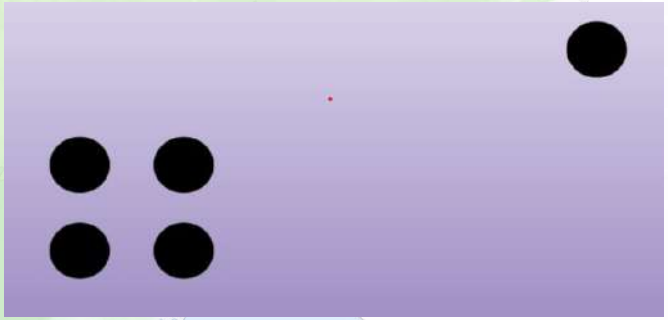
Kindergarten Thinking

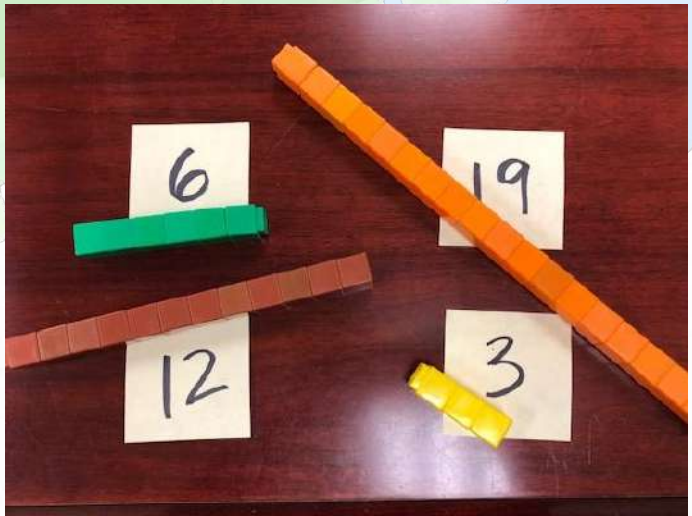
Current work of Kindergarten mainly assessed orally.

- Rote Counting to 100 - 1's, 10's, starting at any number
- Comparing digits/numbers
- Classifying, sorting, counting
- Counting in different arrangements - line, array, circle, scattered
- Comparing with greater than, less than or equal to
- Naming and describing attributes of shapes - 2D and 3D
- Using positional words to describe relationships of objects

Kindergarten Thinking

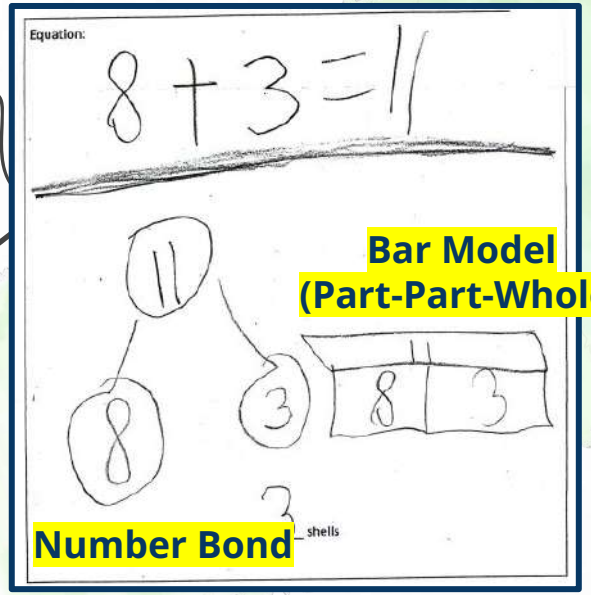






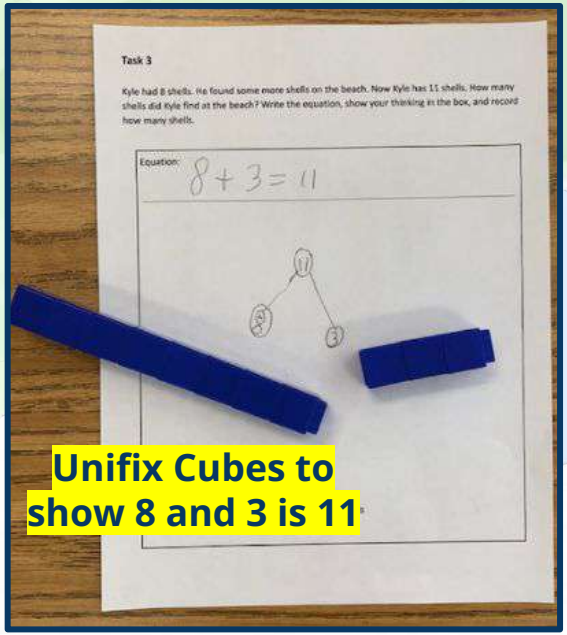
1st Grade Thinking

Task: Kyle had 8 shells. He found some more shells on the beach. Now Kyle has 11 shells. How many shells did Kyle find at the beach? Write the equation, show your thinking in the box, and record how many shells.

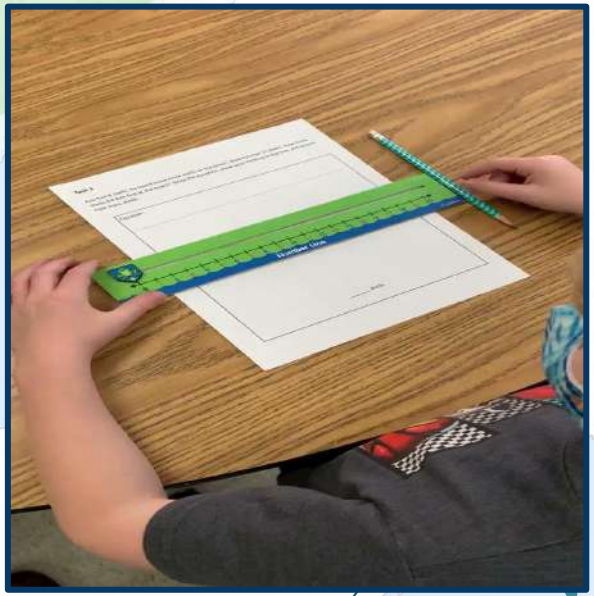


Bar Model (Part-Part-Whole)

Number Bond

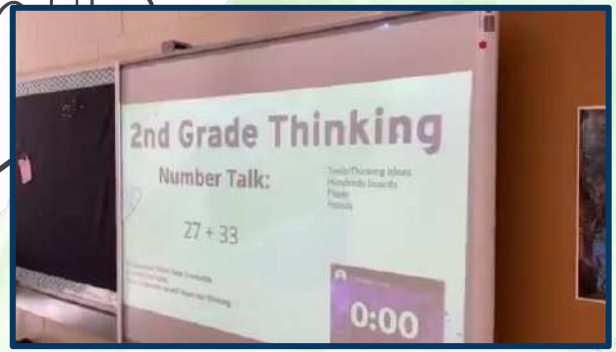


Unifix Cubes to show 8 and 3 is 11

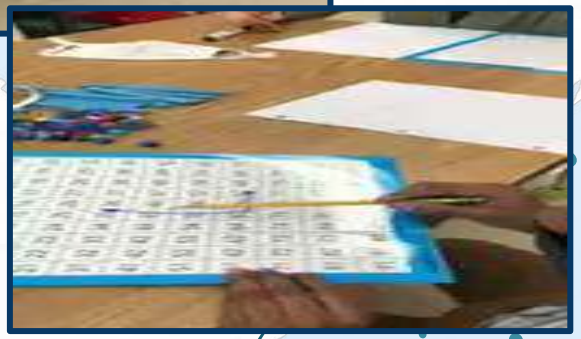


2nd Grade Thinking

Number Talk:
27 + 33



Word Problem: Lena watch 35 minutes of a movie before lunch. She watched some more of the movie after lunch. Now she has watched 67 minutes of the movie. How many minutes of the movie did she watch after lunch?



Pictures of their work are attached at the end of the presentation.

Using the tools and ideas shared, how would you solve this problem?

Think like a child.

Mateo had 32 Skittles. His little sister ate some Skittles while Mateo was at school. He now has 15 skittles. How many Skittles did his sister eat?

Problem Type: Change Unknown

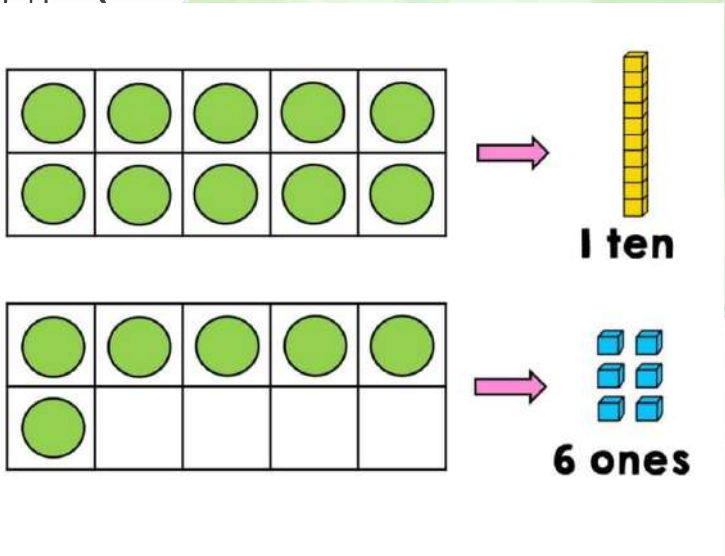
Mateo had 32 Skittles. His little sister ate some Skittles while Mateo was at school. He now has 15 skittles. How many Skittles did his sister eat?

32	
?	15

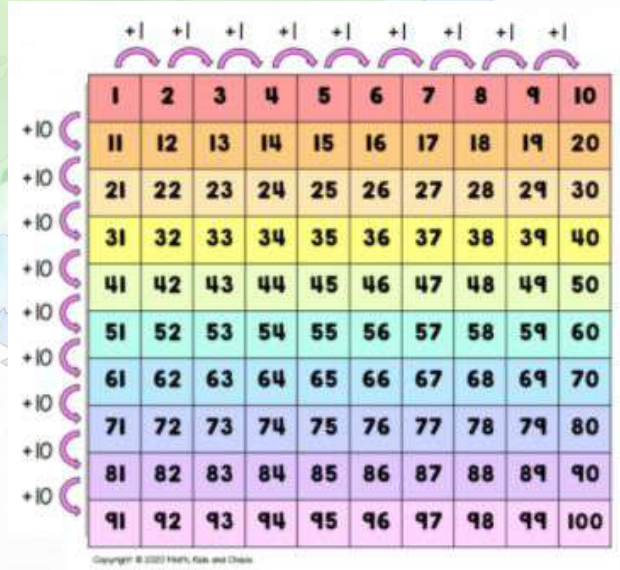
$32 - \square = 15$

Now It's Your Turn to Explore

Ten Frames



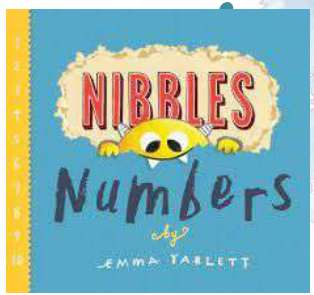
Hundreds Charts

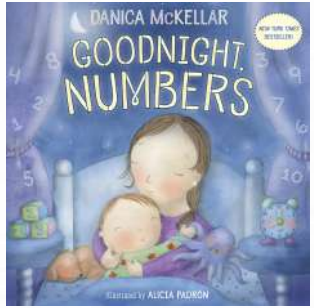


Resources

- Didax Math Manipulatives
- Ten Frame Identification Game
- Ten Frame Equation Game
- Math Playground Hundreds Chart
- Math Playground Hundreds Chart Puzzles
- Virtual Manipulatives
- Epic! Math Place Value Collection (books & videos)

Read Alouds





Math Standards

- Kindergarten Math Standards
- First Grade Math Standards
- Second Grade Math Standards

Published Articles:

5 Ways to Build Math into Your Child's Day

Daily Activities to Strengthen Math Skills in Young Children

Everyday Math Activities Kids Can Do at Home

How Come the math my child brings home doesn't look like the math I remember?

Thank you!

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Jill Morris
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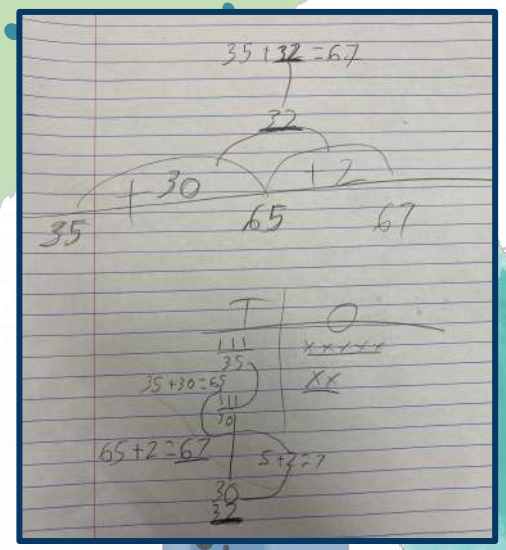
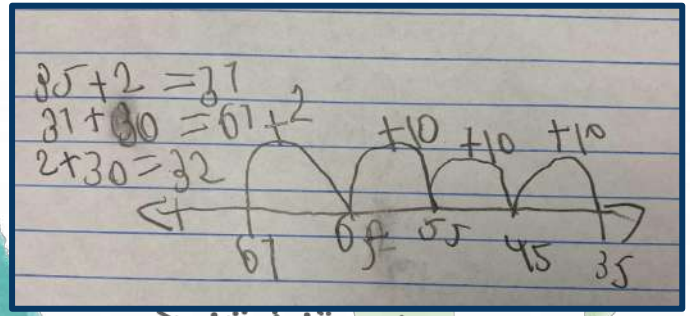
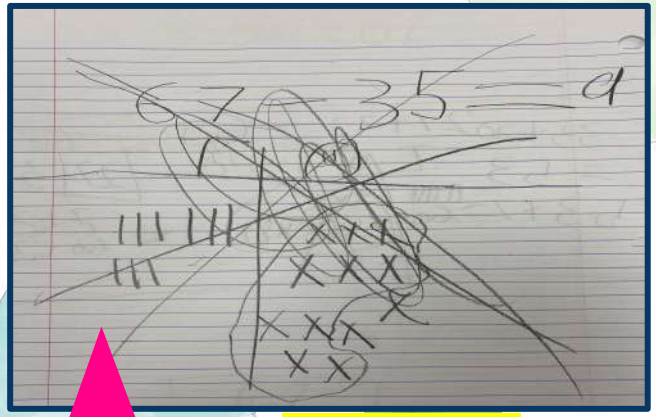
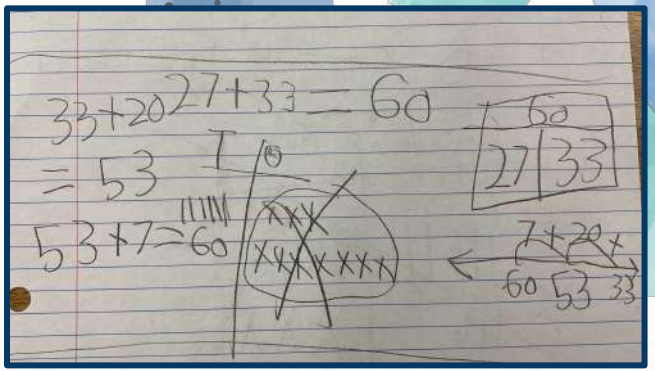
And a special thank you to our 1st and 2nd graders who shared their brilliant mathematical thinking!

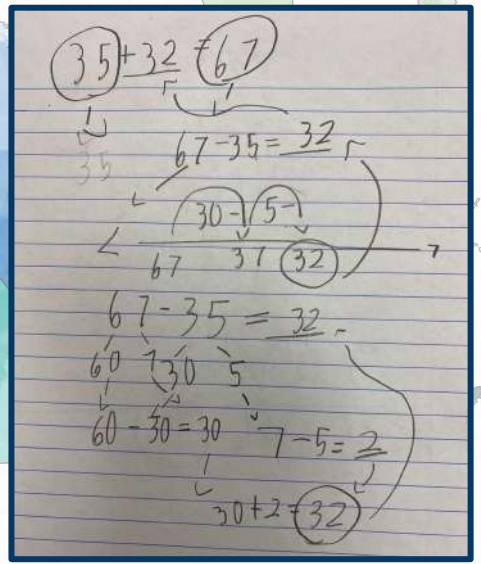
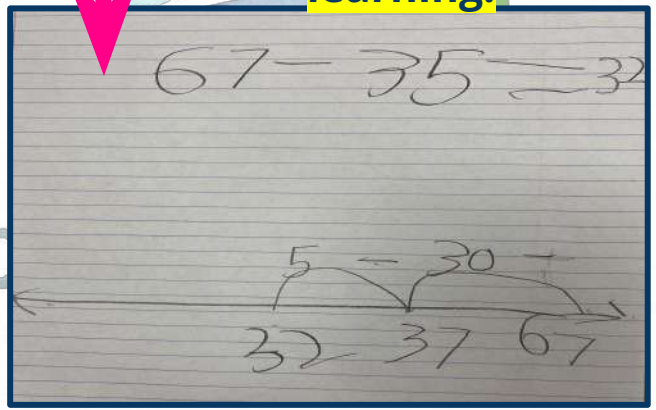
2nd Grade Work samples (more) 😀











Mistakes are opportunities for learning!