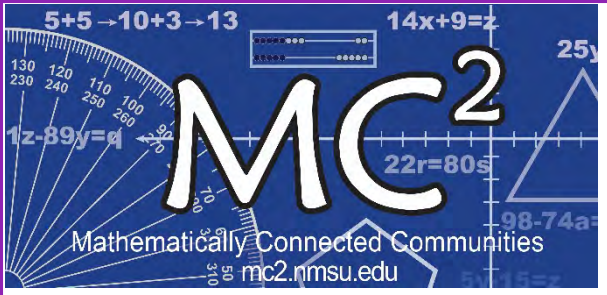


Welcome!

This webinar was pre-recorded on Wednesday, March 23, 2016. There were no FAQs generated during the live presentation.

Please submit any questions or comments to mc2@nmsu.edu.

Addition & Subtraction within 100

Extending Conceptual Place Value

Megan Kidwell
Lisa Matthews

Learning Targets

- Understand the research-based instructional progression that supports students as they develop strategies based on place value

- Understand how the fluency progression outlined in the CCSSM develops for students

- Explore instructional alternatives to column addition & subtraction (the algorithm)

Place Value:
Phases of Instruction

- Phase 1: Developing Foundational Knowledge
- **Phase 2: Consolidating Early Strategies**
- Phase 3: Refining Strategies and Extending Tasks

Developing Number Knowledge, pp. 110 - 120
Wright et. al., ©2012

Place Value:
Phases of Instruction

1st Grade

- Phase 1: Developing Foundational Knowledge
- **Phase 2: Consolidating Early Strategies**
- Phase 3: Refining Strategies and Extending Tasks

2nd Grade

Developing Number Knowledge, pp. 110 - 120
Wright et. al., ©2012

Instructional Progression for Number & Operations in Base Ten

Phase 1: Foundation:
Structuring Numbers to 20
Conceptual Place Value

Webinars 1 & 2

Phase 2: Develop Mental Computation
open tasks, students grapple with solutions
tasks presented with base ten models (not manipulated)
tasks posed as number talks and in story contexts

Phase 3: Refine and Extend Mental Strategies
formalize notation, bigger numbers, strategic tasks

CCSSM:
Number & Operations in Base Ten

2.NBT.5
Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

3.NBT.2
Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

4.NBT.4
Fluently add and subtract multi-digit whole numbers using the standard algorithm.

CCSSM:
Number & Operations in Base Ten

2.NBT.5
Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

3.NBT.2
Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

4.NBT.4
Fluently add and subtract multi-digit whole numbers using the standard algorithm.

Think of a couple mental strategies for solving

47 + 28

(try not to mentally stack the numbers and use the algorithm)

2nd Grade Student: 47+28

Assessment: Expression Cards

- Ask student to read and solve the task
- Ask student to explain how they got the answer
- If student uses the standard algorithm, ask if there is another way they could solve it
- This assessment is used to determine facility with *strategies based on place value* the student has developed for solving 2-digit addition & subtraction tasks

2nd Grade Student

52 + 24 • 35 – 21 • 47 + 28 • 73 – 38

Analyzing the Assessment:

<u>What prior knowledge is the student using</u>:

Starts with adding the tens, then the ones

Conceptual Place Value

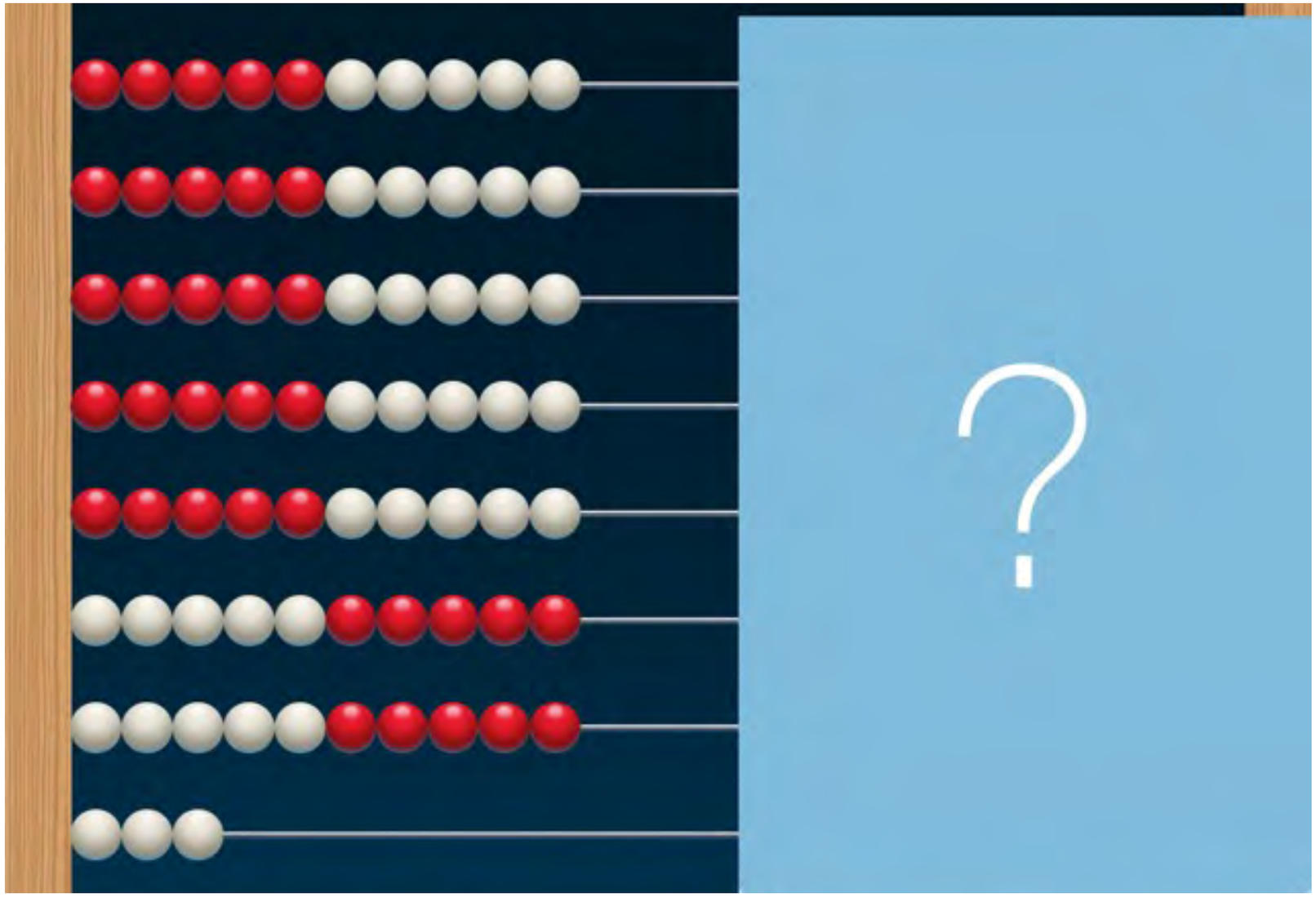
When adding 7+8, makes a 10 out of the two 5s

Structuring Numbers

<u>Areas to work on</u>:

Develop fluency with addition and subtraction within 20

Subtraction tasks: make sense using models, use notation to show successful strategies using numbers



73 - 38

Assessment: Expression Cards

If a student is…

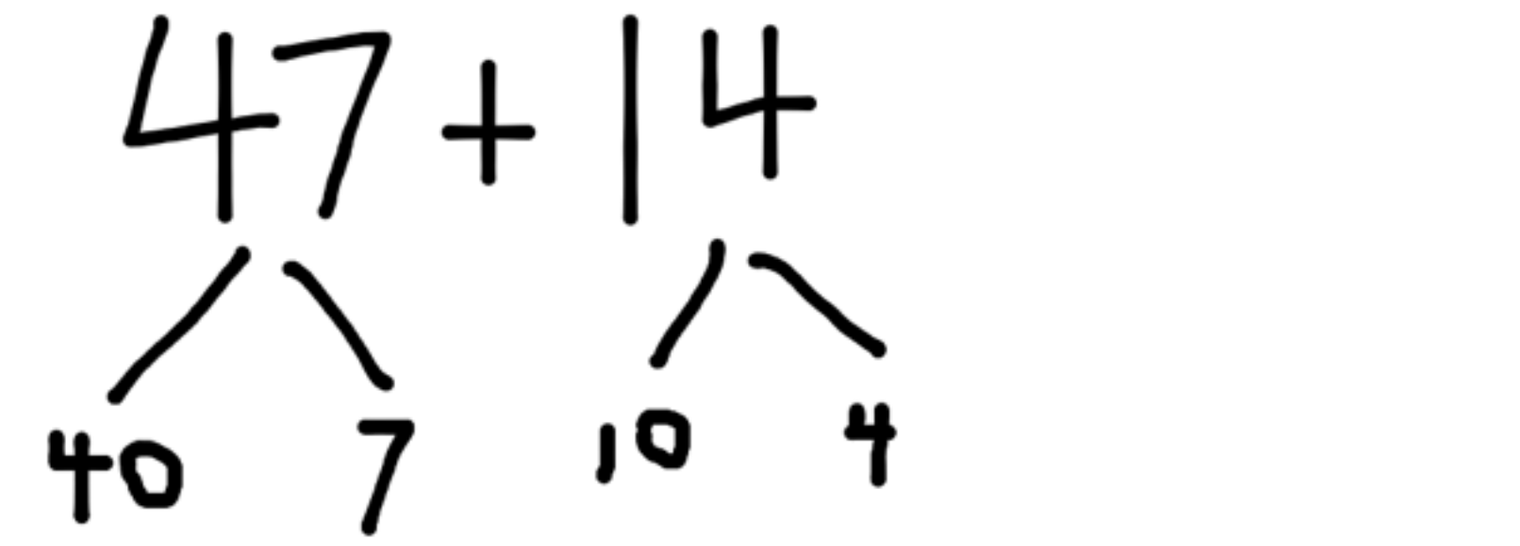
- unable to solve some or all of the tasks
- only able to solve tasks using the algorithm

…use the dot strips assessment to check whether they have strategies for adding tens & ones with materials

2nd Grade Student 47+28, task with numbers

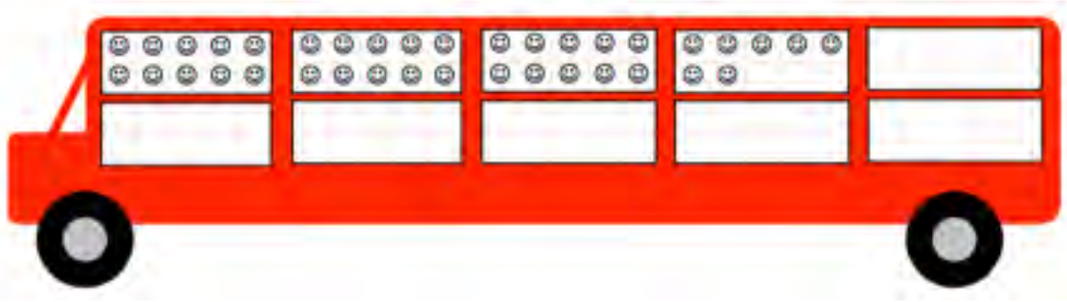
2nd Grade Student 47+14, dot strips

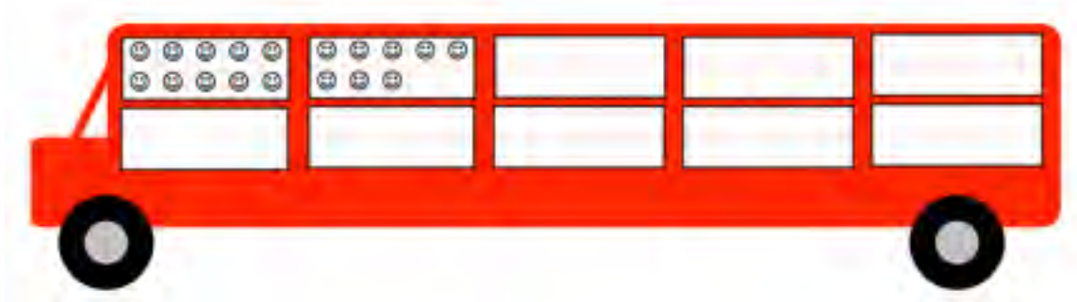
Informal Notation:
numbers are used to show
strategies used to solve dot strips tasks



40+10→50+7→57+4→61

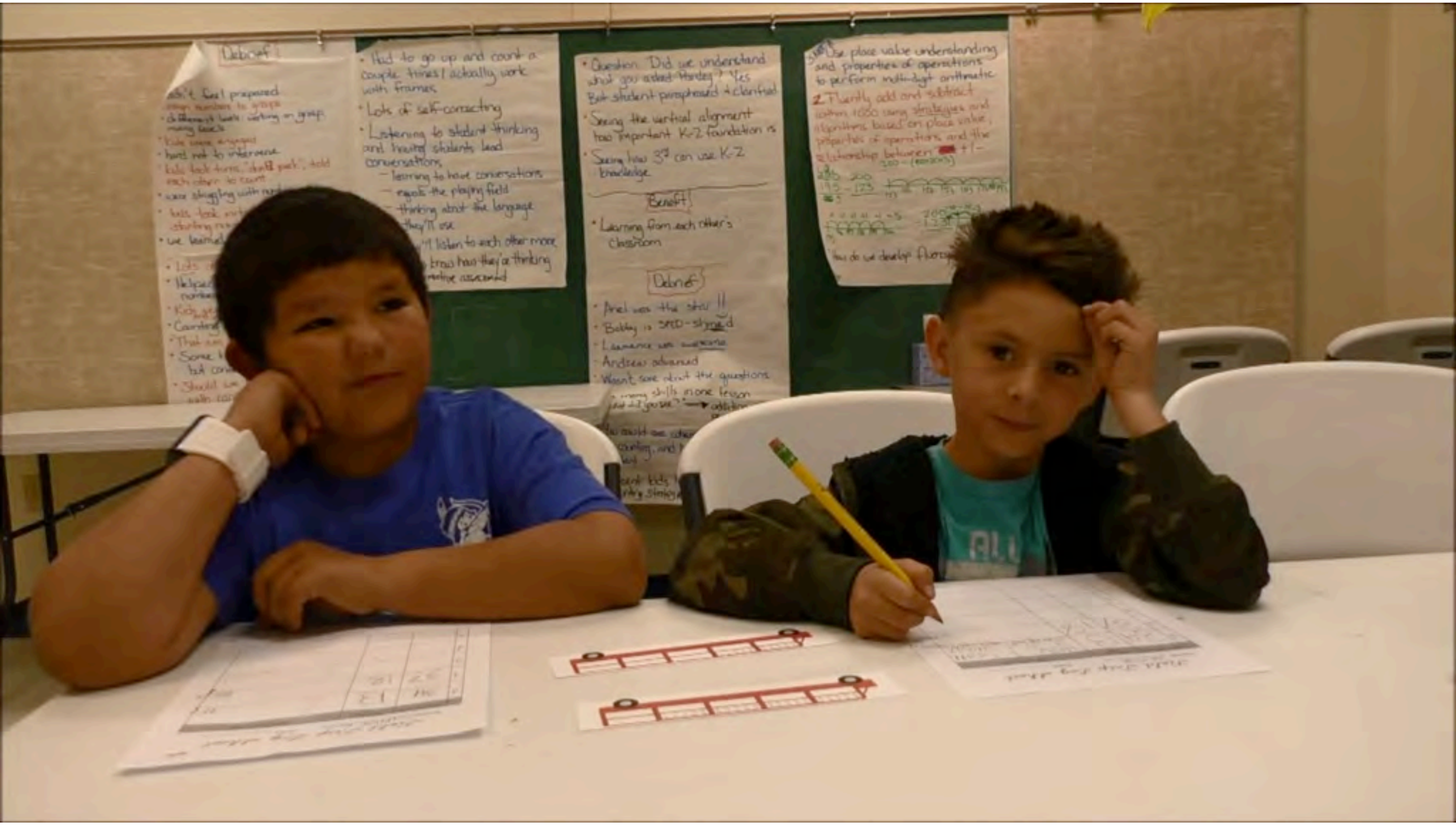
Field Trip Addition





- Students select 2 bus cards
- Record the number of kids on each bus on their record sheet
- Use the cards to determine the total number of kids

2nd Grade: Field Trip Addition
37 + 18



Split Strategy:
Working with the Tens, then the Ones

37+18

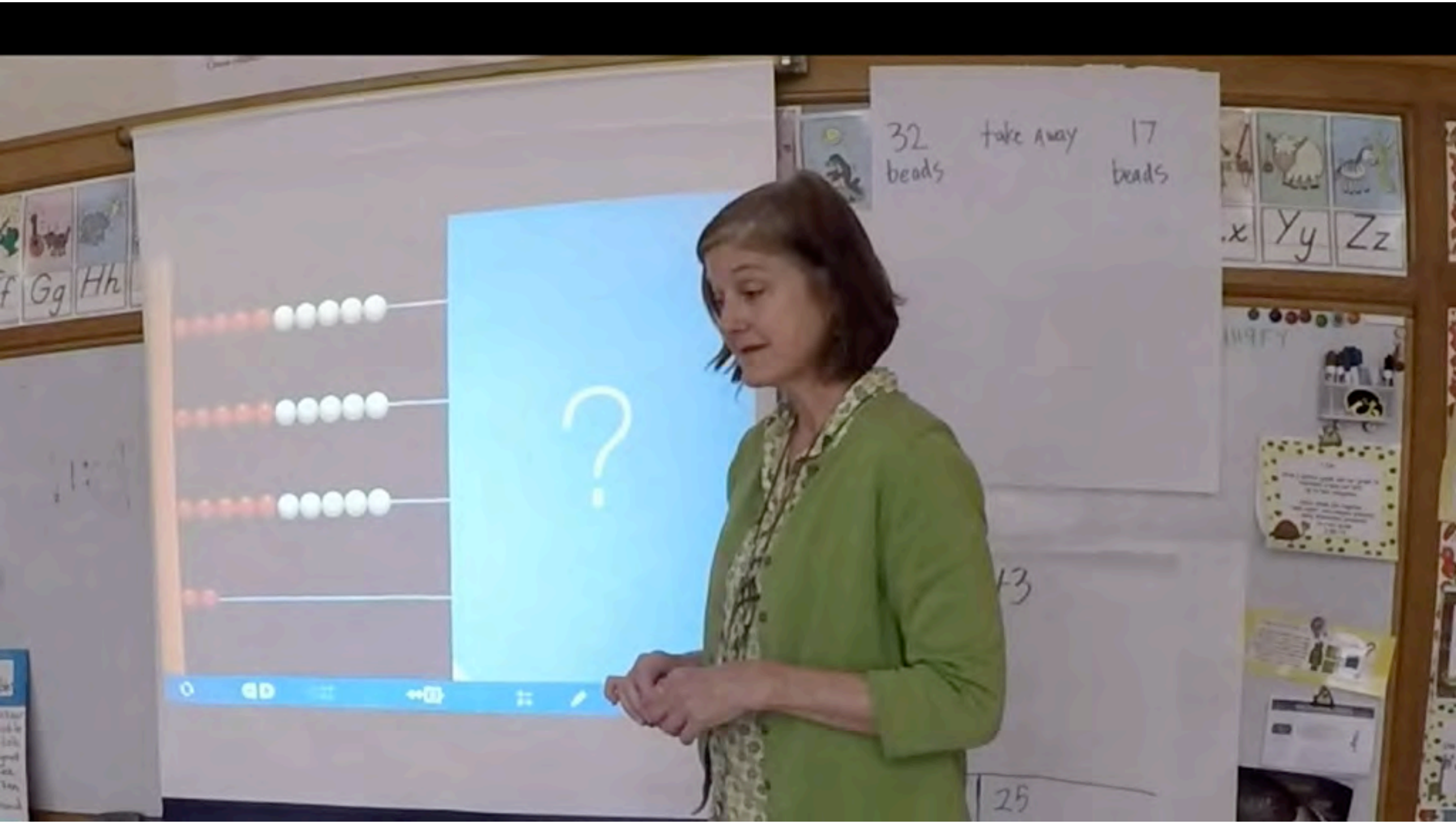
Informal Notation:

- notation matches student thinking
- use arrows, not equal sign, when showing a running record of the solution
- when students split numbers into parts, use drop-down notation to indicate the parts
- notation can be modeled in number talks

Number Talks

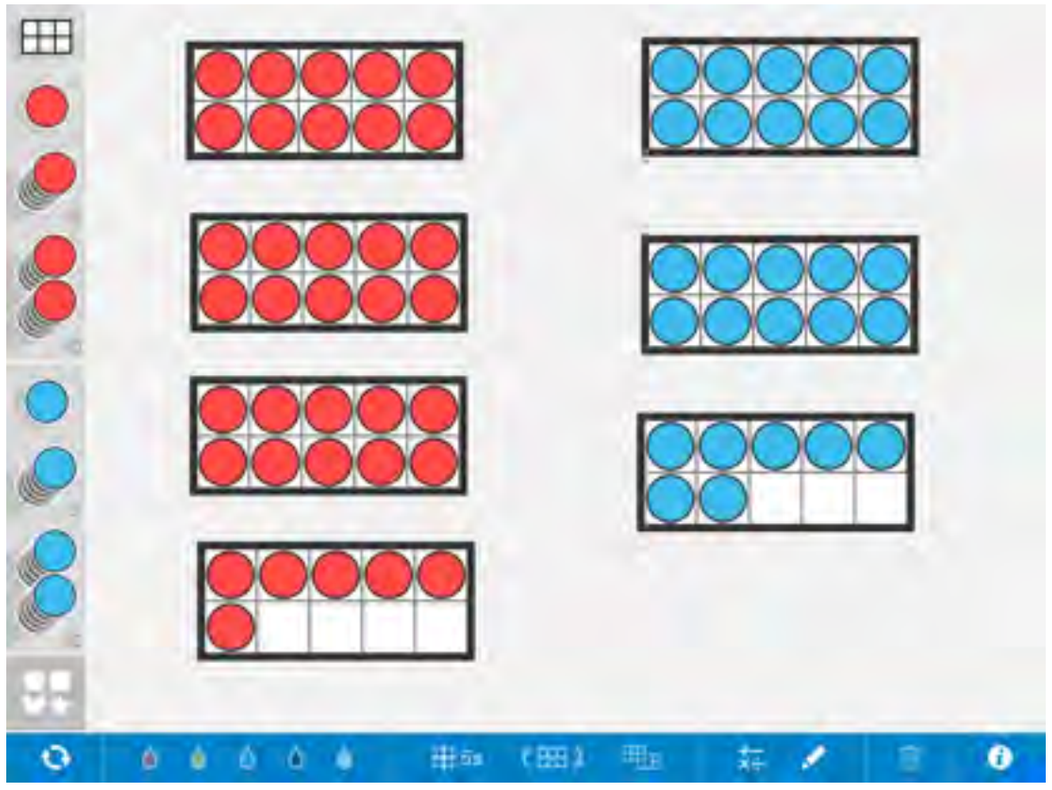
- a 10 - 15 minute routine, 3 or more times a week
- students solve problems using mental strategies
- students develop communication skills as they explain their reasoning
- teacher records solutions in a way that reflects students' strategies
- for more information, see the MC^2 website

2nd Grade: 32 – 17



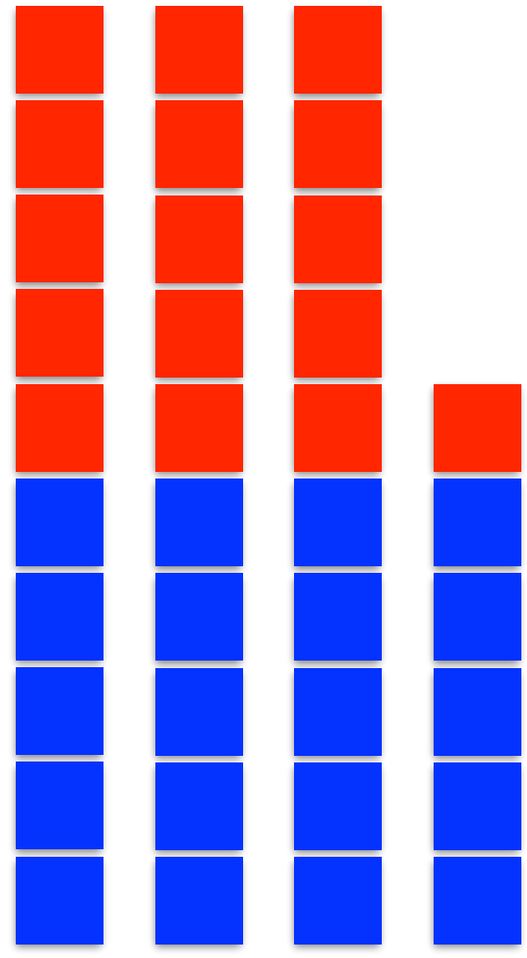
Number Rack App: Math Learning Center website and the App Store for iOS devices

Number Talks: Other Models



Number Frames App:

- Math Learning Center website
- The App Store for iOS devices



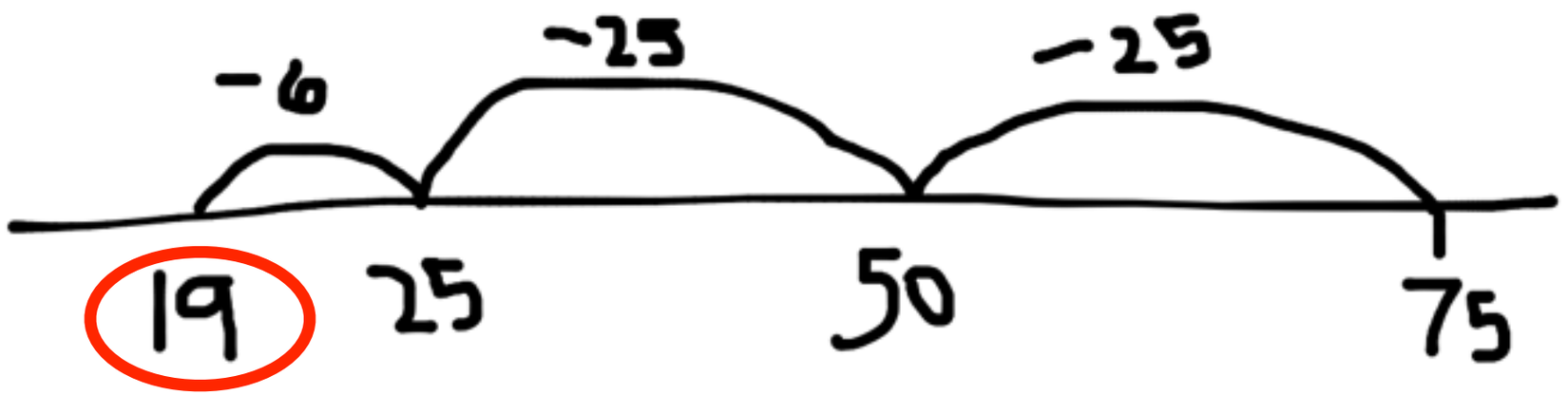
Unifix cubes / Snap cubes:
36 – 19

New Mexico Travel: Interstate 25

Get on at Exit 75 Williamsburg.

Travel south to Radium Springs: the trip is 56 miles.

What is the exit number for Radium Springs?



Instructional Progression for Number & Operations in Base Ten

Phase 1: Foundation:
Structuring Numbers to 20 (& into higher decades)
Conceptual Place Value

Phase 2: Develop Mental Computation
open tasks, students grapple with solutions
tasks presented with base ten models (not manipulated)
tasks posed as number talks and in story contexts

Phase 3: Refine and Extend Mental Strategies
formalize notation, bigger numbers, strategic tasks

Learning Targets

- Understand the research-based instructional progression that supports students as they develop strategies based on place value

- Understand how the fluency progression outlined in the CCSSM develops for students

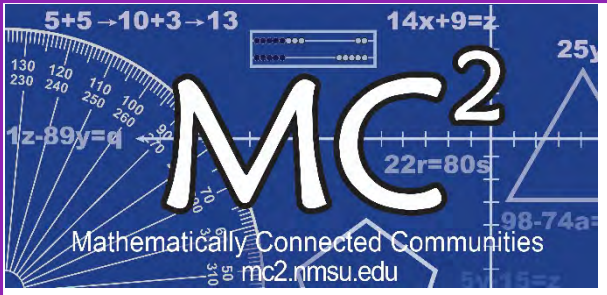
- Explore instructional alternatives to column addition & subtraction (the algorithm)

CCSSM: Number & Operations in Base Ten

2.NBT.5
Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

3.NBT.2
Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

4.NBT.4
Fluently add and subtract multi-digit whole numbers using the standard algorithm.



Thank you!

This webinar recording and handouts are available at the MC² website.

Please submit any questions or comments to mc2@nmsu.edu.

Thank you for your input!

MC² is always striving to improve the learning experience.