

Mendon Center Elementary

Common Core State Standards

Mathematics

Grades K-2

October 25, 2012

Common Core State Standards for Mathematics

- Standards for Mathematical Practice
 - Describe processes that students are expected to develop and apply in the math classroom.
- Standards for Mathematical Content
 - Define what students should understand, know, and be able to do

Standards for Mathematical Practice

Common Core Language	Student-friendly Language
<ul style="list-style-type: none">• Make sense and persevere in solving problems.	<ul style="list-style-type: none">• I can try many times to understand and solve a math problem.
<ul style="list-style-type: none">• Reason abstractly and quantitatively.	<ul style="list-style-type: none">• I can think about the math problem in my head, first.
<ul style="list-style-type: none">• Construct viable arguments and critique the reasoning of others.	<ul style="list-style-type: none">• I can make a plan, called a strategy, to solve the problem and discuss other students' strategies.
<ul style="list-style-type: none">• Model with mathematics.	<ul style="list-style-type: none">• I can use math symbols and numbers to solve the problem.

Standards for Mathematical Practice

Common Core Language	Student-friendly Language
<ul style="list-style-type: none">• Use appropriate tools strategically.	<ul style="list-style-type: none">• I can use math tools, pictures, drawings, and objects to solve the problem.
<ul style="list-style-type: none">• Attend to precision.	<ul style="list-style-type: none">• I can check to see if my strategy and calculations are correct.
<ul style="list-style-type: none">• Look for and make use of structure.	<ul style="list-style-type: none">• I can use what I already know about math to solve the problem.
<ul style="list-style-type: none">• Look for and express regularity in repeated reasoning.	<ul style="list-style-type: none">• I can use a strategy that I used to solve another math problem.

Instructional Shifts



Students must.....

- Understand why the math works
- Make the math work
- Prove they know why and how the math works
- Apply the math in real world situations
- Know which math to use for which situation
- Be able to use core math facts fluently

Kindergarten Focus

- Learning numbers and what numbers represent
- Adding and subtracting
- Identifying and working with shapes

*Examples of
Kindergarten Word
Problems*

 Addition	Three red apples and three green apples are on the table. How many apples are on the table?
 Subtraction	Mom has ten apples. She gives one to Mary Ann. How many apples are left?

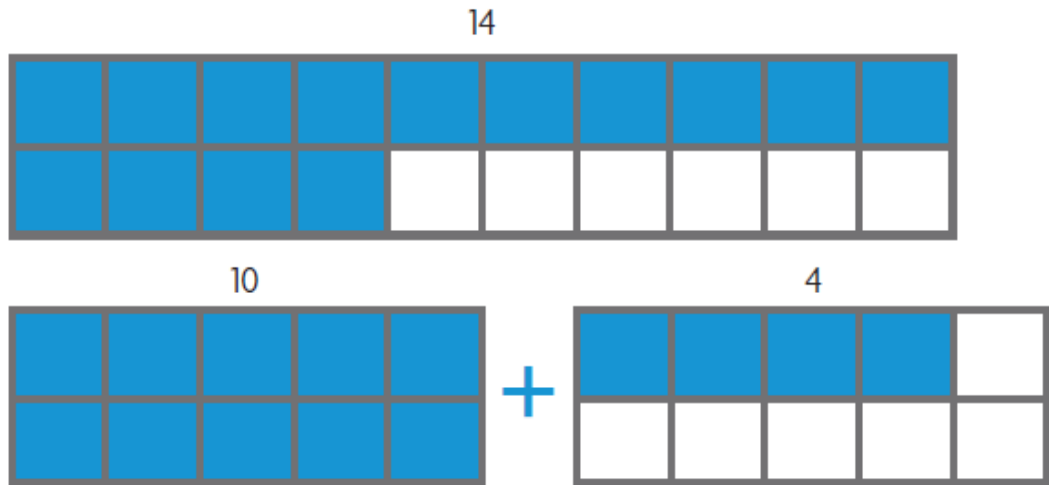
In kindergarten your child will use a variety of pictures and models to understand and solve addition and subtraction problems.



Your child will learn to find the “partners” that make ten for any number. This drawing shows that if you have 8, it takes 2 more to make 10.





From there, students learn to think of ten as a unit and to break all the teen numbers down to a ten and some leftover ones.



Grade 1 Focus

- Working with whole numbers and place value including grouping numbers into tens and ones as they learn to add and subtract up through 20
- Using charts, tables, and diagrams to solve problems

Examples of Grade One Word Problems

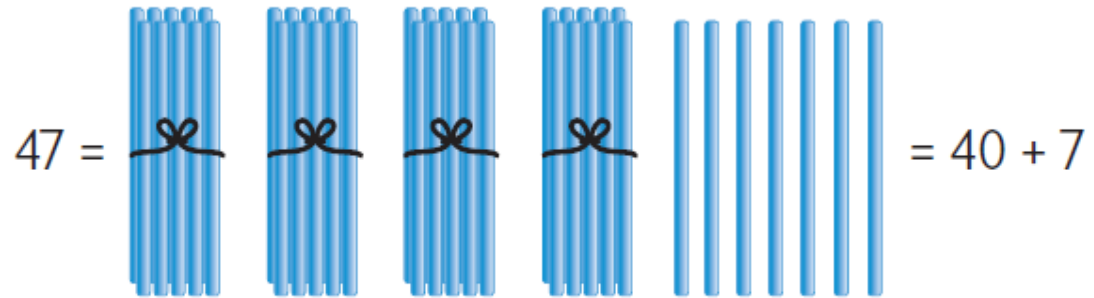
 Addition	6 bunnies sat on the grass. Some more bunnies hopped over. Then there were 14 bunnies. How many bunnies hopped over?
 Subtraction	14 bunnies were sitting on the grass. Some bunnies hopped away. Then there were 5 bunnies. How many bunnies hopped away?
Comparison	Lucy has 12 apples. Julie has 9 apples. How many more apples does Lucy have than Julie?

Your child will use pictures and diagrams to show addition and subtraction and to compare amounts.



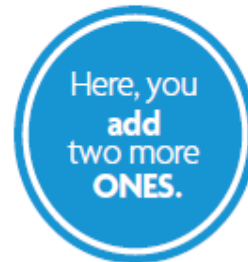
*Lucy has three more apples than Julie.
Julie has three fewer apples than Lucy.*

Students use models and pictures to show that 47 is the same as 47 ones, or 4 tens + 7 ones, and to better understand the relative size of the units.



Your child will use this understanding of place value to add one- and two-digit numbers together.

$$47 + 2 = 49$$



$$47 + 20 = 67$$



Grade 2 Focus

- Extending their understanding of place value to the hundreds place
- Using place value understanding to solve word problems including those involving length and other units of measure
- Adding and subtracting, quickly and accurately adding and subtracting numbers up through 20
- Working with numbers up through 100
- Building a foundation for understanding fractions by working with shapes and geometry

Students learn that
 $250 =$
2 hundreds and 5 tens,
25 tens, or 250 ones.

$$\boxed{250} = \boxed{2} + \boxed{5} + \boxed{0}$$

hundreds tens ones

Students apply their
understanding that
 $5 \text{ tens} + 5 \text{ tens} =$
 $10 \text{ tens, or } 1 \text{ hundred,}$
that can then be added
to the hundreds place.

$$\boxed{2} \boxed{5} \boxed{0} + \boxed{2} \boxed{5} \boxed{3} = \boxed{5} \boxed{0} \boxed{3}$$

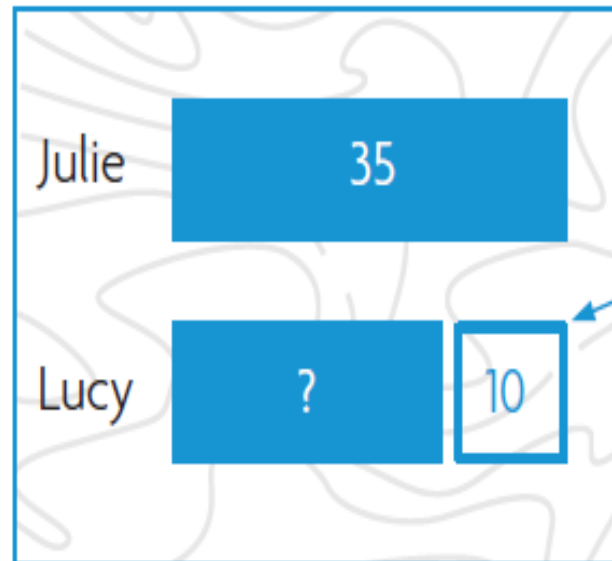
hundreds tens ones hundreds tens ones hundreds tens ones

Students in grade two will use diagrams such as this one to think through and solve one- and two-step word problems.

Julie has 35 books. Julie has 10 more books than Lucy. How many books does Lucy have? How many books do they have together?

Step 1: If Lucy has 10 less books than Julie, students first need to figure out what 10 less than 35 is.

$$35 \text{ books} - 10 \text{ books} = 25 \text{ books}$$

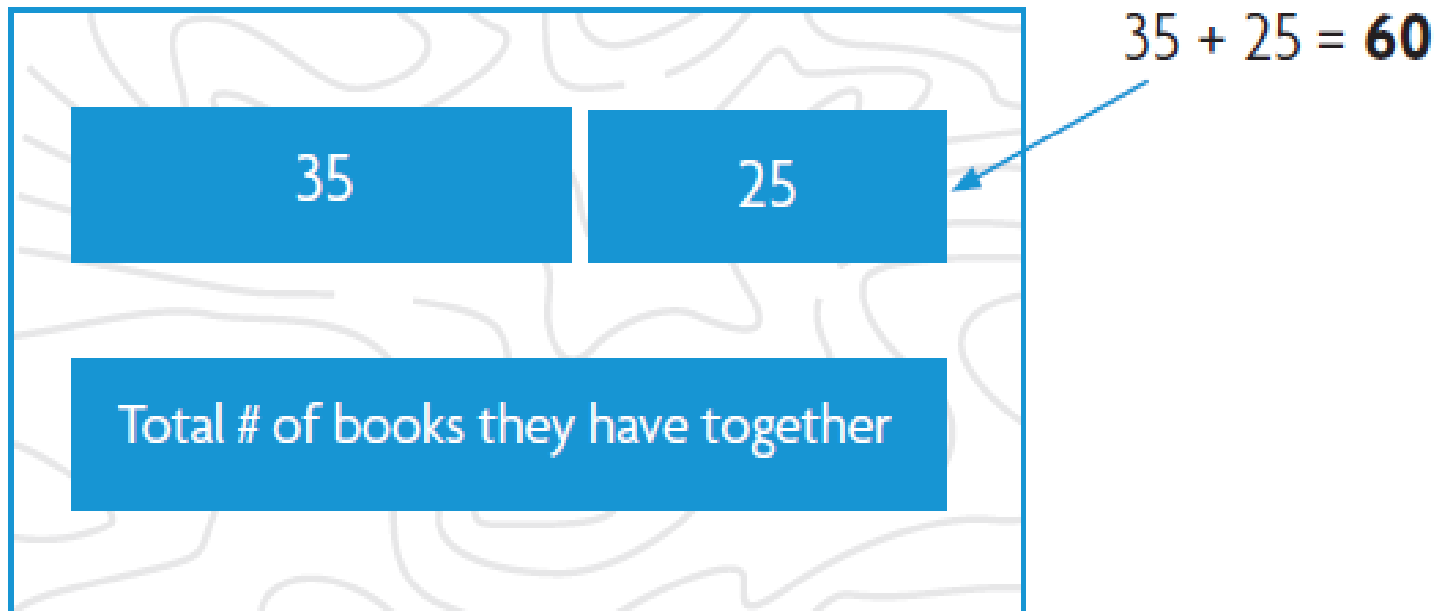


$$25 + 10 = 35$$

$$35 - 10 = 25$$

Step 2: Students then have to add the number of books Julie has to the number of books Lucy has.

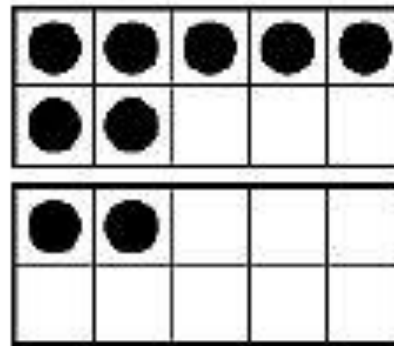
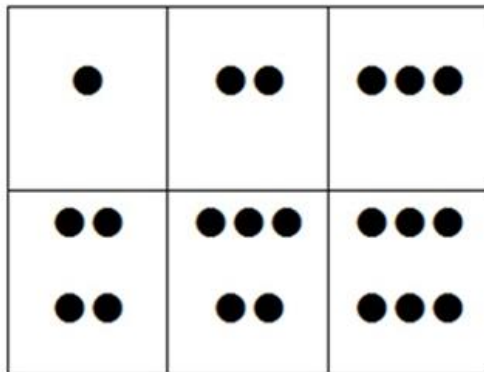
$$35 \text{ books} + 25 \text{ books} = 60 \text{ books}$$



Other tools

Dot Cards and Ten Frames

- Develop students' subitizing skills
- Instantly see "how many"



Showing Combinations to Eight

The diagram illustrates four different combinations of two dice that sum to 8:

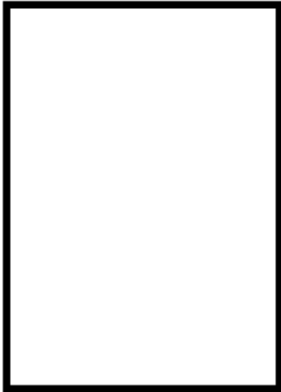
- Two dice showing 6 and 2, with the equation $6 + 2 = 8$ written below them.
- Two dice showing 7 and 1, with the equation $7 + 1 = 8$ written below them.
- Two dice showing 5 and 3, with the equation $5 + 3 = 8$ written below them.
- Two dice showing 8 and 0, with the equation $8 + 0 = 8$ written below them.

I found 4 ways to make 8.

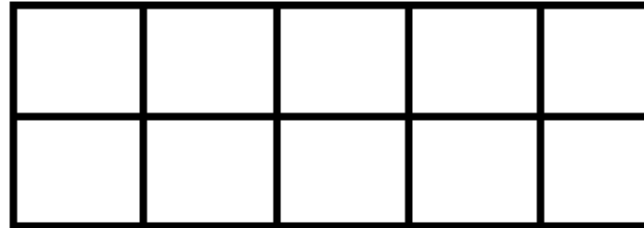
Representing Numbers in Three Ways

Name:

My dot card:



My ten frame:



The digit:

Missing Number

1				5
	7		9	
11		13		
	17		19	

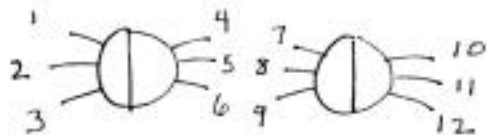
Rekenreks

- Arithmetic rack designed by Adrian Treffers, Holland
- Each row made of five red beads and five white beads
- Uses 5 and 10 as anchors for counting, adding and subtracting is more efficient than one-by-one counting
- provides learners with the visual models to discover number relationships and develop a variety of addition and subtraction strategies





1 Use pictures, numbers and words to show how you solve the problem:



$$6 + 6 = 12$$

they have 6 legs.

I know that case
I am smart because

There are 12 legs.

smart

because

Case I am a number expert
because

What should you be doing at home?

- Asking the right questions
 - Have you solved similar problems before?
 - Can you think of a number sentence (equation) to match the story (situation)?
 - What tools can help you solve this problem?
 - Is your answer reasonable?

Key Fact Fluencies

Grade

Required Fluency

- K Add/subtract within 5
- 1 Add/subtract within 10
- 2 Add/subtract within 20
Add/subtract within 100 (pencil and paper)
- 3 Multiply/divide within 100
Add/subtract within 1000

What should you be doing at home?

- Using math in the real world
- Having conversations about numbers

Other Tips for Parents

- Don't attempt to “re-teach” the content
- Encourage your student to try based on what they know from class
- Help child to articulate what's challenging
- Remember the role of homework