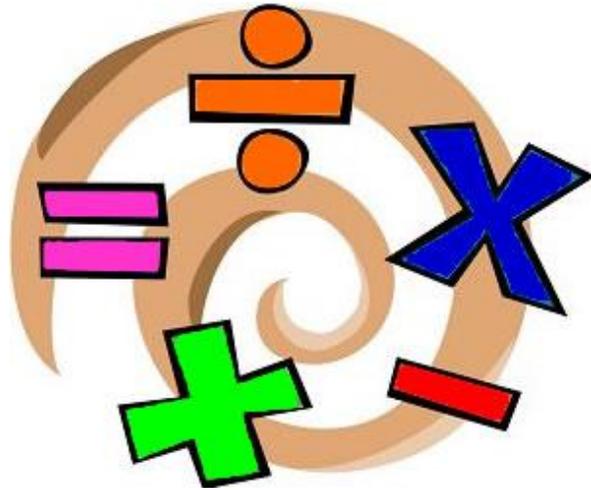


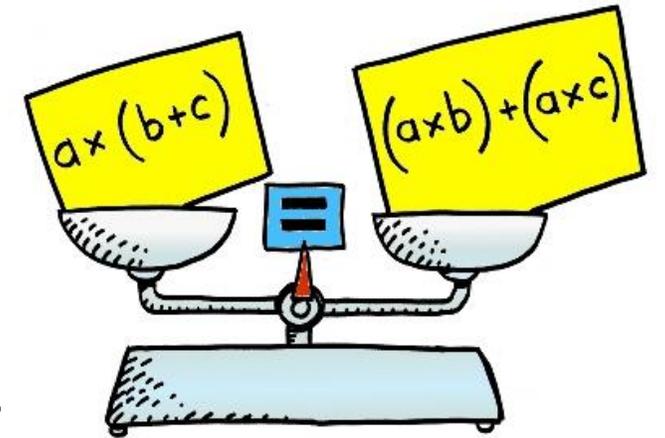
Third Grade

An Overview of the Second Half



Presented by:

Anthony Forcinito, Math Specialist
Kimberly England, Third Grade Teacher
Chatsworth Avenue School



March 2, 2017

Today's Agenda

- What third graders need to know
- What third graders will be doing
- What you can do to help your third grader

What Third Graders Need to Know

What is Number Sense?

- How might kids solve this problem?

$$201 - 199$$

- With someone nearby, discuss:
 - What strategies might kids use?
 - What do kids need to understand in order to solve this mentally?

What is Number Sense?

- A sense of what numbers mean
- An understanding of relative magnitude
- An ability to compare quantities
- Flexibility, automaticity, and fluidity with numbers and problems
- An ability to perform mental math
- An ability to determine reasonableness
- An ability to decide on a strategy based on the numbers in the problem

| | | Grade | | | | | |
|-----------|--------------------------------|--|--|---|---------------------------|---|-------------|
| | | K | 1 | 2 | 3 | 4 | 5 |
| September | Numbers to 10 | Sums and Differences to 10 | Sums and Differences to 20 | Multiplication & Division | Place Value | Place Value | |
| | | | Measurement | | | | |
| | | | Place Value to 1000 | | | | |
| | Shapes | Place Value, Addition & Subtraction to 20 | Addition & Subtraction to 200 | Multiplication & Division | Multiplication & Division | Addition, Subtraction, Multiplication, Division | |
| | Measurement | | | | | | |
| | Addition & Subtraction to 10 | Place Value, Addition & Subtraction to 40 | Foundations of Multiplication & Division | Multiplication & Area | Geometry | Fractions: Addition & Subtraction | |
| | | | | | | | Measurement |
| | Addition & Subtraction to 10 | Place Value, Addition & Subtraction to 40 | Foundations of Multiplication & Division | Fractions | Fractions | Fractions: Multiplication & Division | |
| | | | | | | | Shapes |
| | Numbers to 20; Counting to 100 | Place Value, Addition & Subtraction to 100 | Problem Solving & Measurement | Measurement & Data | Decimals | Volume & Area | |
| Shapes | | | | | | | |
| June | Shapes | Place Value, Addition & Subtraction to 100 | Measurement & Geometry | Problem Solving with Geometry & Measurement | Multiplication & Division | Coordinate Geometry | |

Number, Operations, & Algebraic Thinking

- Fluently add and subtract within 1,000
- Round to the nearest ten and hundred
- Understand the meaning of multiplication and division – and the relationship between the two
- Multiply and divide within 100 (know single-digit facts by the end of third grade)
- Solve two-step word problems involving the four operations

Game #1: *Multiplication BINGO*



| How to Play | Where's the Math? | | | | | | | | | | | | |
|---|-------------------|-----|-----|----|----|----|----|----|---|----|----|----|---|
| <ul style="list-style-type: none">• Players take turns picking two “digit cards”, multiplying the numbers, and explaining their strategy.• Players then mark the product on their BINGO board.• The player to get five in a row, vertically, horizontally, or diagonally, is the winner. <div data-bbox="468 1046 1238 1288"><p>Multiplication BINGO!</p><table border="1"><tr><td>2</td><td>3</td><td>100</td><td>4</td><td>50</td><td>12</td></tr><tr><td>64</td><td>16</td><td>7</td><td>24</td><td>25</td><td>20</td></tr></table></div> | 2 | 3 | 100 | 4 | 50 | 12 | 64 | 16 | 7 | 24 | 25 | 20 | <ul style="list-style-type: none">• Multiplication fact fluency• Distributive property of multiplication• Skip counting |
| 2 | 3 | 100 | 4 | 50 | 12 | | | | | | | | |
| 64 | 16 | 7 | 24 | 25 | 20 | | | | | | | | |

Number & Operations – Fractions

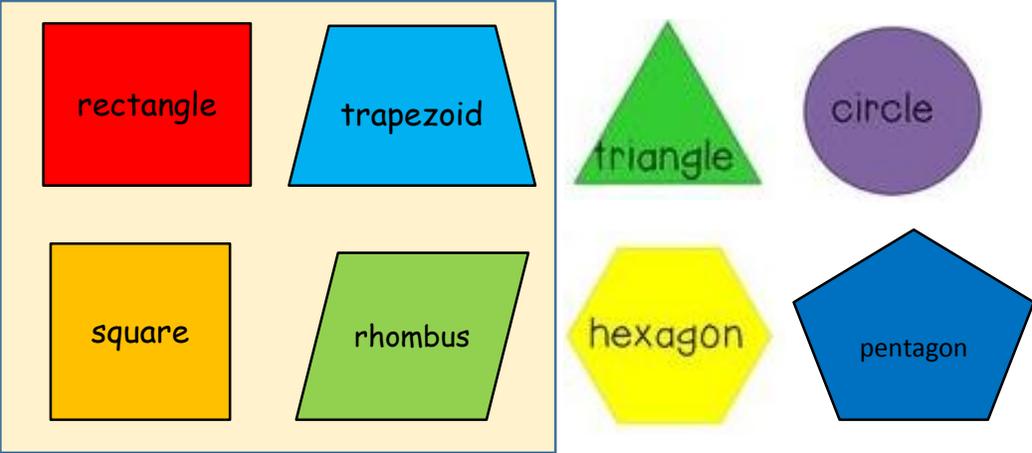
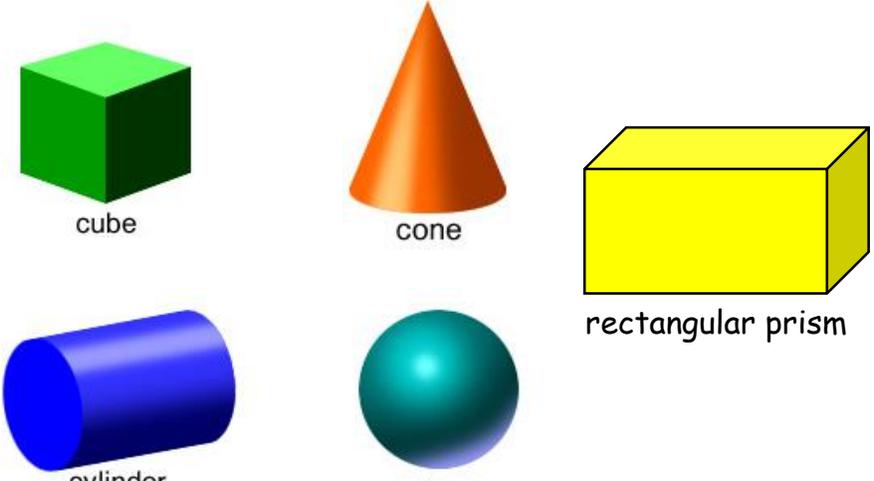
- Develop an understanding of fractions as numbers (halves, thirds, fourths, sixths, and eighths)
- Meaning of the numerator/denominator
- Understand and represent fractions on a number line
- Explain equivalence of fractions by using visual models and number lines (e.g., $1/2 = 2/4$, $4/6 = 2/3$)
- Compare fractions by reasoning about their size

Measurement & Data

- Tell and write time to the nearest minute
- Measure length to the nearest quarter inch
- Measure and estimate liquid volumes and masses (grams, kilograms, liters)
- Solve problems involving time, volume, and mass
- Represent and interpret data on picture and bar graphs
- Understand area and its relationship to multiplication and division
- Understand and find perimeters of polygons

Geometry

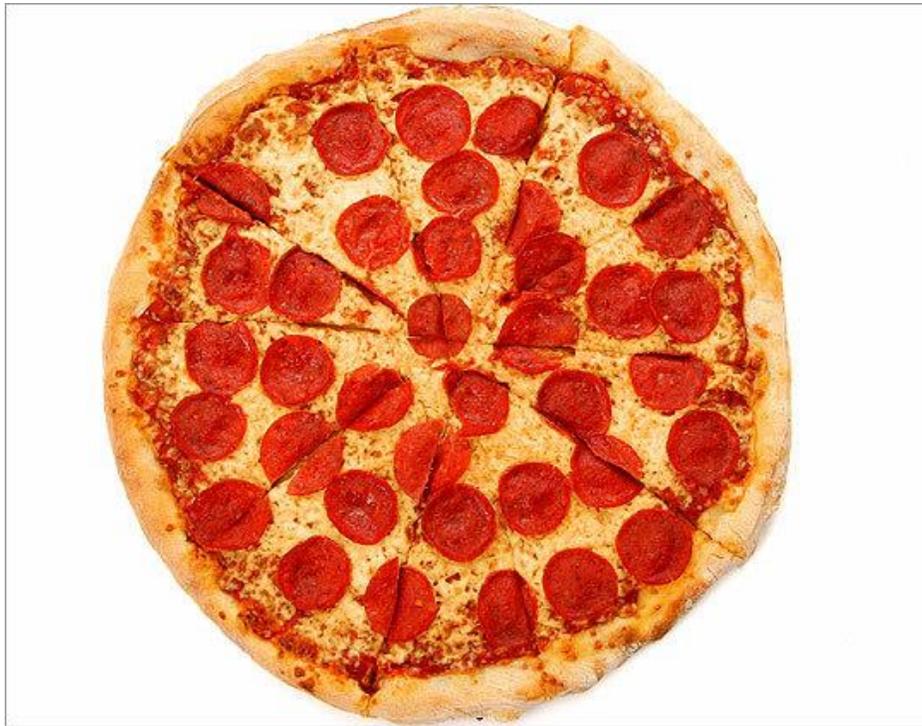
- Reason with shapes and their attributes
- Partition shapes into parts with equal areas; express using fractions

| 2-D Shapes | 3-D Shapes |
|---|---|
|  <p>rectangle</p> <p>trapezoid</p> <p>triangle</p> <p>circle</p> <p>square</p> <p>rhombus</p> <p>hexagon</p> <p>pentagon</p> <p>quadrilaterals</p> |  <p>cube</p> <p>cone</p> <p>rectangular prism</p> <p>cylinder</p> <p>sphere</p> |

What Third Graders Will Be Doing

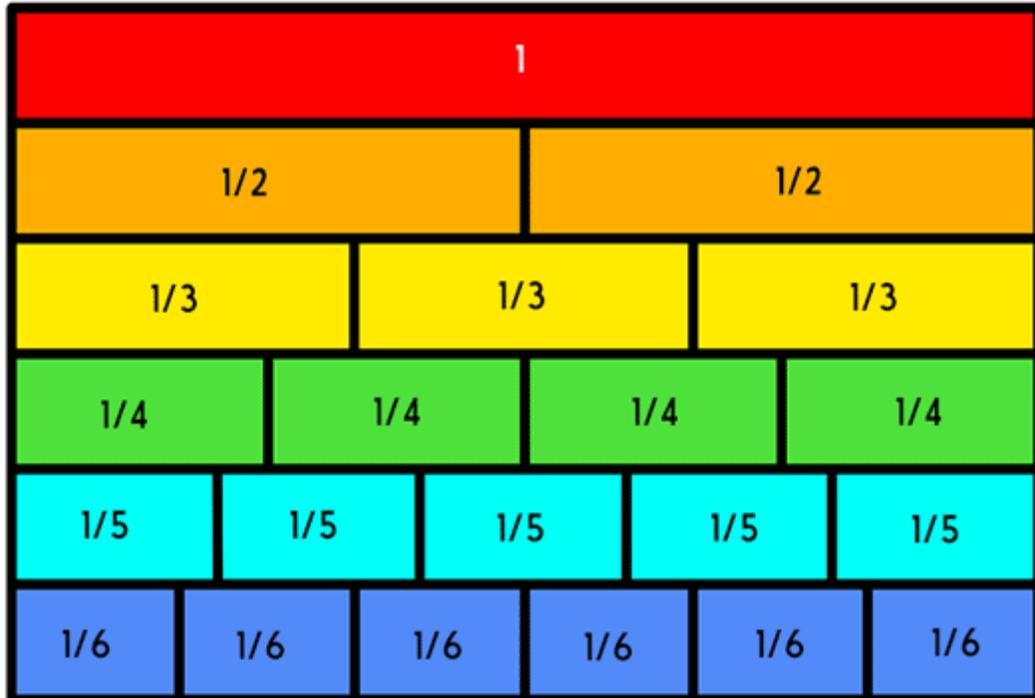
Making Fractions Real

- Students explore real-life applications of fractions to introduce the concept

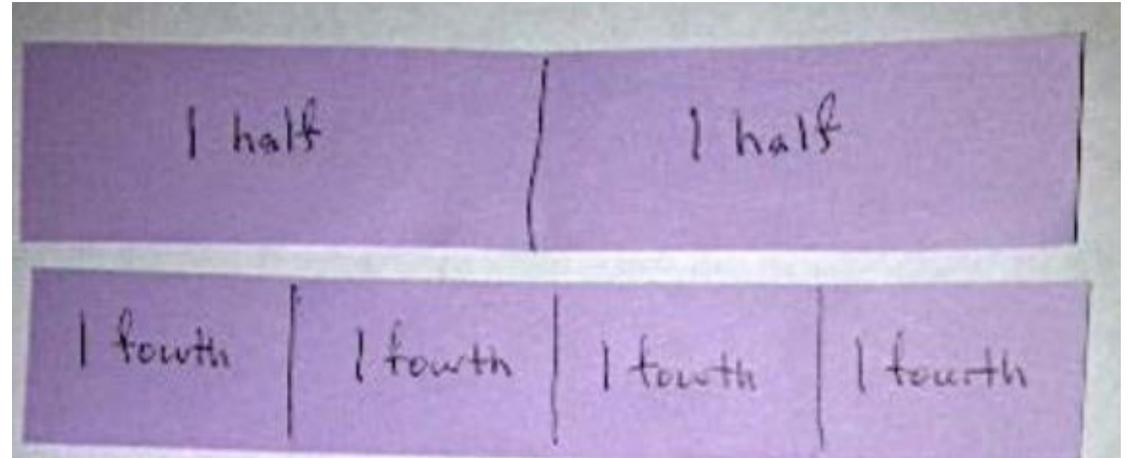


Some Fraction Tools We Will Use

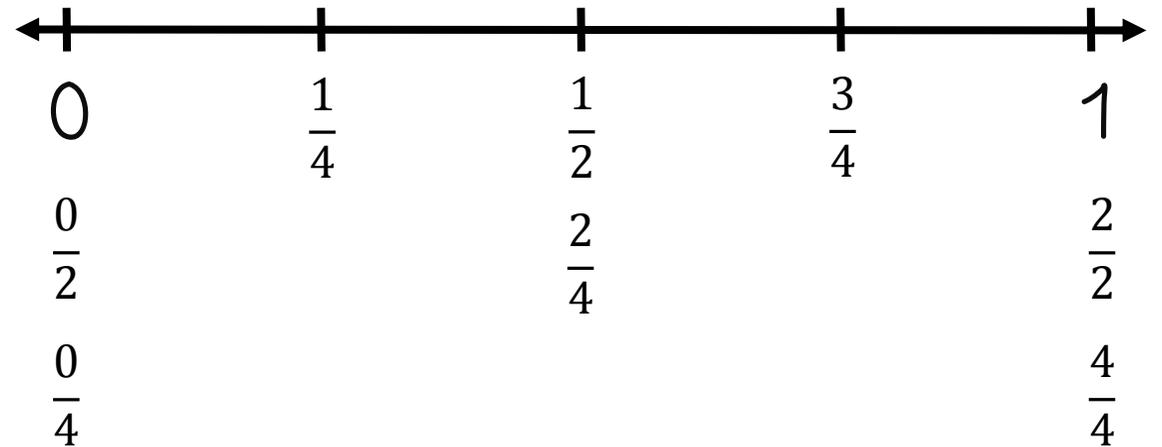
Fraction Strips



Fraction Strips



Number Line

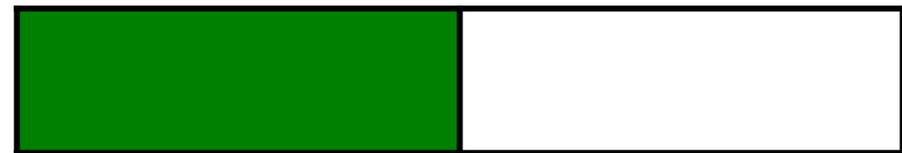
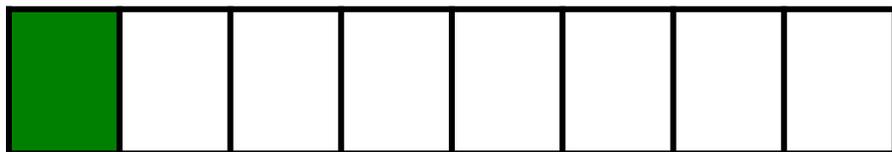


Comparing Fractions

- Compare fractions with a **different** numerator but the **same** denominator; e.g., $1/8$ is smaller than $3/8$, because 1 of a certain unit must be smaller than 3 of that same unit

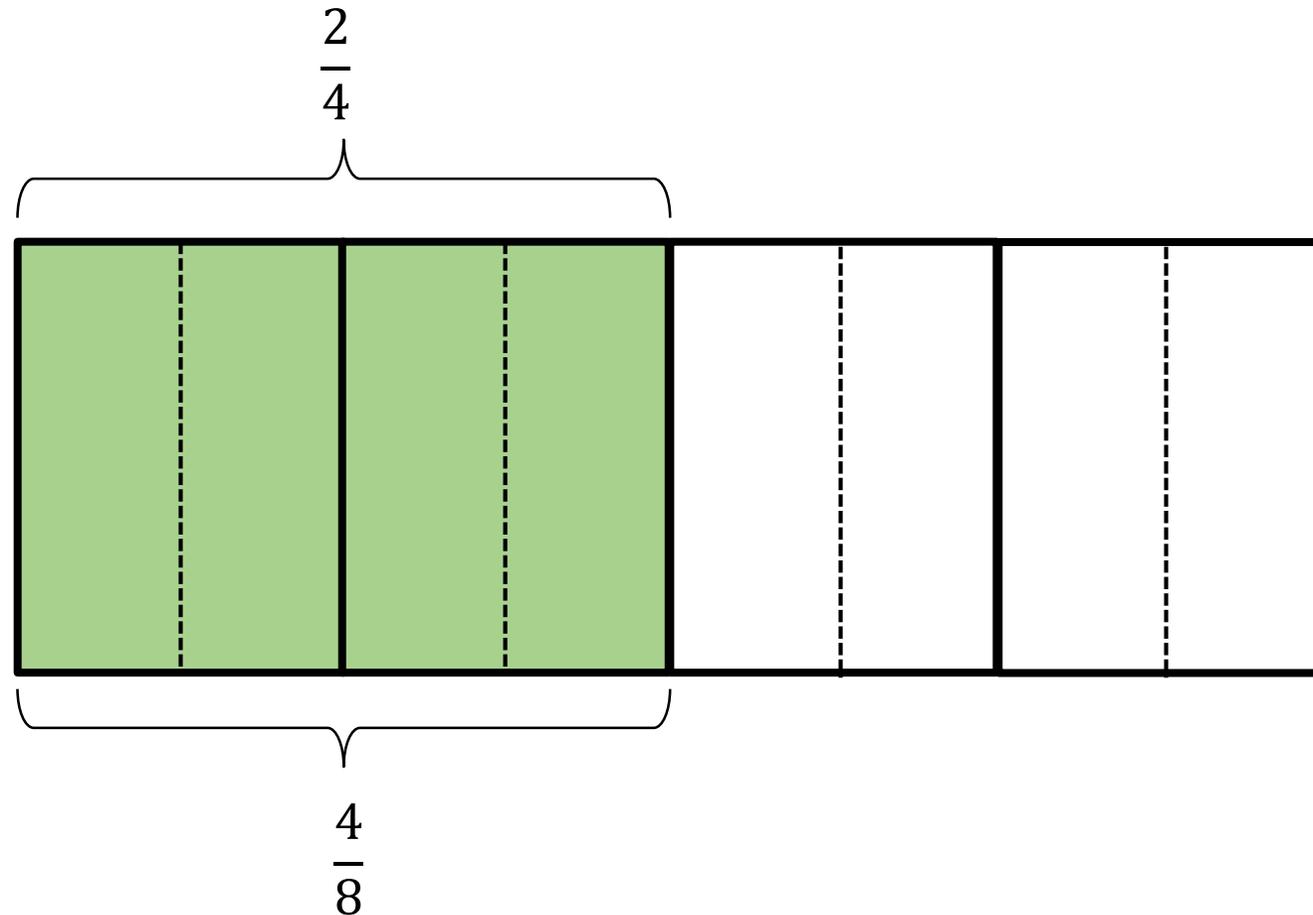


- Compare fractions with the **same** numerator but a **different** denominator; e.g., $1/8$ is smaller than $1/2$ because splitting the same whole into eight equal parts would yield smaller parts



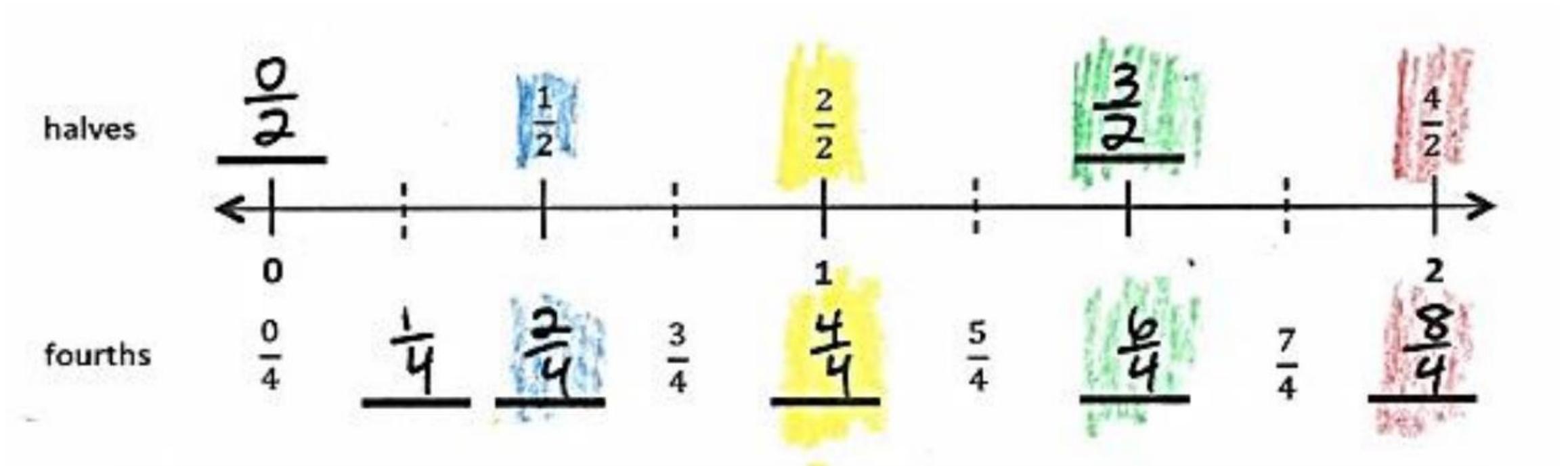
Equivalent Fractions

- Students represent fractions with drawings and partition “wholes” into different fractional parts to find equivalencies

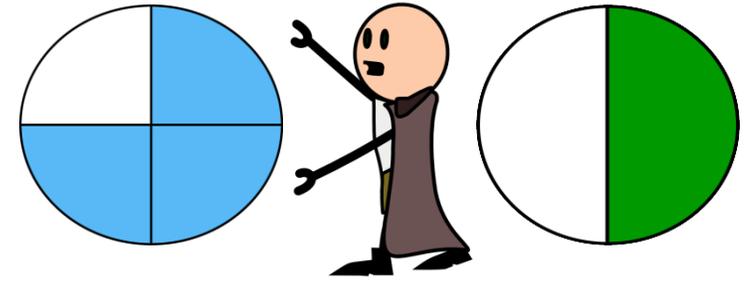


Equivalent Fractions

- We also use the open number line to plot fractions and find equivalencies



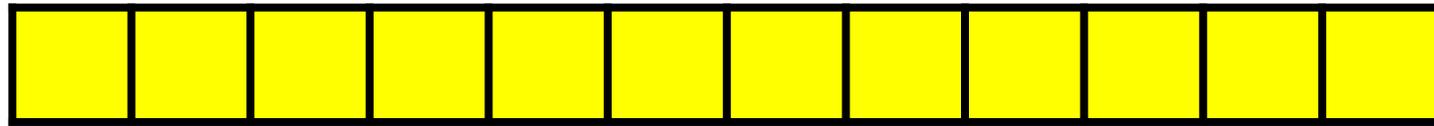
Game #2: *Capture Fractions*



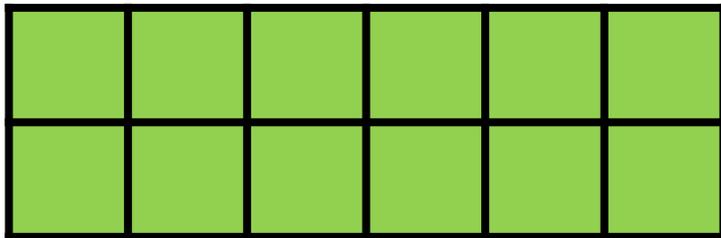
| How to Play | Where's the Math? |
|---|---|
| <ul style="list-style-type: none">• Divide the deck into equal-sized piles, one for each player.• In each round, each player turns over the top card in his/her pile. The players then figure out which fraction is larger. They may use fractions strips, a number line, or a verbal explanation to prove their thinking.• The player with the larger fraction puts both cards at the bottom of his/her pile.• The person with the most cards wins. | <ul style="list-style-type: none">• Fractions as numbers• Equivalent fractions• Comparing fractions• Fraction on a number line |

Exploration of Area

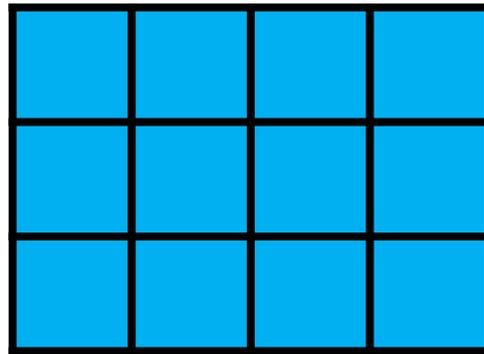
- The area of a shape can be measured in unit squares – which are 1 unit by 1 unit



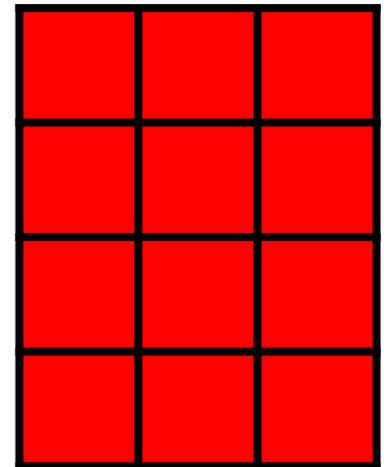
$$1 \times 12$$



$$2 \times 6$$



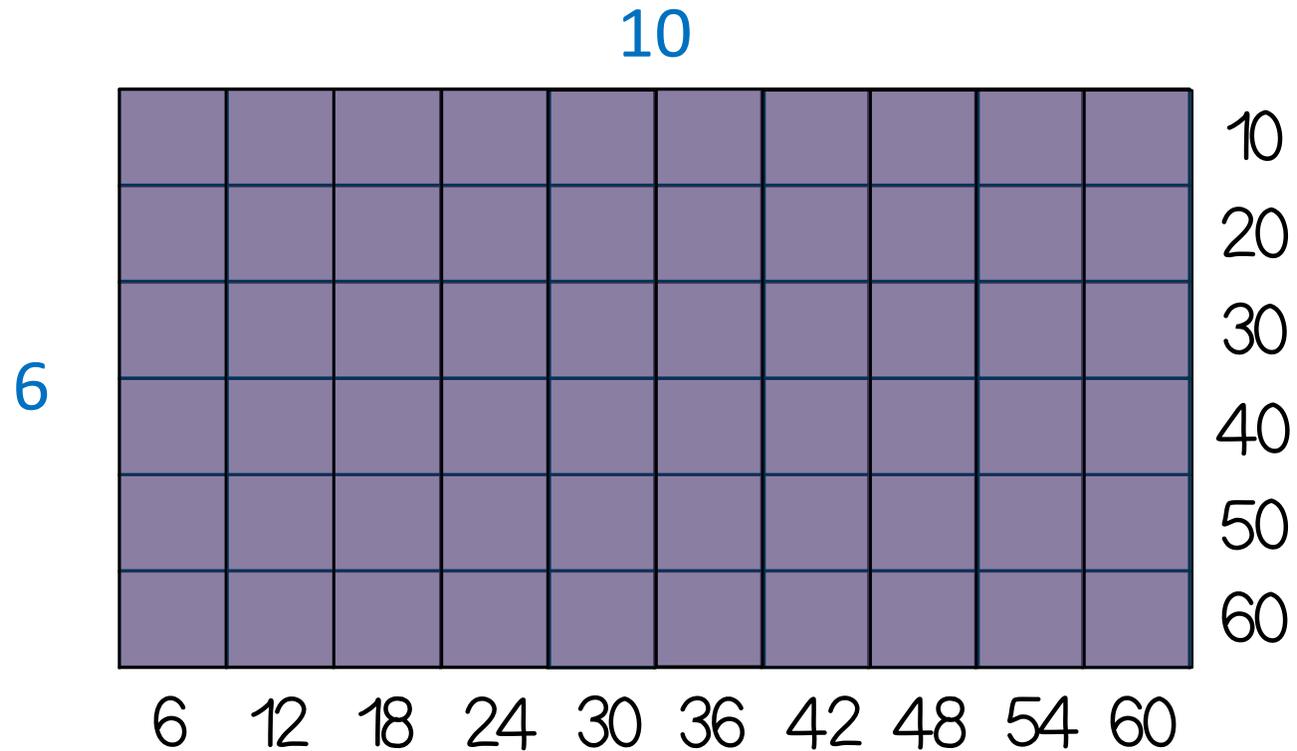
$$3 \times 4$$



$$4 \times 3$$

Exploration of Area

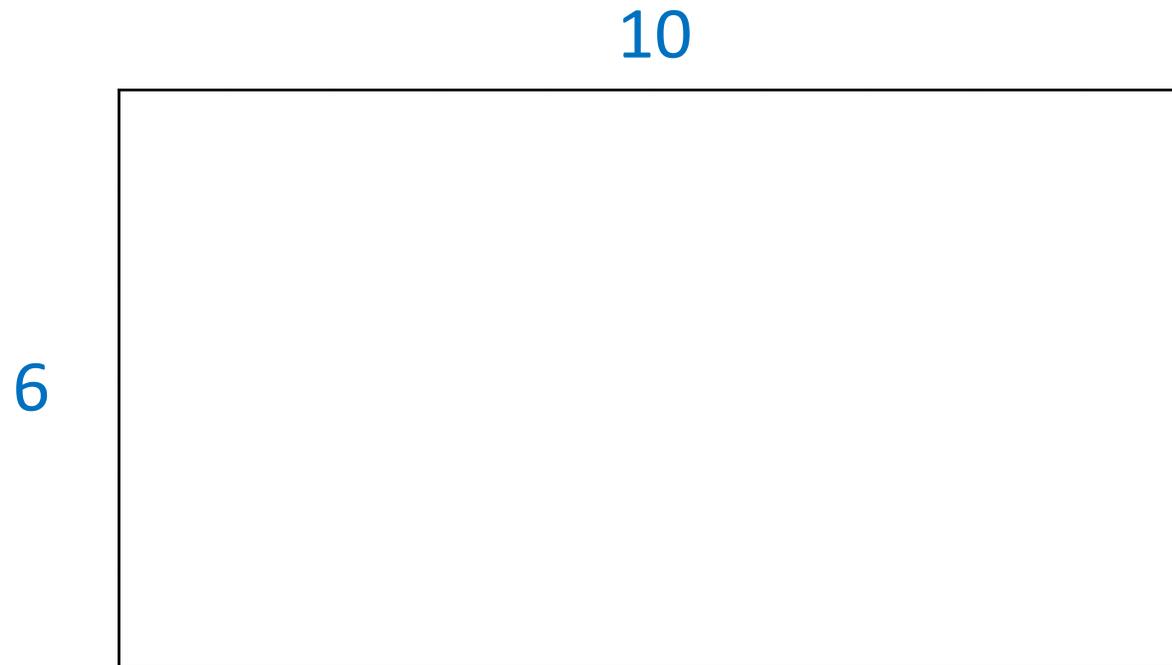
Area Model (Closed Array)



$$6 \times 10 = 60$$

Exploration of Area

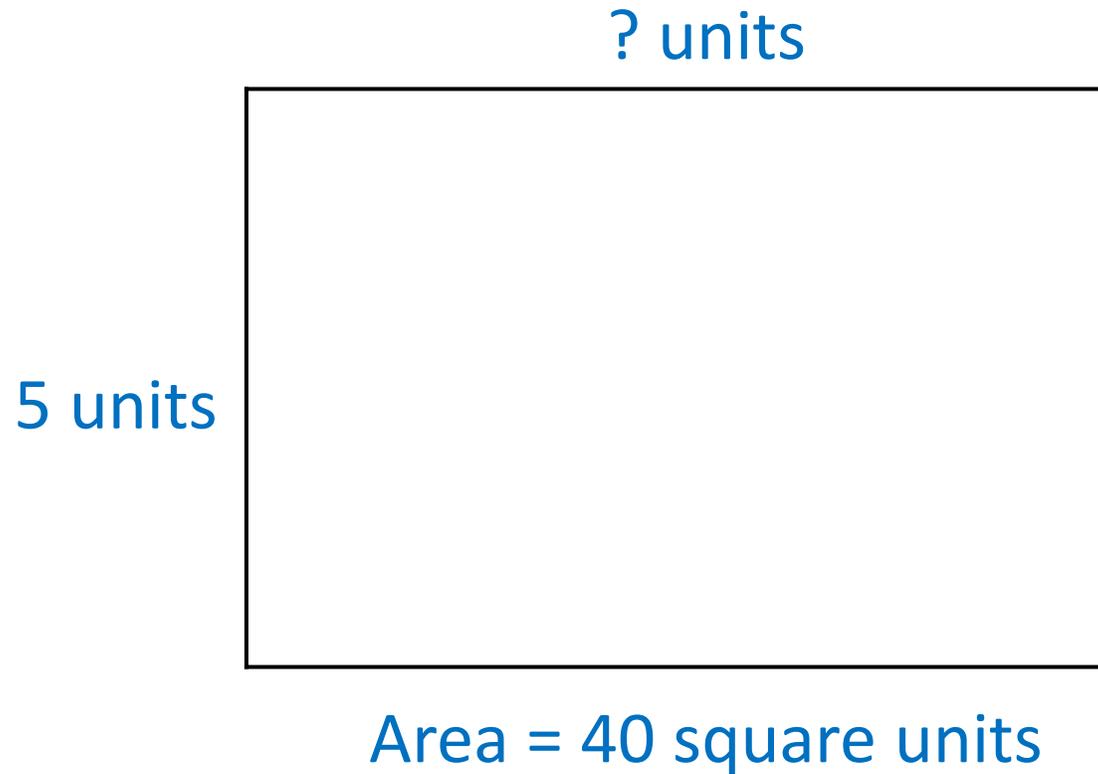
Area Model (Open Array)



$$6 \times 10 = 60$$

Exploration of Area

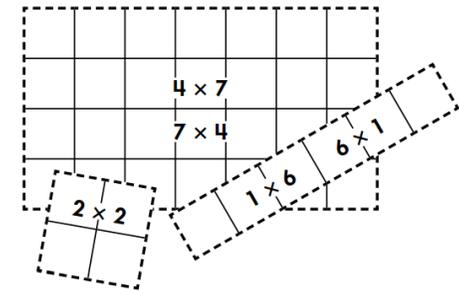
Area Model (Open Array)



$$5 \times \underline{\quad} = 40$$

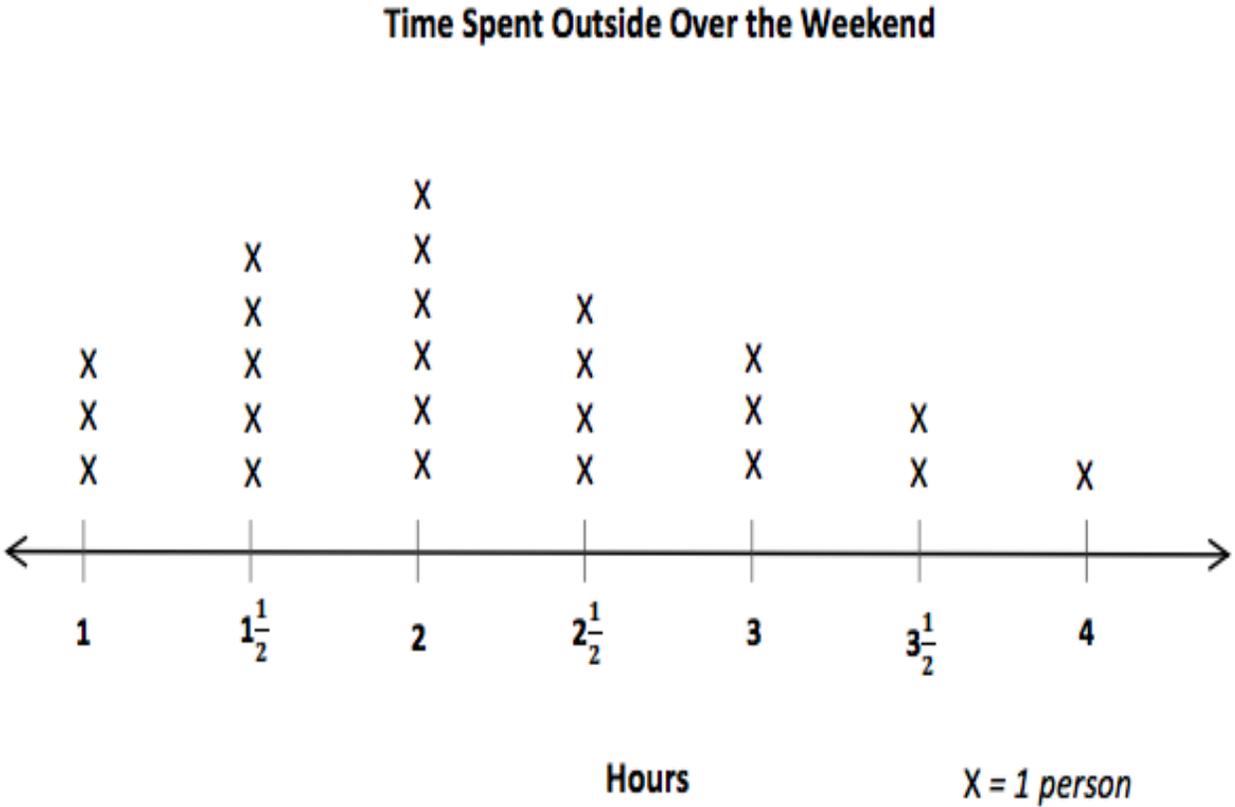
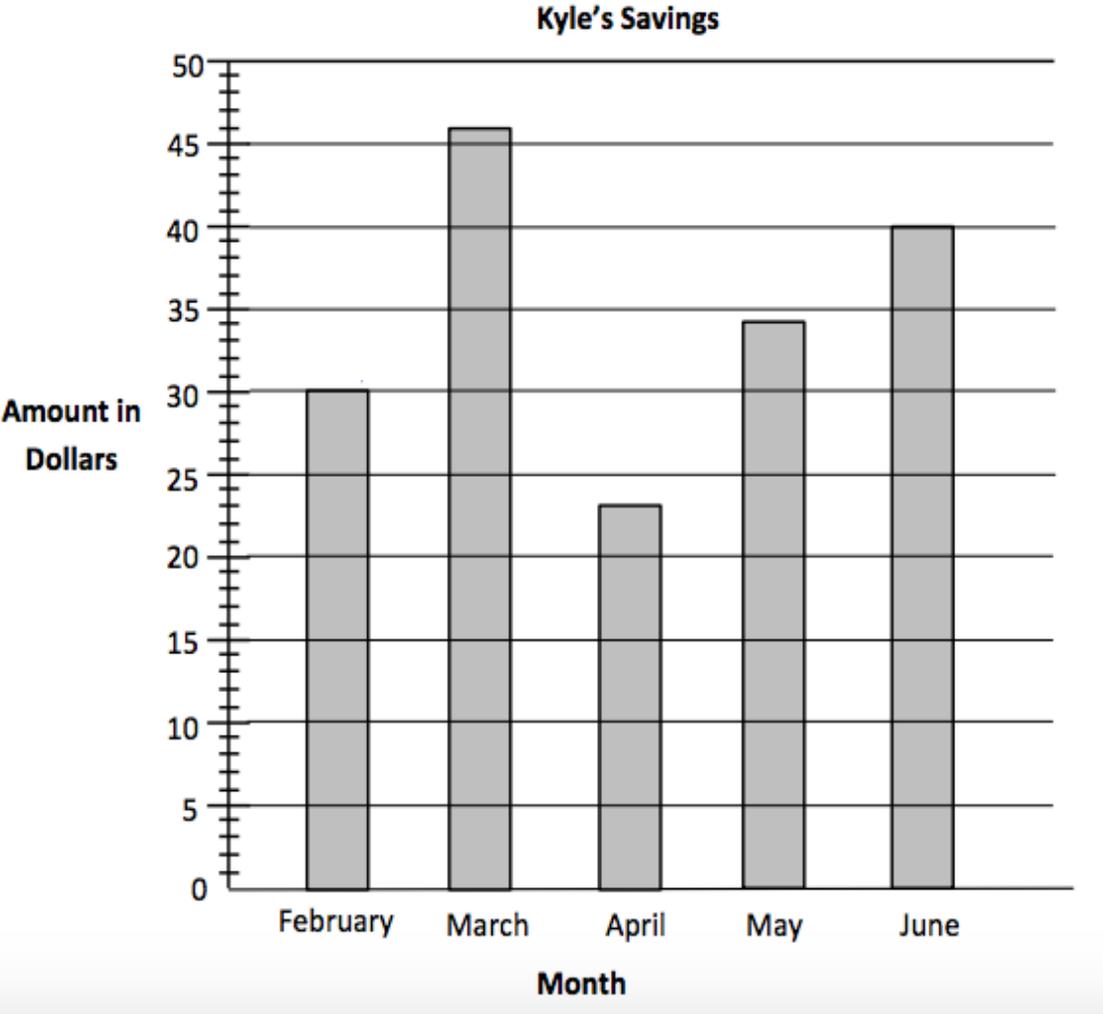
$$40 \div 5 = \underline{\quad}$$

Game #3: *Missing Factors*



| How to Play | Where's the Math? |
|--|---|
| <ul style="list-style-type: none">• Players take turns choosing an array card. Given the product and one factor, players say what the other factor is.• Players then turn over the array card and check the answer. Players keep their card if they are correct.• On the recording sheet, players record two equations, one multiplication and one division, to go with each array.• The player with the most cards at the end is the winner. | <ul style="list-style-type: none">• Conceptual understanding of multiplication and division• Skip counting• Relationship between multiplication and division• Fact fluency• Distributive property |

Measurement & Data



What is *Automaticity*?

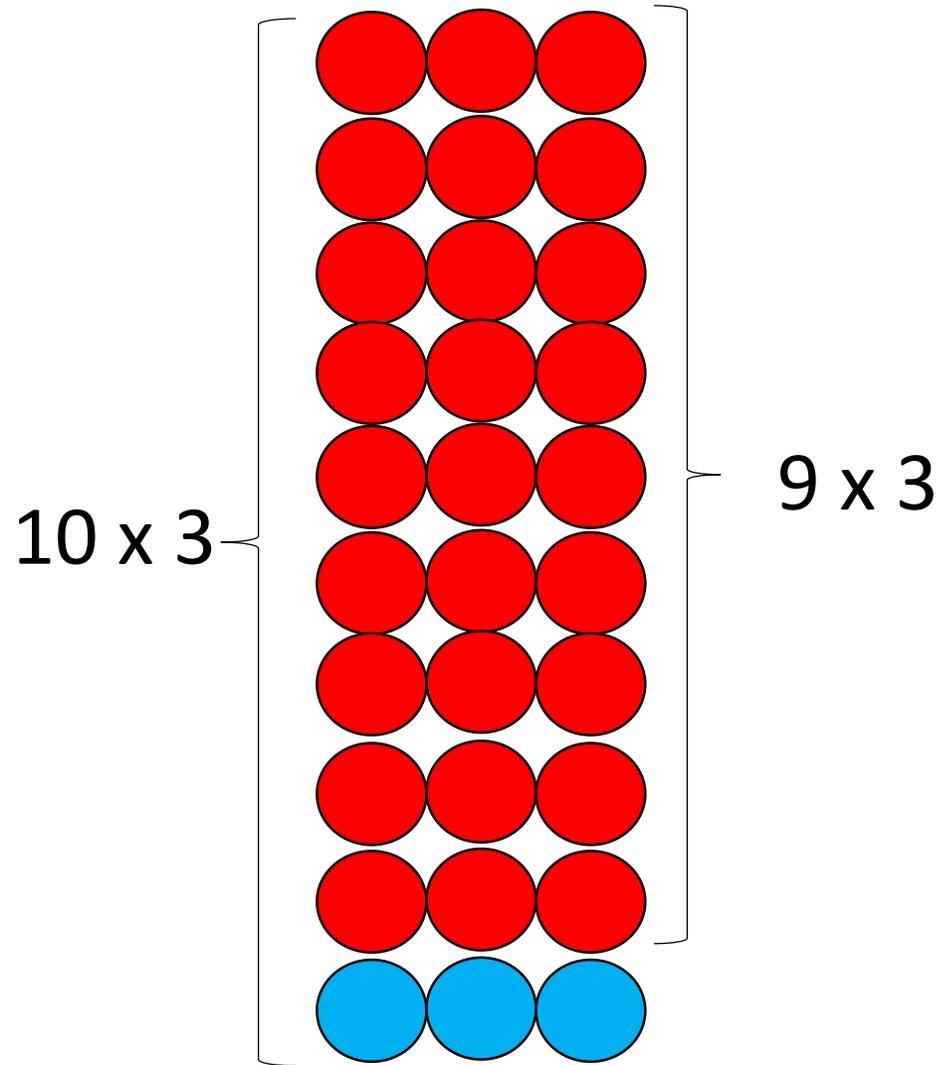
Memorization

- Committing the results of operations to memory so that thinking is unnecessary
- Isolated problems practiced one after another
- Emphasis is on answer recall

Automaticity

- Relies on thinking about relationships among facts
- Answer produced within a few seconds
- Eventually leads to memorization, but with much more meaning

What is *Automaticity*?

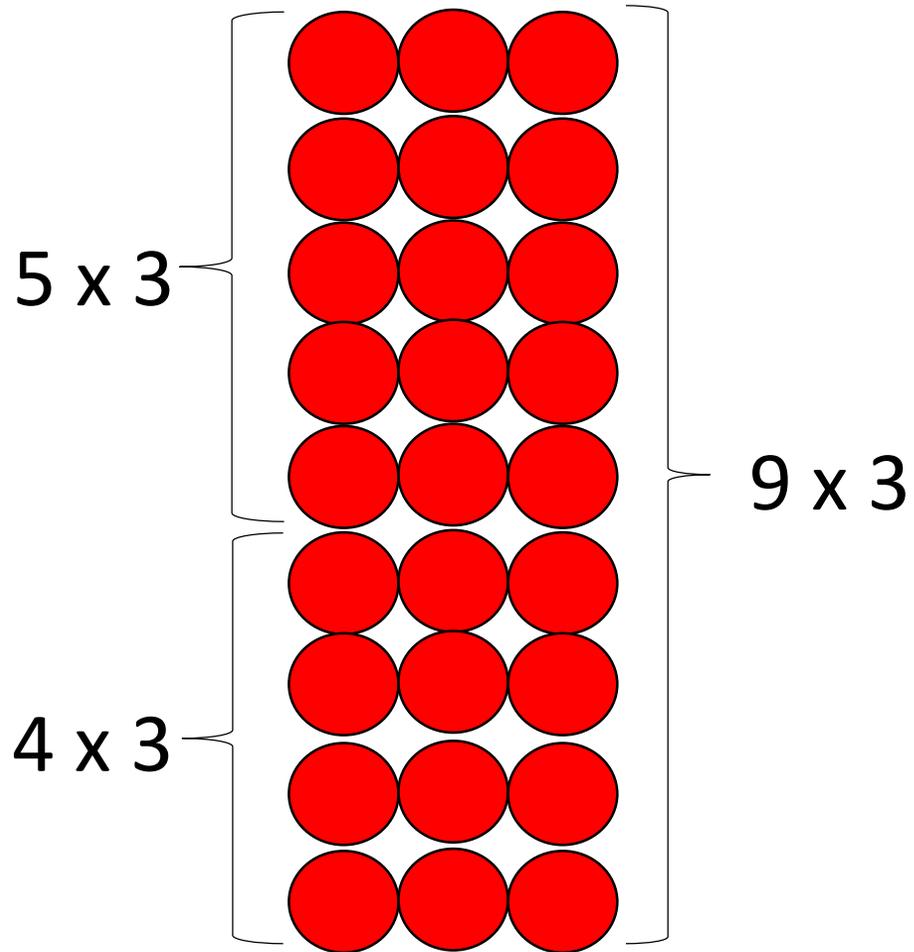


$$9 \times 3$$

I know 10×3 is 30, so
 9×3 must be 3 less
than 30... 27!



What is *Automaticity*?



$$9 \times 3$$

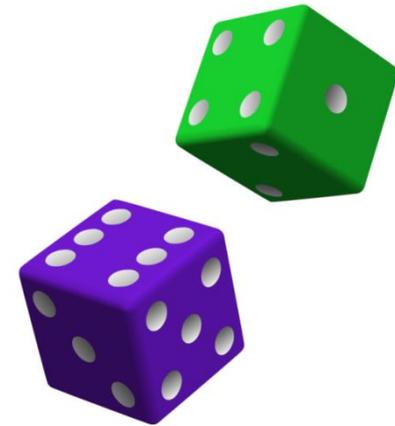
I know 5×3 is 15, and
 4×3 is 12, so 9×3 is
15 plus 12... 27!



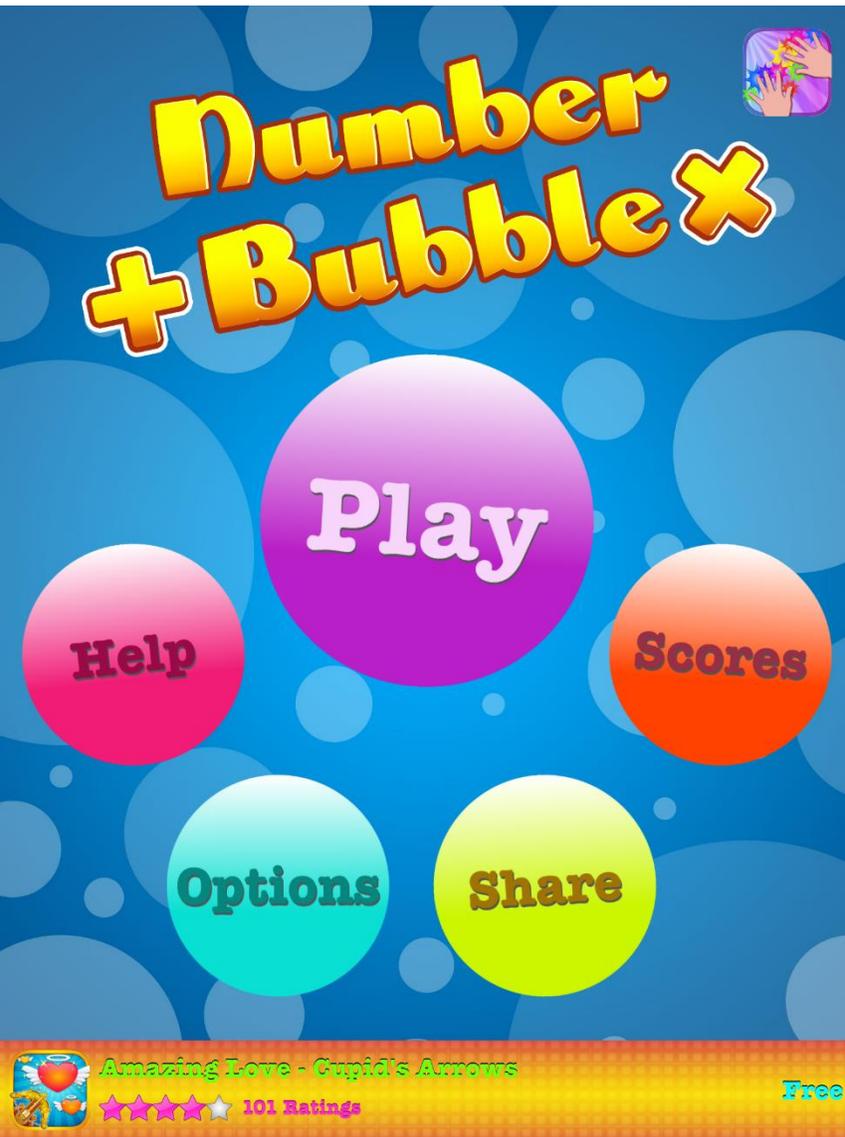
**What You Can Do
to Help
Your Third Grader**

Things You Can Do at Home

- Find the math in ordinary activities (cooking, gardening, shopping, home design)
- Ask questions strategically
 - Can you tell me how you know that?
 - Can you prove your thinking to me?
 - Is there another way to solve that problem?
- Play board and card games
- Play some of our school games



Try These Apps!

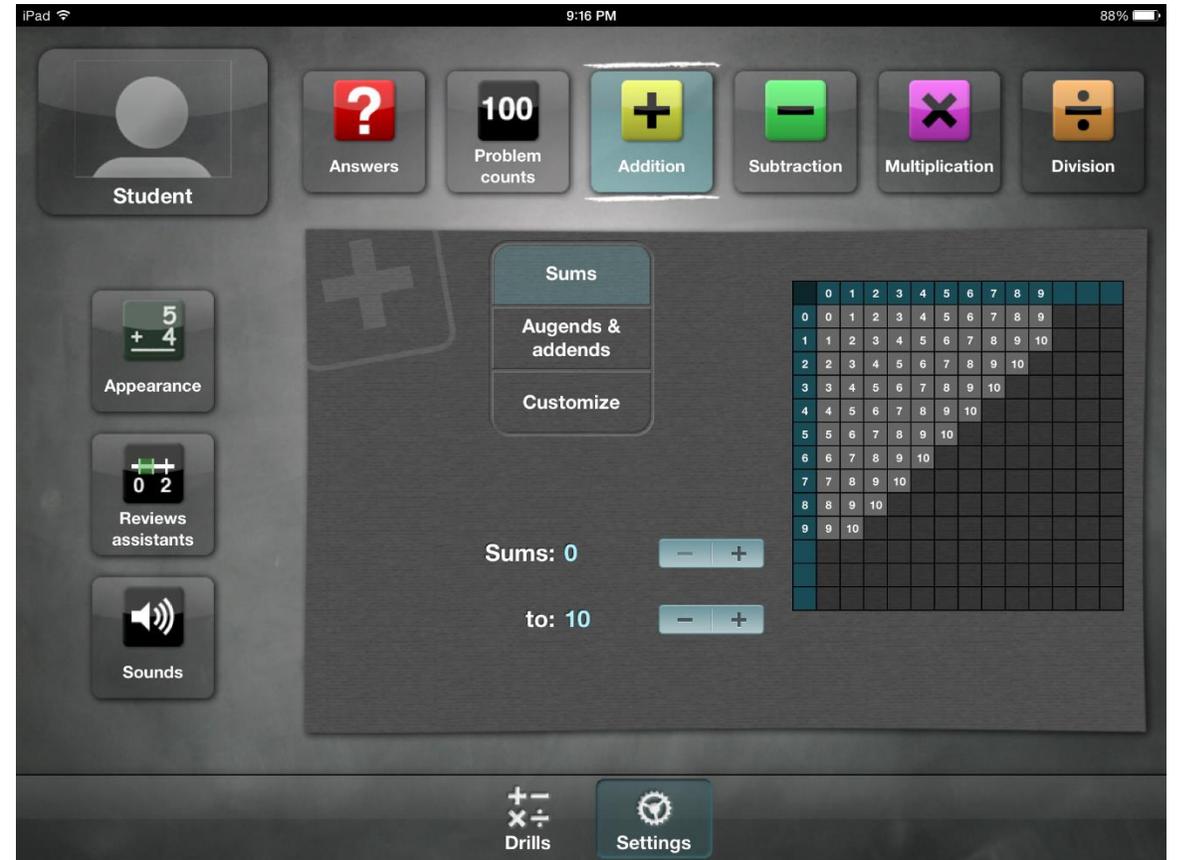


*Addition and
Multiplication
Number
Bubbles*



Try These Apps!

Math Drills



Helpful Resources

Dear First Grade Families,

In this letter, we will share a grade-specific overview of the year, as well as information about our current module.

Summary of the Year

First grade mathematics is about:

- (1) Developing understand of addition and subtraction, and strategies for addition and subtraction within 20;
- (2) Developing understanding of whole number relationships and place value, including grouping tens and ones;
- (3) Developing understanding of linear measurement and measuring lengths as iterating length units;
- (4) Reasoning about attributes of, and composing and decomposing geometric shapes.

The learning goal for each student is to achieve *mastery* by the end of the school year. Along the way teachers and students will celebrate what the students can do now and identify what the students need to work on next.

A Story of Units

The yearly curriculum is broken into modules (units), whose sequence is as follows:

Module 1: Sums and Differences to 10

Module 2: Introduction to Place Value Through Addition and Subtraction Within 20

Module 3: Ordering and Comparing Length Measurements as Numbers

Module 4: Place Value, Comparison, Addition and Subtraction of Numbers to 40

Module 5: Identifying, Composing, and Partitioning Shapes

Module 6: Place Value, Comparison, Addition and Subtraction of Numbers to 100

As your child begins a new module, you will receive information explaining the learning targets that are being addressed.

Module 1: Overview

In Grade 1, work with numbers to 10 continues to be a major stepping-stone in learning the place value system. In Module 1, students work to further understand the meaning of addition and subtraction begun in Kindergarten, largely within the context of the Grade 1 word problem types. They begin intentionally and energetically building fluency with addition and subtraction facts—a major gateway to later grades.

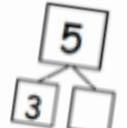
Please see reverse side for specific Module 1 objectives.

If at any time throughout the module, you have questions or concerns regarding your child's progress, please feel free to contact your child's teacher.

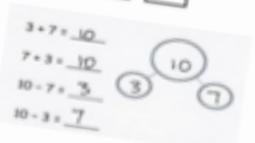
Sincerely,
MUFSD 1st Grade Teachers

Examples of Concepts in Module 1: First Grade

Children will learn to use **Piano Fingers** when counting up to ten. They will have their hands in front of them with their fingers extended (as if about to play a piano). Counting from left to right with their fingers (beginning with left pinky and moving across hands toward right pinky) is an organized way for them to use their most readily-available tool! This type of counting also mimics the number line/path, which will be used in later lessons.



Number Bonds: Number Bonds are a way to represent a math fact and a way to represent the *known* and *unknown* quantities in a problem. Students write the total in the large circle and the addends in the small circles of the bond. This is another way to create a visual representation of the **embedded numbers** (3 and 2 in the example on the top left) within a given number.

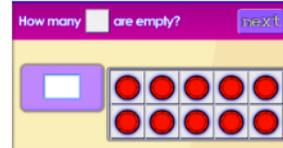


Ten Frames are a visual representation of a number. They can be used to show the two parts in a number under ten (5 and 1 in the example below) and to visualize and show different ways to make a number (if the ten frame on the right had two rows of three filled in).



They can also be used for "Make Ten" math

My Web Page



Resources

+ App Recommendations

+ Problem Solving & Puzzle Web Sites

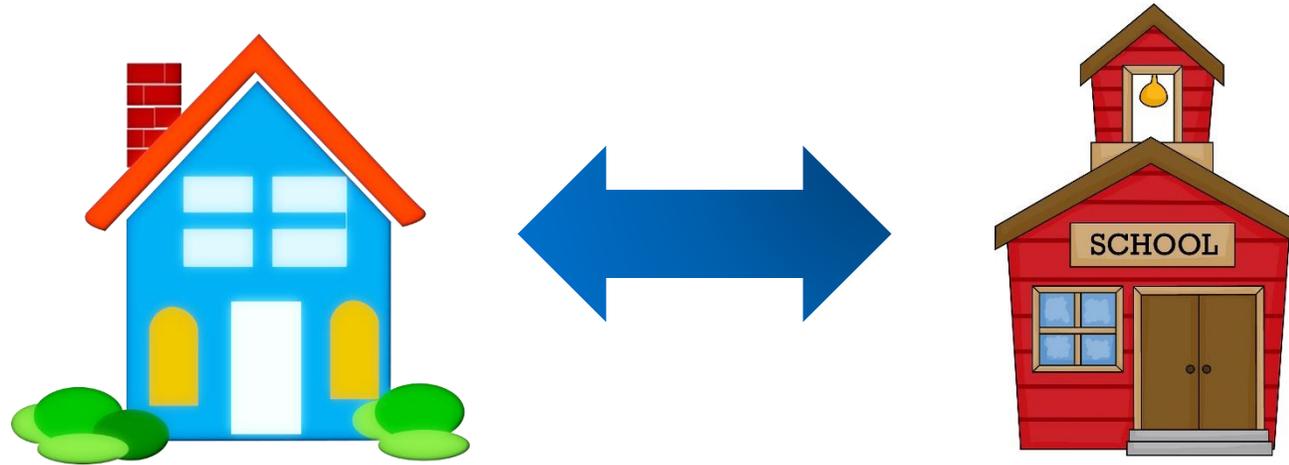
+ Enrichment Ideas

+ Our Favorite Math Games

+ Module Overview Parent Letters

Reflection

What is one thing that you can commit to doing at home to support the work being done here at school?



Thank You!

My contact information:

aforcinito@mamkschools.org

Please fill out a feedback form on your way out.

Questions?