Tonight's Math Objectives

- Why Eureka?
- What Standards?
- Eureka Math Lesson Components
- Models We Use
- Homework Resources
- Family Activity Answers

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Why Eureka Math?

- Eureka has a proven track record in boosting student achievement in math.

- Of the most popular mathematics curricula for grades K-12, Eureka Math, created by the non-profit Great Minds, ranks #1 for both usage and quality.

(May 2016 Great Minds-Eureka Math Tops in U.S. for Usage and Quality)

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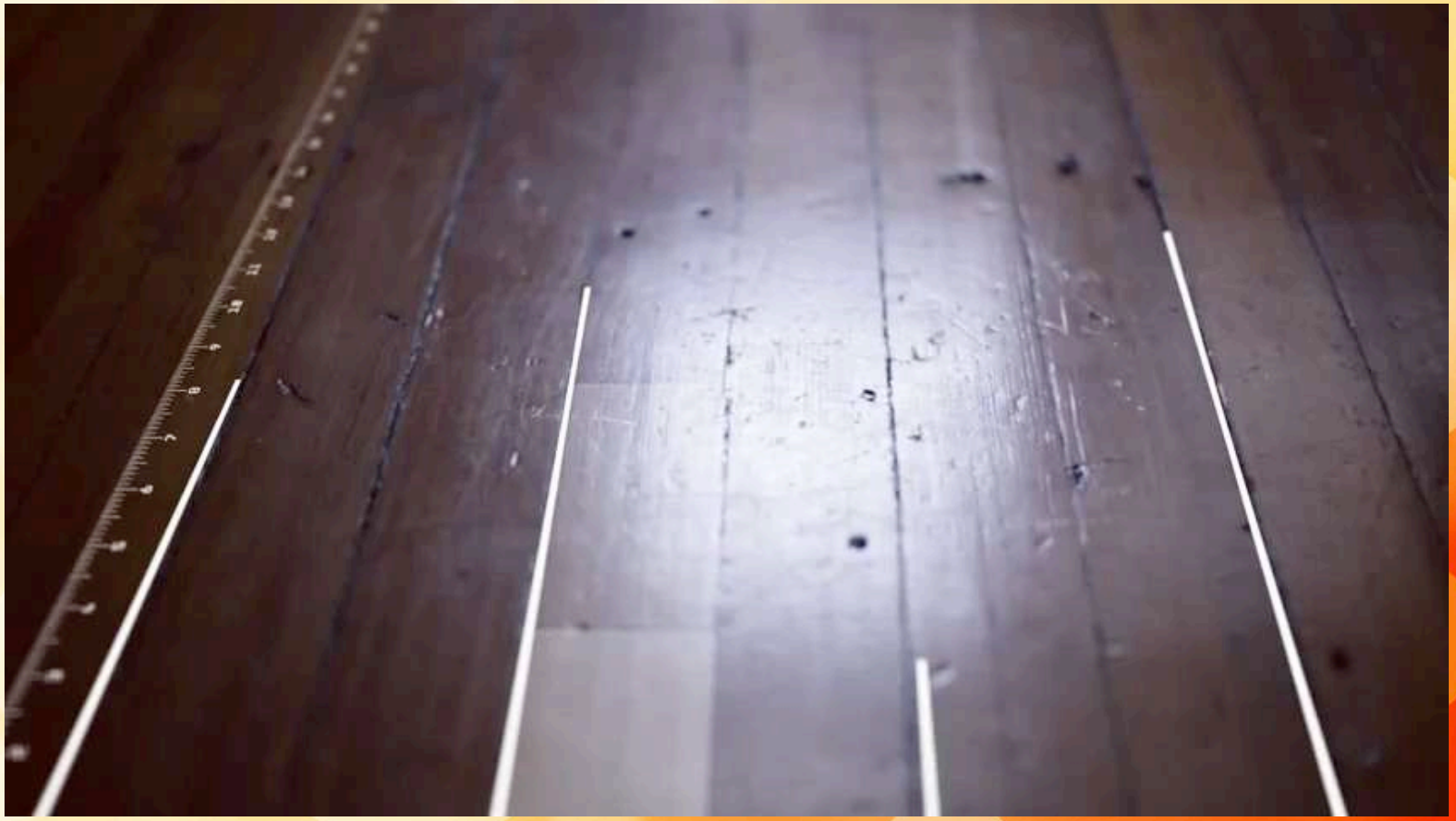
A New Curriculum for a New Day



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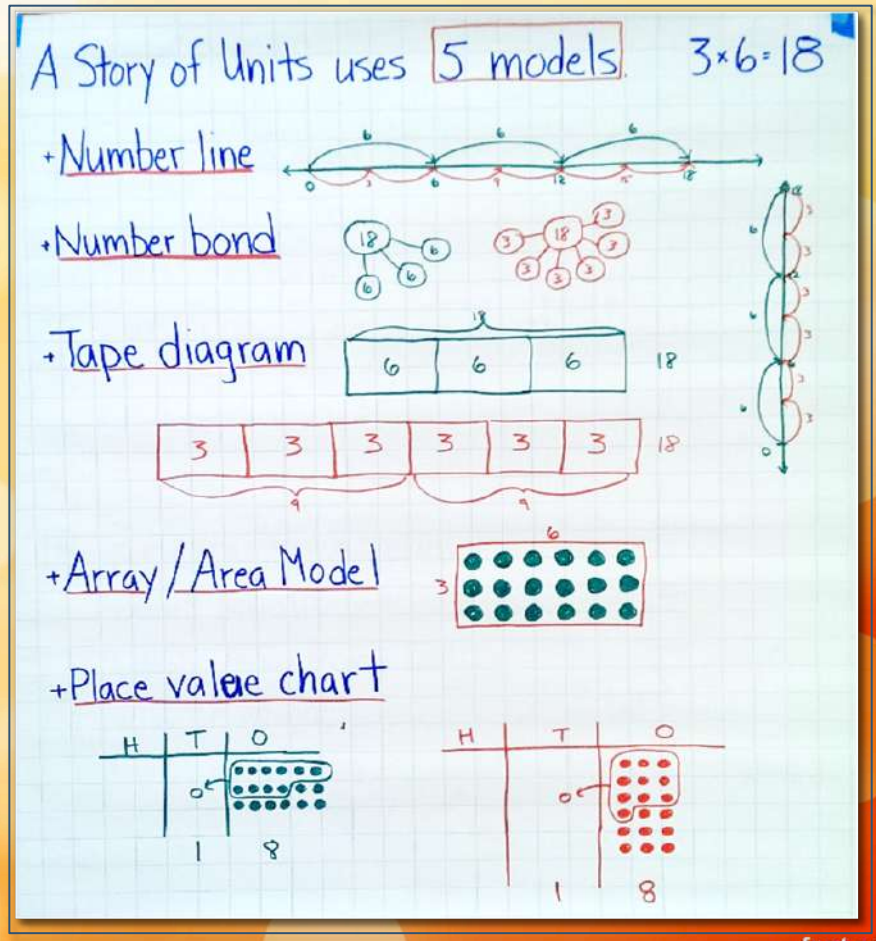
Why is Eureka so different?

- The Eureka curriculum helps build students' **conceptual understanding** of math.

  Students…

  - Think *flexibly* about numbers
  - Understand *why* the steps work
  - Know *when* to apply steps
  - Know how to use *other strategies* when more efficient



MAFS and CCSS
Math Florida Standards and Common Core Standards

- New standards are more rigorous than previous standards
- "Old ways" are still taught, just not first.
- Previous Mathematics focus was on HOW you solve problems = Memorizing, Not Understanding.
- New Mathematics focus is on what you are doing to get the answer = Understanding Before Memorizing.
- Focus is beyond ONLY getting the correct answer.

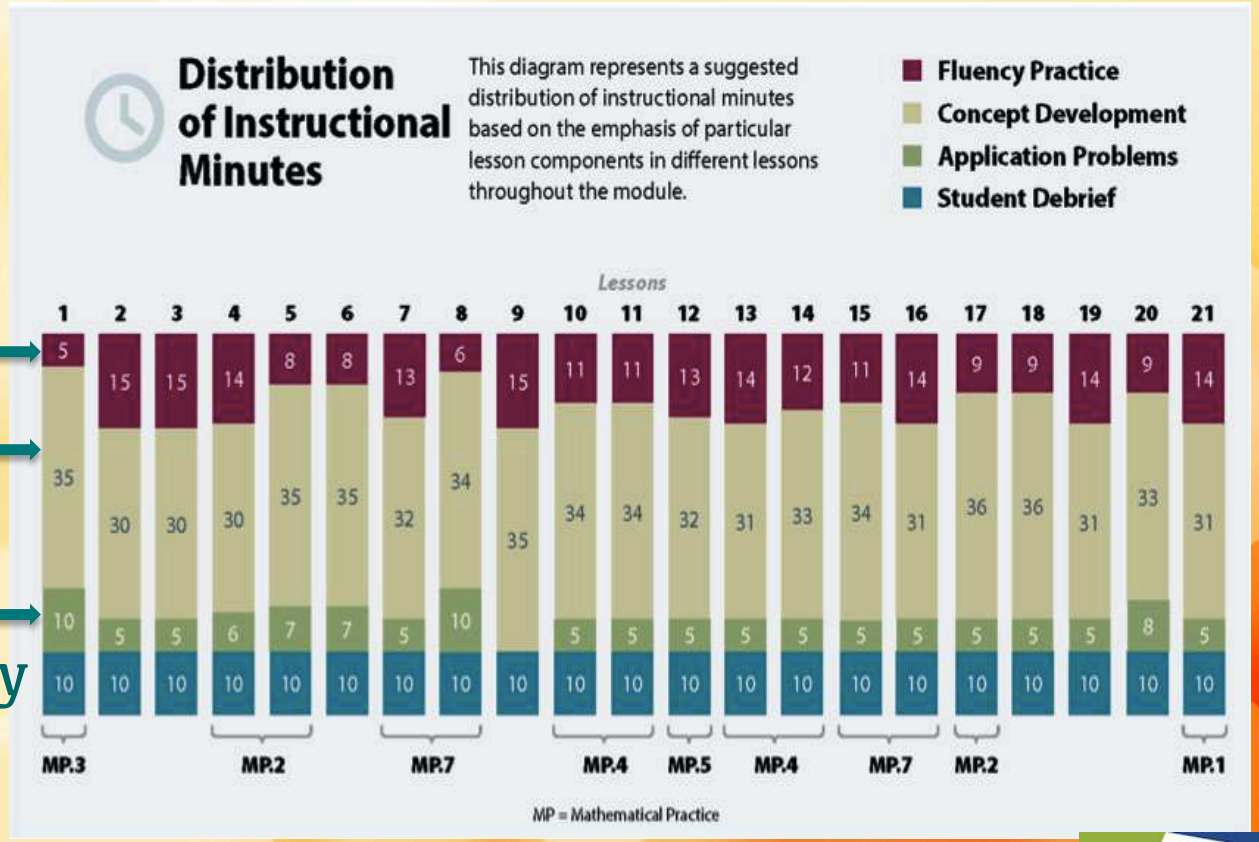
Eureka Math™ Lessons

Rigor

Pursue…

- Fluency
- Conceptual understanding
- Application

with equal intensity



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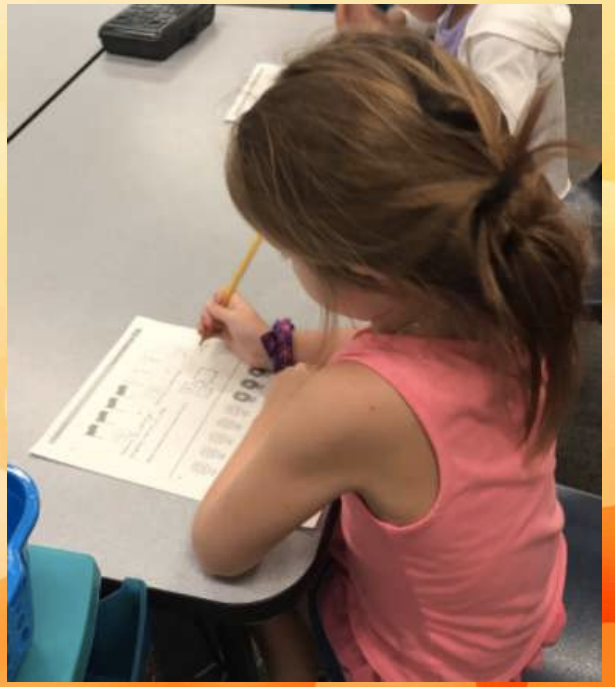
Typical Eureka Lesson Components

Approximate times:

1) Fluency Practice (10 minutes)
2) Application Problem (10 minutes)
3) Concept Development (20 minutes)
4) Problem Set (10 minutes)
5) Student Debrief (7 minutes)
6) Exit ticket (3 minutes)
7) Homework (optional)



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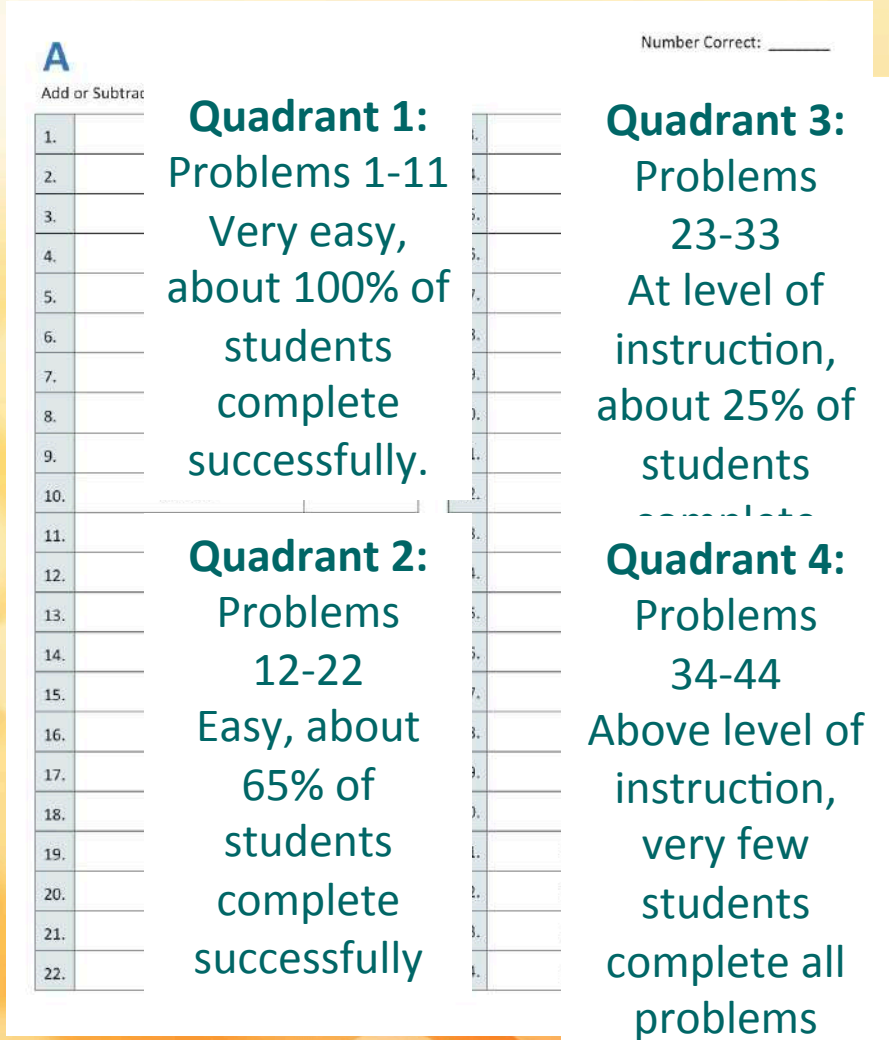
Fluency Activities:

Sprints

- Designed to develop fluency.
- Fun, Adrenaline-rich activities
- Fast Paced
- Progression from simple to challenging
- Sprint is just one type of fluency activity.



Quadrant 1:
Problems 1-11
Very easy, about 100% of students complete successfully.

Quadrant 2:
Problems 12-22
Easy, about 65% of students complete successfully

Quadrant 3:
Problems 23-33
At level of instruction, about 25% of students

Quadrant 4:
Problems 34-44
Above level of instruction, very few students complete all problems

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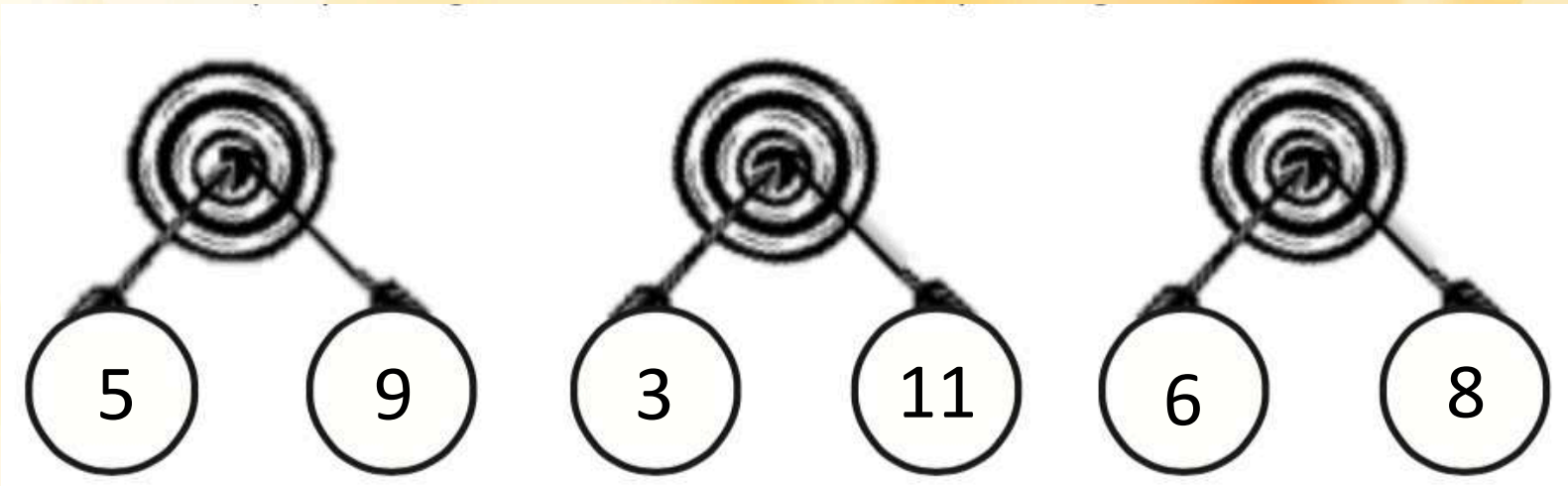
- 2nd Grade: Fluency Target Game



Application Problems

- Help students understand how to choose and apply the correct mathematics concepts to solve real-world problems.

2nd Grade Example:

Emma has 45 pencils. Eight pencils are sharpened. How many pencils are not sharpened?

Why is conceptual understanding so important?

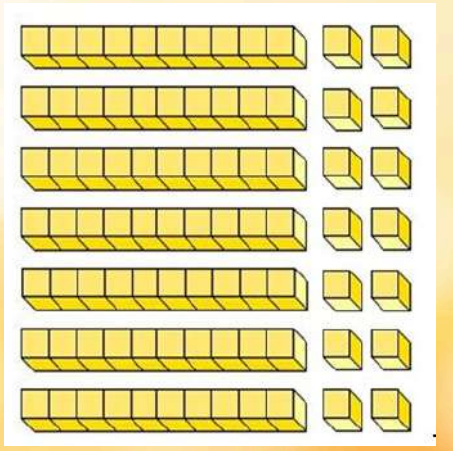
The brain can only compress *concepts*; it cannot compress rules and methods. (Thurston, 1990)

Experts see meaningful **patterns** of information and use them to **organize** their knowledge in ways that reflect a deep **understanding** of their subject matter.

(Bransford et al., 1999)

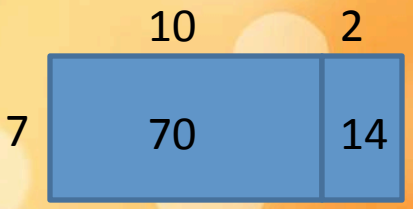
Concept development

- Presents new content, building on the prior lesson
  - Carefully sequenced problems with gradually increasing complexity
  - Moves from concrete to pictorial to abstract representations
  - Includes 10 minutes for work on problem set



7 x 12 =

Concrete
(base 10 blocks)



Pictorial
(area model)

$$\begin{array}{r} 12 \\ \times\ 7 \\ \hline 84 \\ {\scriptstyle 1} \end{array}$$

Abstract
(standard algorithm)

Student debrief

- Students reflect on learning
- Discuss thinking and strategies with classmates
- Teacher clarifies any misconceptions
- Reinforces conceptual understanding
- Teacher and students summarize the day's lesson

Student Debrief Example

- Turn to your partner and compare your answers to Problems 1 and 2. Which math strategies did you use to determine which line was longer or shorter?
- What did you notice about the relationship between the unit of length (e.g. paper clips, centimeters) and the number of units needed to measure the lines? Use comparative words

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Exit Tickets

- A “quick check” to see if students understand the new learning for the day
- It is NOT EXPECTED that students master the learning each day
- Progress over time is important, as concepts and skills spiral through the module
- Exit Tickets help us to know what concepts we may need to focus on for groups of students

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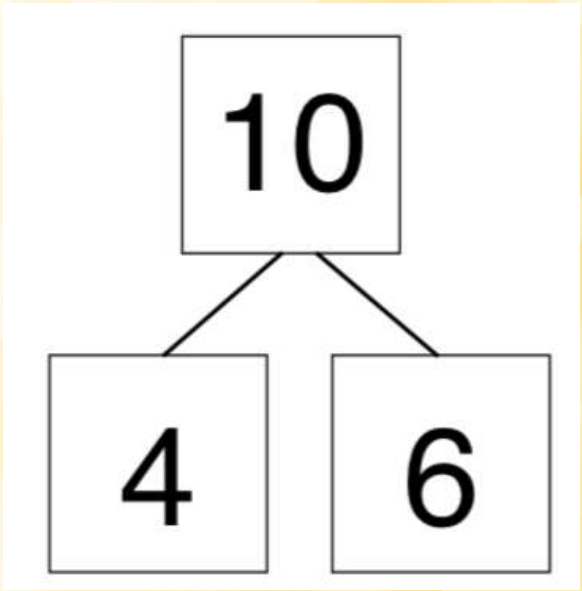
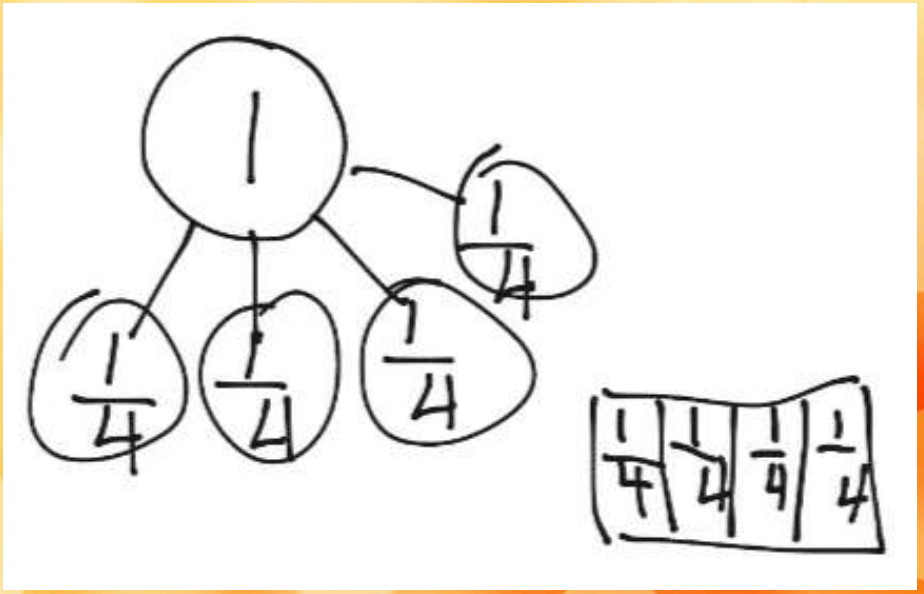
Strategies You Will See

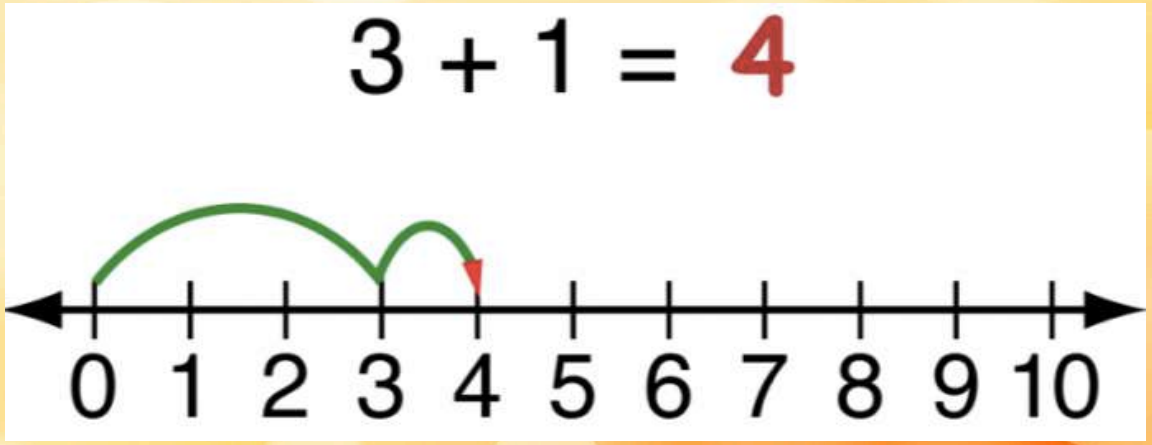
Number Bonds

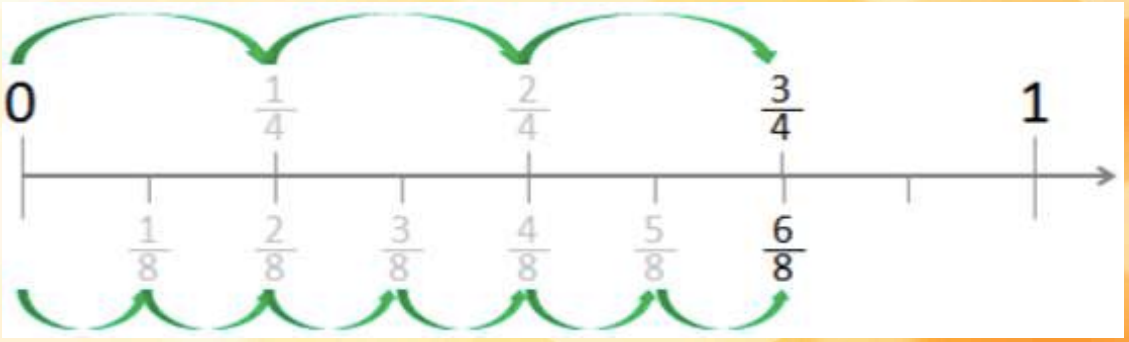




Strategies You Will See

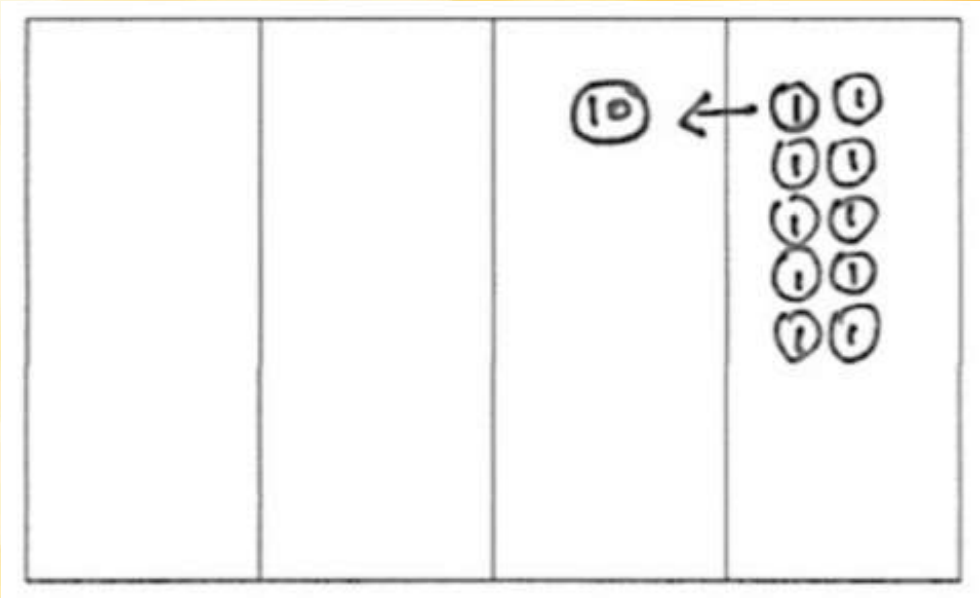
Number Lines





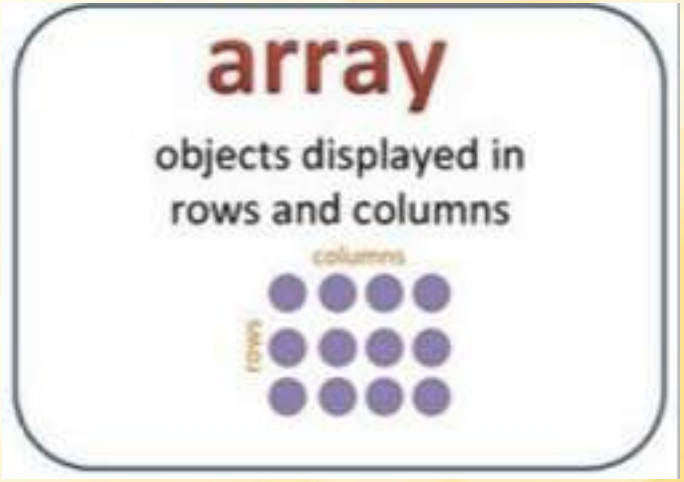
Strategies You Will See

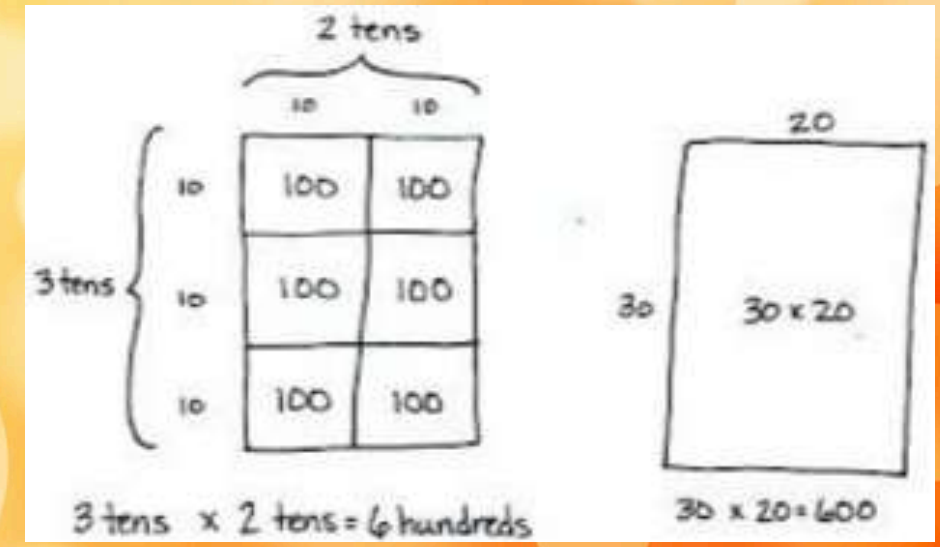
Place Value Charts



Strategies You Will See

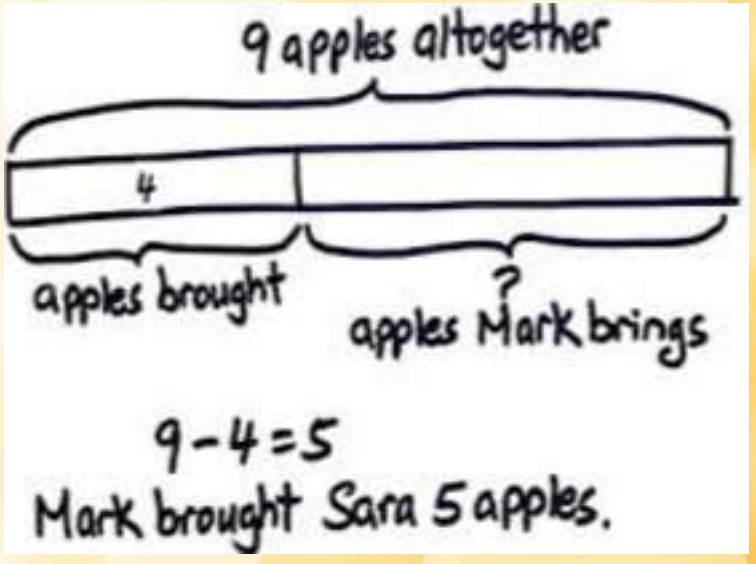
Arrays / Area Models

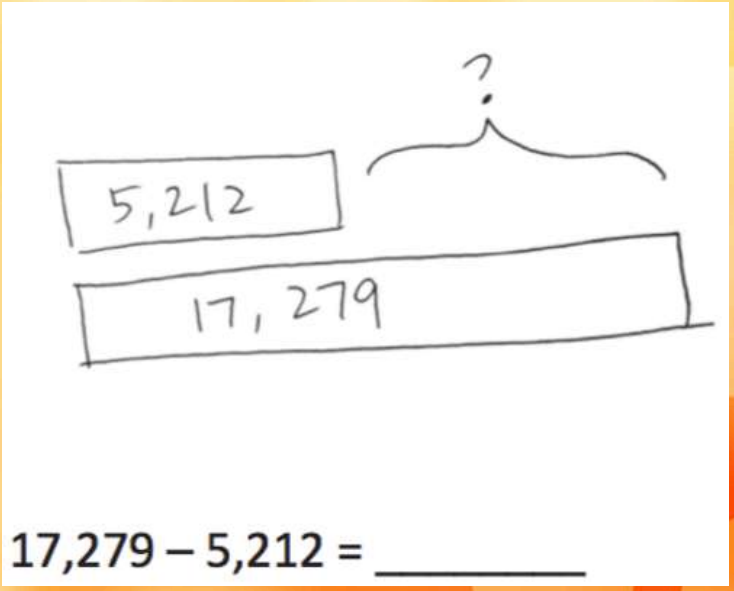




Strategies You Will See

Tape Diagram





Help (Don't Tell) with Homework

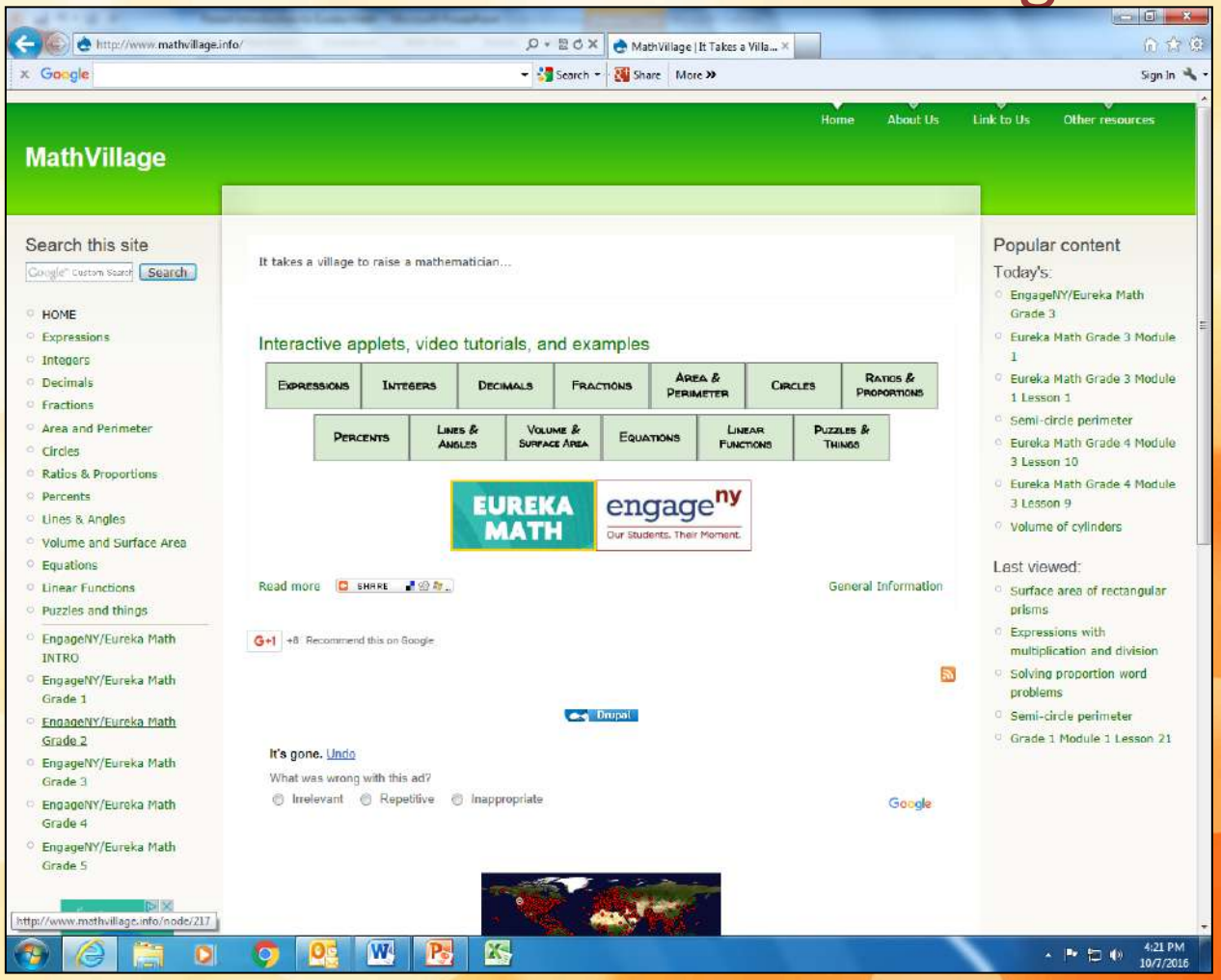
- Homework is practice, not new information.
- When assisting your child, help guide them
  - Use the strategy they are asked to use
  - Don't do the thinking for them. Ask them what the word problem means
  - Please don't teach shortcuts
  - If after practice your child still does not understand, write a note on the homework so your child's teacher knows they struggled.

Free Resources for Parents

https://greatminds.org/math/parents

- Parent Tip Sheets
- Video Resources
- Eureka Math Curriculum Resources

Homework videos from mathvillage.info



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