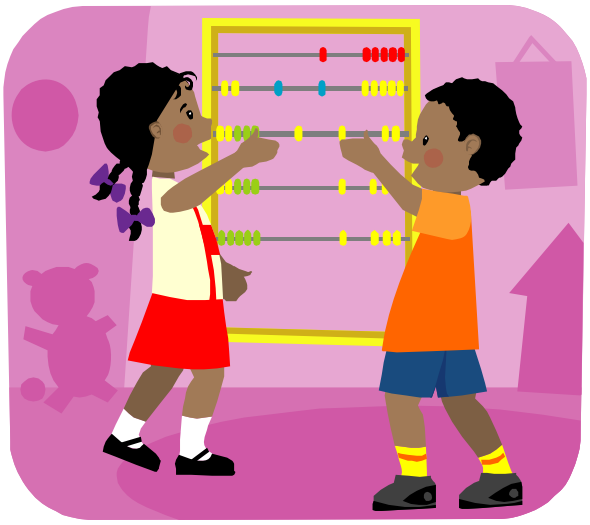
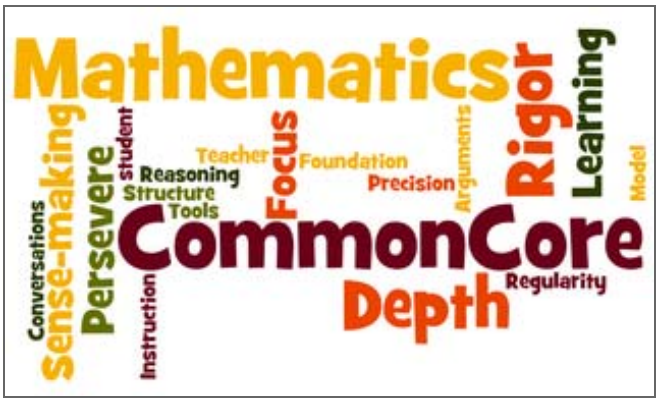
West Genesee Mathematics

A Parent's Guide to 3rd Grade Mathematics



Compiled by Teachers at East Hill Elementary School



Dear Parents,

This guide is intended to better acquaint you with the Common Core Learning Standards for 3rd Grade Mathematics. It has been compiled from several different sources.

Included in this guide is an overview of the Common Core Learning Standards for 3rd grade, a glossary compiled by Michele Gipe, West Genesee Math Coach, that explains many of the newer terms to which students are being exposed, information from “A Parent’s Backpack Guide to the Common Core” (also from EngageNY), a sampling of strategies that students use in third grade for various concepts from a variety of sources, information from “Parent Roadmap: Supporting Your Child in Grade Three Mathematics,” and websites for both parents and students.

We will continue to update and revise these guides as we continue along our journey in the implementation of the common core. If you have any suggestions for things to include in this guide, please send an email to lcraig@westgenesee.org. I hope you find this guide helpful. Thank you!

Lisa Craig
East Hill Elementary Principal
Elementary Math Coordinator

Table of Contents

3rd Grade Common Core Learning Standards ……..……p. 2 - 3

Parent's Backpack Guide to the Common Core State Standards for Mathematics .. p. 3

Parent Roadmap: Supporting Your Child in Grade 3 Mathematics: Place Value ..…p. 4

Parent Roadmap: Supporting Your Child in Grade 3 Mathematics: Fractions ……p. 5

3rd Grade Glossary created by Michele Gipe, West Genesee Math Coach ……..p. 6 - 8

Stages of Addition adapted from Why Before How by Jana Hazenkamp……..p. 9

Stages of Subtraction adapted from Why Before How by Jana Hazenkamp……. p. 10

Addition and Subtraction Strategies from the KATM Flip Book for Grade 3 ..……...p. 11

Additional Strategies from East Irondequoit ……..……p. 12 - 15

Multiplication Strategies from the Hudsonville, MI CSD ……..……p. 16

Multiplication & Division Strategies from the KATM Flip Book for Grade 3 ..…p. 16 - 17

Websites for Parents ……..……p. 18

Websites for Third Graders ……..……p. 19

Resources Used ……..……...p. 19

The way we taught students in the past simply does not prepare them for the higher demands of college and careers today and in the future. Your school and schools throughout the country are working to improve teaching and learning to ensure that all children will graduate high school with the skills they need to be successful.

In mathematics, this means three major changes. Teachers will concentrate on teaching a more focused set of major math concepts and skills. This will allow students time to master important ideas and skills in a more organized way throughout the year and from one grade to the next. It will also call for teachers to use rich and challenging math content and to engage students in solving real-world problems in order to inspire greater interest in mathematics.

Taken from Parent Roadmap: Supporting Your Child in Grade Three Mathematics

An Overview of 3rd Grade Math

Mathematical Practices

These eight practices are the goals of all math education, K-12

1. Make sense of problems and persevere in solving them.

2. Reason abstractly and quantitatively.

3. Construct viable arguments and critique the reasoning of others.

4. Model with mathematics.

5. Use appropriate tools strategically.

6. Attend to precision.

7. Look for and make use of structure.

8. Look for and express regularity in repeated reasoning.

In Grade 3, instructional time should focus on four critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.

1. Students develop an understanding of the meanings of multiplication and division of whole numbers through activities and problems involving equal-sized groups, arrays, and area models; multiplication is finding an unknown product, and division is finding an unknown factor in these situations. For equal-sized group situations, division can require finding the unknown number of groups or the unknown group size. Students use properties of operations to calculate products of whole numbers, using increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving single-digit factors. By comparing a variety of solution strategies, students learn the relationship between multiplication and division.

2. Students develop an understanding of fractions, beginning with unit fractions. Students view fractions in general as being built out of unit fractions, and they use fractions along with visual fraction models to represent parts of a whole. Students understand that the size of a fractional part is relative to the size of the whole. For example, 1/2 of the paint in a small bucket could be less paint than 1/3 of the paint in a larger bucket, but 1/3 of a ribbon is longer than 1/5 of the same ribbon because when the ribbon is divided into 3 equal parts, the parts are longer than when the ribbon is divided into 5 equal parts. Students are able to use fractions to represent numbers equal to, less than, and greater than one. They solve problems that involve comparing fractions by using visual fraction models and strategies based on noticing equal numerators or denominators.

3. Students recognize area as an attribute of two-dimensional regions. They measure the area of a shape by finding the total number of same-size units of area required to cover the shape without gaps or overlaps, a square with sides of unit length being the standard unit for measuring area. Students understand that rectangular arrays can be decomposed into identical rows or into identical columns. By decomposing rectangles into rectangular arrays of squares, students connect area to multiplication, and justify using multiplication to determine the area of a rectangle.

4. Students describe, analyze, and compare properties of two-dimensional shapes. They compare and classify shapes by their sides and angles, and connect these with definitions of shapes. Students also relate their fraction work to geometry by expressing the area of part of a shape as a unit fraction of the whole.

Big Ideas in Grade 3

Operations and Algebraic Thinking

• Represent and solve problems involving multiplication and division.

• Understand properties of multiplication and the relationship between multiplication and division.

• Multiply and divide within 100.

• Solve problems involving the four operations, and identify and explain patterns in arithmetic.

Number and Operations in Base Ten

• Use place value understanding and properties of operations to perform multi-digit arithmetic.

Number and Operations—Fractions

• Develop understanding of fractions as numbers.

Measurement and Data

• Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.

• Represent and interpret data.

• Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

• Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

Geometry

• Reason with shapes and their attributes.

What is Changing in Mathematics Education

The information below was taken from the "Parent's Backpack Guide to Common Core State Standards" found on engageny.org.

To improve student learning, the new Common Core State Standards are different from the old ones. These changes are called shifts. The chart below shows what is shifting, what you might see in your child's backpack and what you can do to help your child. Again, if your child's assignments do not reflect the shifts, then talk to your child's teacher.

What's Shifting?	What to Look for in the Backpack?	What Can You Do?
• Your child will **work more deeply in fewer topics**, which will ensure full understanding. (less is more!)	• Look for assignments that require students to show their work and explain how they arrived at an answer.	• Know what concepts are important for your child based on their grade level and spend time working on those concepts.
• Your child will **keep building on learning year after year**, starting with a strong foundation.	• Look for assignments that build on one another. For example, students will focus on adding, subtracting, multiplying and dividing. Once these areas are mastered, they will focus on fractions. Building on that, they will then focus on Algebra. You should be able to see the progression in the topics they learn.	• Be aware of what concepts your child struggled with last year and support your child in those challenge areas moving forward.
• Your child will **spend time practicing and memorizing math facts**.	• Look for assignments that ask your child to master math facts such as addition groupings up to 20 or multiplication tables.	• Help your child know and memorize basic math facts. Ask your child to "do the math" that pops up in daily life.
• Your child will **understand why the math works and be asked to talk about and prove their understanding**.	• Your child might have assignments that ask her or him to show or explain their mathematical thinking - to SAY why they think their answer is the right one.	• Talk to your child about their math homework and ask them to teach you new concepts. Help them figure out ways to explain their thinking.
• Your child will now be asked to **use math in real-world situations.**	• Look for math assignments that are based on the real world. For instance, homework for 5th graders might include adding fractions as part of a dessert recipe or determining how much pizza friends ate based on fractions.	• Provide time every day for your child to work on math at home.

How 3rd Grade "Fits" in the Progression

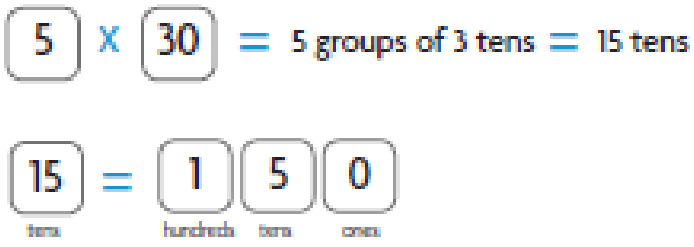
(taken from Parent Roadmap: Supporting Your Child in Grade Three Mathematics)

In grade three, students will continue to build their concept of numbers, developing an understanding of fractions as numbers. They will learn the concepts behind multiplication and division and apply problem-solving skills and strategies for multiplying and dividing numbers up through 100 to solve word problems. Students will also make connections between the concept of the area of a rectangle and multiplication and addition of whole numbers.

Here are just a few examples of how students will develop and use their understanding of place value in grade three.

Grade Two Mathematics	Grade Three Mathematics	Grade Four Mathematics
• Understand that 100 can be thought of as a bundle of ten tens—called a "hundred"	• Use place value understanding to round whole numbers to the nearest 10 or 100	• Use place value understanding to round multi-digit whole numbers to any place
• Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones (place value)	• Quickly and accurately add and subtract numbers through 1000 using knowledge of place value	• Use place value understanding to find the product of two multi-digit numbers
• Add and subtract numbers through 1000 using what students have learned about place value	• Use place value understanding to multiply and divide numbers up through 100	• Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right
	• Multiply one-digit whole numbers by multiples of 10 between 10 and 90. For example, 9×80 or 5×60	• Compare two multi-digit numbers based on the meanings of the digits in each place, using the symbols > (more than), = (equal to), and < (less than)

Students understand that 15 tens = 5 tens + 10 tens (or 1 hundred).



Students use their understanding of place value as a strategy for multiplying one-digit numbers by multiples of ten. This will prepare them to multiply two multi-digit numbers in grade four.

Partnering with your Child's Teacher
(taken from Parent Roadmap)

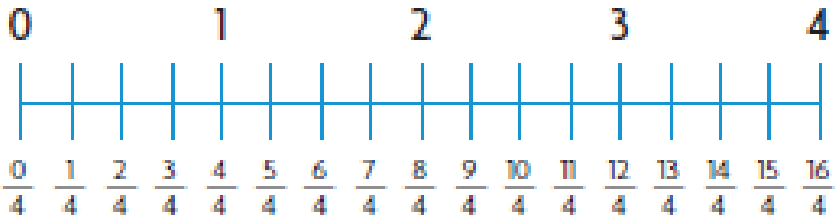
Don't be afraid to reach out to your child's teacher—you are an important part of your child's education. Ask to see a sample of your child's work or bring a sample with you. Ask the teacher questions like:

- Is my child at the level where he/she should be at this point of the school year?
- Where is my child excelling? How can I support this success?
- What do you think is giving my child the most trouble? How can I help my child improve in this area?
- What can I do to help my child with upcoming work?

Here are just a few examples of how students will learn about and work with fractions in grade three.

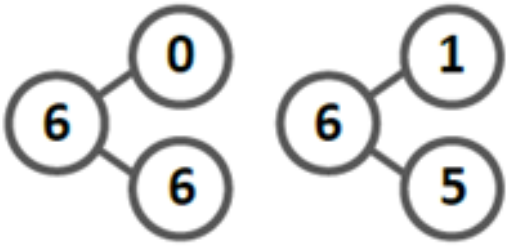
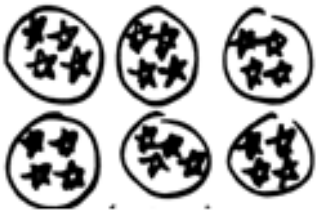
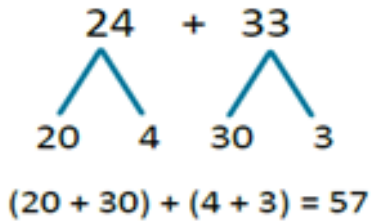
Grade Two Mathematics	Grade Three Mathematics	Grade Four Mathematics
• Break circles and rectangles into two, three, or four equal parts • Describe parts of a whole using the words halves, thirds, half of, a third of, etc. • Describe a whole as two halves, three thirds, four fourths	• Determine a fraction's place on a number line by defining the length from 0 to 1 as the whole and "cutting it" into equal parts • Understand two fractions as equal if they are the same size or at the same point on a number line • Compare the size of two different fractions of the same size object. For example, which is bigger, ⅛ of a pizza or ¼ of that same pizza?	• Break down a fraction into smaller fractions with the same denominator, or bottom number, in more than one way (⅜ = ⅛ + ⅛ + ⅛ = ⅛ + ¼) • Explain why a fraction is equal to another fraction • Add and subtract mixed numbers (whole numbers mixed with fractions, such as 1 ½) with the same denominators • Multiply a fraction by a whole number

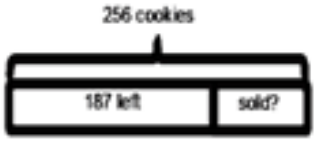
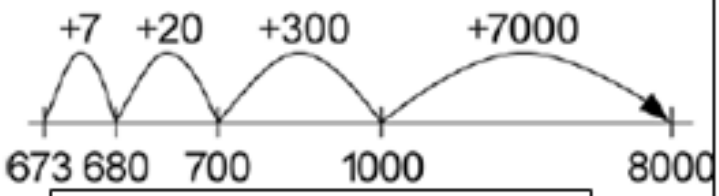
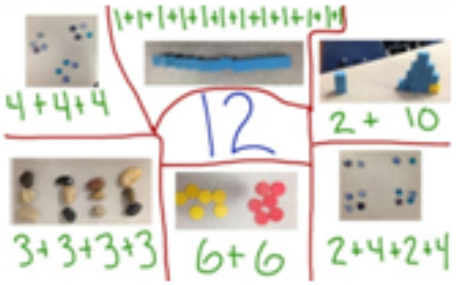
Using a number line helps students think of a fraction as a number.

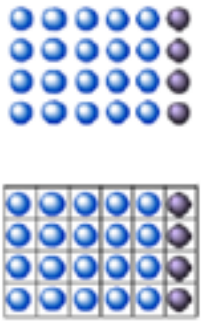


Students begin to understand that fractions are sometimes the same quantity as a whole number (4/4 = 2) and whole numbers can be expressed as fractions (3= 12/4).

Glossary for 3rd Grade Math

Number Bond	A representation of two smaller parts that make up a whole. For example, 6 is made up of 0 and 6 or 6 is made up of 1 and 5	
Number Path	Foundation for understanding a number line – 1 number, 1 space Counting and matching numbers and objects	
Array	Objects organized into equal rows (going across) and columns (going down)- used for multiplication Illustration shows 3 rows of 4	
Equal Groups	In multiplication, each group has the same amount in the group. This illustration shows 6 groups of 4 or 6 x 4 = 24	
Partial Sums	A way to add numbers by adding each place and combining	

Tape Diagram	The tape diagram provides an essential bridge to algebra and is often called "pictorial algebra." They are pictorial representations of relationships between quantities used to solve word problems.	Grade 3 Example *Sarah baked 256 cookies. She sold some of them. 187 were left. How many did she sell?* 
Partial Differences	A way to subtract multi-digit numbers by their value.	**34-17 = 34 – 10 = 24** **24-7= 17** Break up the 17 into 10 and 7. Begin with the 34 and subtract the 10 and then the 7.
Number Line	The number line is used to develop a deeper understanding of whole number units, fraction units, measurement units, decimals, and negative numbers. Can be used for solving operations (+, -, x and ÷)	**8000 – 673 = 7, 327**  Subtracting by counting up on a number line
	Using a number line for multiplying	
Decompose	Breaking a number down into smaller parts	

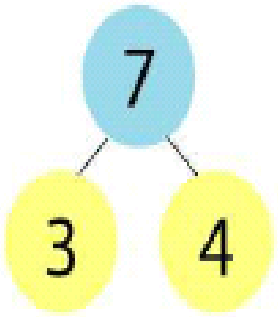
Equation	A number sentence consisting of two things that are equal	2 + 5 = 7 33 = 11 x 3
Distributive Property		 4 x 6 = 4 x 5 = 20 + 4 x 1 = 4 20 + 4 = 24 5 threes + 2 threes = (5 + 2) threes 3 3 3 3 3 3 3
Line Plot	A representation of data (like a graph) using a number line and x's to represent the data	

Stages of Addition

(taken and adapted from Why Before How: Singapore Math Computation Strategies by Jana Hazekamp)

It is important to encourage your students to use a variety of computation strategies. Guide your students to notice what is the same and different about these methods. Begin with the concrete, move on to pictorial representations, and with the abstract. You can do this by teaching the concept of addition in the following sequence: 1) Number bonds, 2) Decomposing numbers, 3) Left-to-right addition, 4) Place value disks and charts, 5) Vertical addition, and 6) Traditional addition.

Number Bonds help students see that numbers can be "broken" into pieces to make computation easier.



Decomposing Numbers encourages students to think about place value, and students' awareness of place value will be key to later success with mental math and other computation methods.

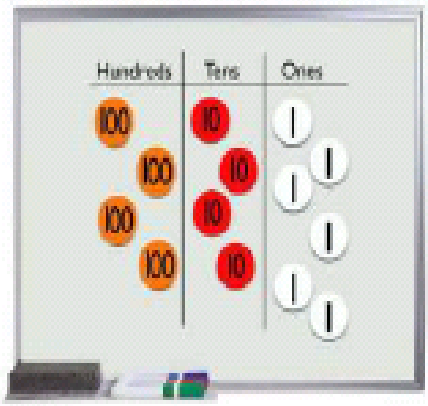
Left-to-Right Addition emphasizes place value. Decomposing is an important prerequisite.

$$34 + 45$$

$$(30 + 40) + (4 + 5)$$

$$70 + 9$$

Place Value Disks and Charts help move students toward understanding the traditional algorithm, and help students



Vertical Addition is similar to left-to-right, except that it is vertical instead of horizontal. This is also known as partial sums.

$$\begin{array}{r} 59 \\ +37 \\ \hline 80 \\ 16 \\ \hline 96 \end{array}$$

Traditional Addition is the final addition strategy that students learn. It is important that it is connected to other methods when it is taught.

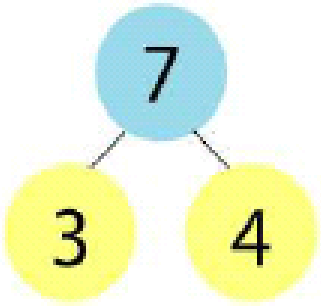
$$\begin{array}{r} {}^{1} \\ 59 \\ +37 \\ \hline 96 \end{array}$$

Stages of Subtraction

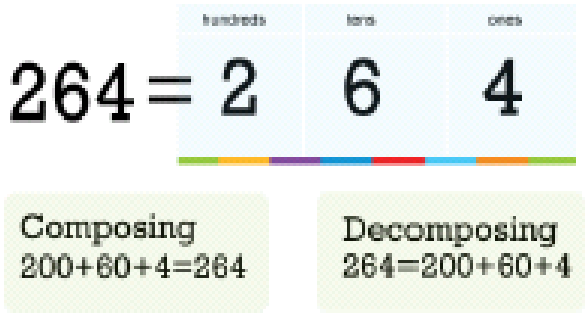
(taken and adapted from *Why Before How: Singapore Math Computation Strategies* by Jana Hazekamp and *Foundations of Number Sense* by SDE—Staff Development for Educators)

It is important to help our students understand the concept of subtraction first, before bombarding them with abstract rules. Students can build an understanding of subtraction by sharing stories in which they have subtracted. They need to begin with the concrete, move on to pictorial representations, and then move to the abstract. You can do this by teaching the concept of subtraction in the following sequence: 1) Number bonds, 2) Place value disks and charts, 3) partial

Number Bonds help students see that numbers can be "broken" into pieces to make computation easier.



Decomposing Numbers encourages students to think about place value, and students' awareness of place value will be key to later success with mental math and other computation methods.



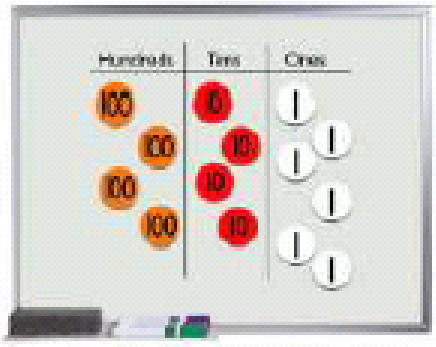
Left-to-Right Addition emphasizes place value. Decomposing is an important prerequisite.

$$34 + 45$$

$$(30 + 40) + (4 + 5)$$

$$70 + 9$$

Place Value Disks and Charts help move students toward understanding the traditional algorithm, and help students understand when to regroup.



Vertical Addition is similar to left-to-right, except that it is vertical instead of horizontal. This is also known as partial sums.

$$\begin{array}{r} 59 \\ +37 \\ \hline 80 \\ 16 \\ \hline 96 \end{array}$$

Traditional Addition is the final addition strategy that students learn. It is important that it is connected to other methods when it is taught.

$$\begin{array}{r} {}^{1}59 \\ +37 \\ \hline 96 \end{array}$$

Addition and Subtraction Strategies (taken from KATM Flip Book for Grade 3)

Addition Examples:

There are 178 fourth graders and 225 fifth graders on the playground. What is the total number of students on the playground?

Student 1
100 + 200 = 300
70 + 20 = 90
8 + 5 = 13
300 + 90 + 13 =
403 students

Student 2
I added 2 to 178 to get 180. I added 220 to get 400. I added the 3 left over to get 403.

Student 3
I know the 75 plus 25 equals 100. I then added
1 hundred from 178 and
2 hundreds from 275. I had a total of 4 hundreds and I had 3 more left to add. So I have 4 hundreds plus 3 more which is 403.

Student 4
178+225=?
178+200=378
378+20+398
398+5=403

Addition strategies based on place value for 48 + 37 may include:

- Adding by place value: 40 + 30 = 70 and 8 + 7 = 15 and 70 + 15 = 85.
- Incremental adding (breaking one number into tens and ones); 48 + 10 = 58, 58 + 10 = 68, 68 + 10 = 78, 78 + 7 = 85
- Compensation (making a friendly number): 48 + 2 = 50, 37 – 2 = 35, 50 + 35 = 85

Subtraction strategies based on place value for 81 - 37 may include:

- Adding up (from smaller number to larger number): 37 + 3 = 40, 40 + 40 = 80, 80 + 1 = 81, and 3 + 40 + 1 = 44.
- Incremental subtracting: 81 -10 = 71, 71 – 10 = 61, 61 – 10 = 51, 51 – 7 = 44
- Subtracting by place value: 81 – 30 = 51, 51 – 7 = 44

Properties that students should know and use are:

- Commutative property of addition (Example: 3 + 5 = 5 + 3)
- Associative property of addition (Example: (2 + 7) + 3 = 2 + (7+3))
- Identity property of 0 (Example: 8 + 0 = 8)

The next three and a half pages were taken from the East Irondequoit website. They include a variety of addition and subtraction strategies that are first introduced to students in K-2 with smaller numbers, and are then extended into the upper elementary grades with bigger numbers. The "traditional" algorithm for addition and subtraction are introduced in 4th grade. We no longer use the terms borrowing and *carrying,* we actually haven't used them for years. The proper term is *regrouping*.

Strategies for Addition

1. **Breaking Apart** (Place Value), also known as “Separating” or “Decomposing”

Break both numbers down to place value and add each, starting with the largest:

46 + 25 =

46 breaks into 40 plus 6 (40 + 6), 25 breaks into 20 plus 5 (20 + 5)

40 + 20 = 60

6 + 5 = 11

60 + 11 = 71

Or:

Keep one number intact and only break second number down by place value and adding each place:

46 + 25 =

46 stays intact and 25 breaks into 20 and 5

46 + 20 = 66

66 + 5 = 71 or *66 + (4 + 1)

*Note: some students may prefer to break the 5 apart (4 + 1) so that they can add 4 to 66 and get 70, then add on 1. It would only make sense to break down the ones to get to the “landmark” number 10.

2. **Compensation:**

Round one or more of the numbers to numbers that are easier to work with, then compensate:

256 + 687

256 [+13] + 700 = 956

956 - [+13] =

(decompose 13)

956 - 10 = 946

946 - 3 = 943

13 is added to **687** to get 700, an easier number to work with - keeping track of the adjustment is critical to making this strategy work, encourage students to box the adjustment (here we box the adjustment as -13 since 13 was added , **now 13 must be subtracted** out of the computation to get the final answer.

3. **Transformation:**

Transform the problem into an equivalent problem that is easier: (like compensation, this is a strategy more advanced math thinkers can handle, you're adding to one and taking away the same amount from the other)

a. 46 + 28 = ___

adding 2 to 28 makes it 30, an easy number to work with but if 2 is added into this equation, then 2 must be subtracted from the 46.

28 + 2 = 30

46 – 2 = 44

30 + 44 = 74

b. 256 + 687 =

add 13 to 687 to make it 700, subtract 13 from 256 to make it 243, 700 + 243 = 943

More Subtraction Strategies (taken from East Irondequoit website)

1 **Breaking Apart/Separating:**

Subtract one number in parts from the other number which stays intact, always starting with largest place value to subtract .

a. 54 – 23 =

23 can be broken into 20 + 3

54 – 20 = 34

34 – 3 = 31

or 56 – 29 =

29 can be broken into 20 + 6 + 3, breaking 9 into 6 + 3 makes it easier to subtract

56 – 20 = 36

36 – 6 = 30

30 – 3 = 27

b. 547 – 297 =

keep 547 intact, break 297 into 200 + 90 + 7, subtract out one place value at a time

547 – 200 = 347

347 – 90 = 257

257 – 7 = 250

or 547 – 297 = _____, break 297 into 247 + 50, subtract out each part

547 – 247 = 300 , 300 – 50 = 250

2. Adding Up/Counting On:

Start with smaller number, add up to a landmark number*, from the landmark add up to get to the target number. Add the two numbers you used.

212 – 197 =

197 + **3** = 200*

200 +**12** = 212

3 + 12 = 15

516 – 305 =

305 + **195** = 500*

500 + **16** = 516

195 + 16 = 211 (195 + 10 = 205, 205 + 6 = 211)

3. **Subtracting across the zeros:**

Adding up is a good strategy when one of the subtrahends involves 0's. Students have a great deal of difficulty subtracting across the zeros.

$10.00 – $4.75 =

Think: $4.75 + $.25 = $5.00

$5.00 + $5.00 = $10.00

$5.00 + $.25 = $5.25

4. **Subtracting from 9's:**

Given 1,000 – 273:

(subtract 1 from 1,000 making it 999 – subtracting from 9's doesn't require any regrouping)

999 +1 *box the adjustment to remember to add it back in*

-273

726 +1 *now add back the 1, the answer is 727*

Given 1006 – 273 :

(subtract 7 from 1006 making it 999,

999 +7

– 273

726 +7 *now add back the 7 making the answer 733*

3. **Transformation**

Transform the entire problem to an equivalent problem that is easier to solve by adding or subtracting the same number from/to both numbers in the subtraction problem. (Using the same number maintains the difference between the two numbers.) The goal of adding or subtracting a number is to make one or more of the numbers easier to work with.

547 – 297 =

add **3** to both numbers to bring **297 to 300** and **547 to 550**, now 300 is an easier number to subtract from 550

550 - 300 = 250

4. **Compensation**:

Adjust one of the numbers in a math problem in order to make them easier to work with.

a. 45 – 27 =

27 - [2] = 25

45 – 25 = 20

20 + 2 = 18

→ You ignored 2 out of the 27 so you need to subtract 2 out of the answer.

b. 45 – 27 =

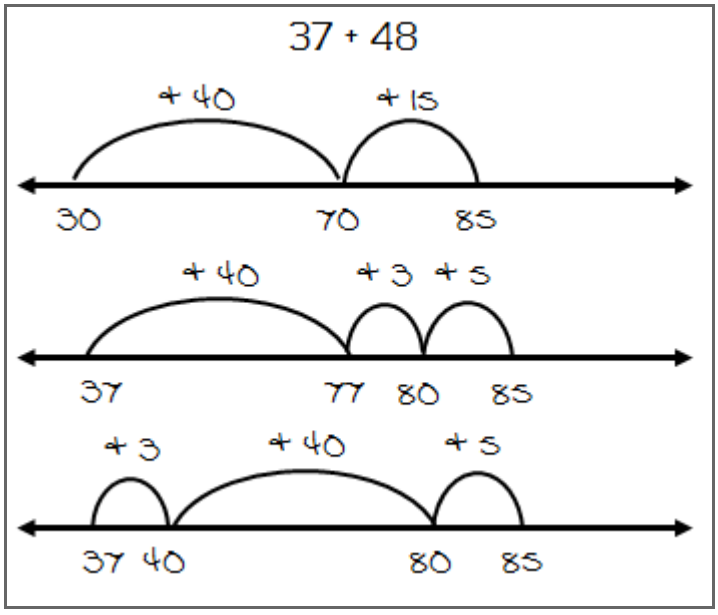
45 [+ 2] = 47

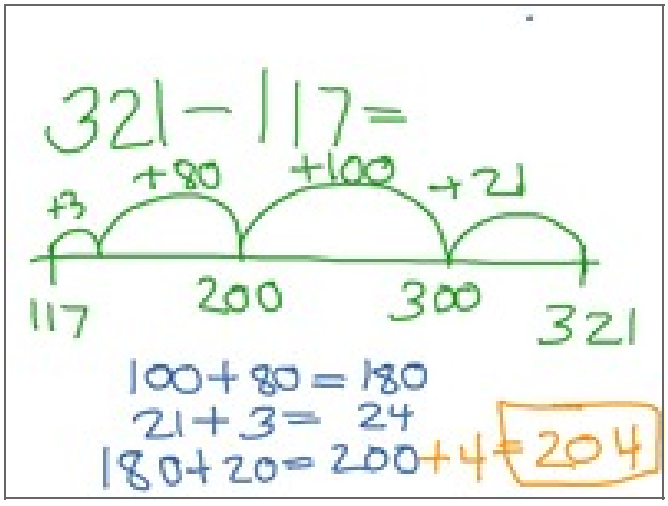
47 – 27 = 20

20 [– 2] = 18

→ You added 2 to 45 so you need to subtract 2 out of the answer.

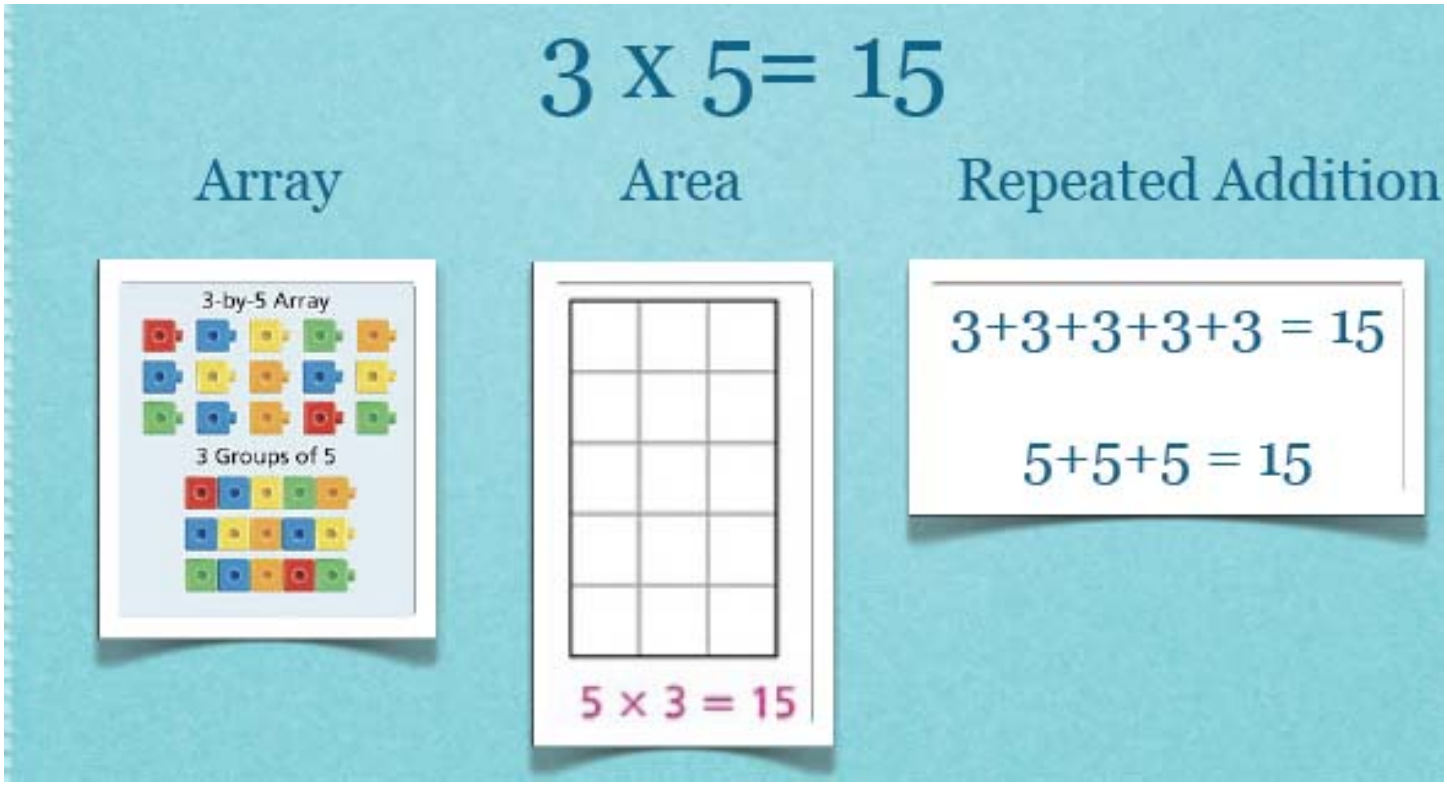
Open or Numberless Number Line (A strategy for addition or subtraction.)

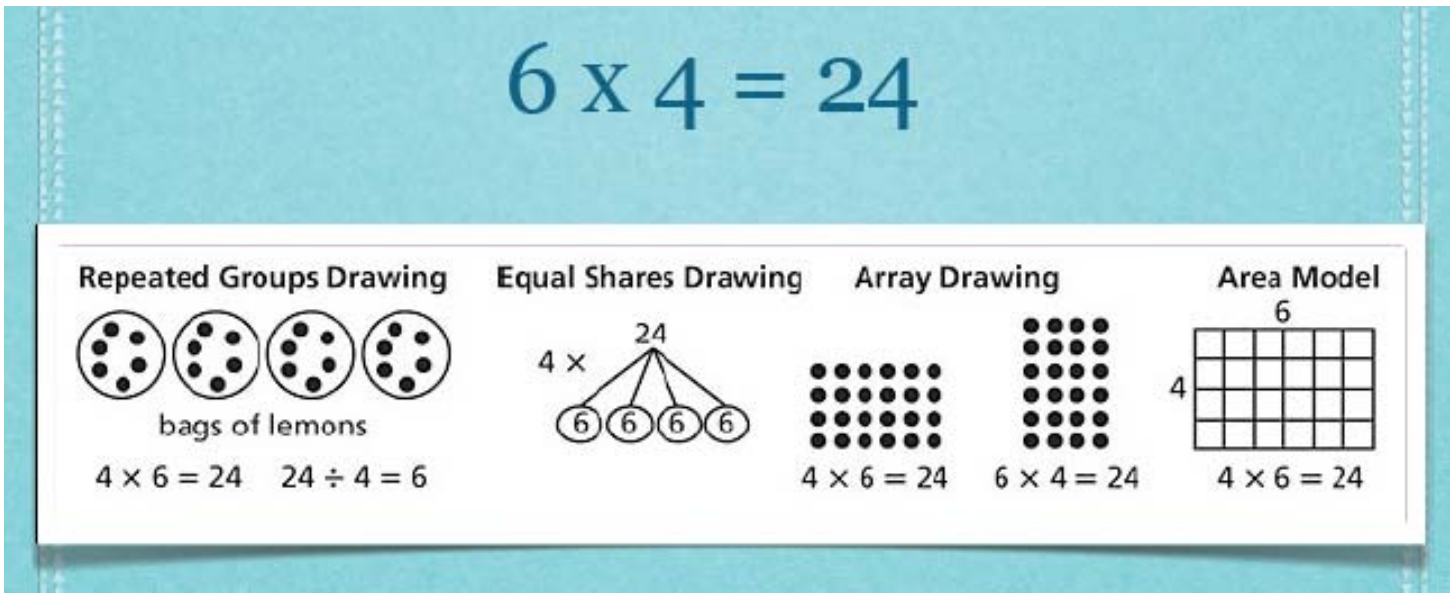




There are several ways to use an open number line for both addition and subtraction.

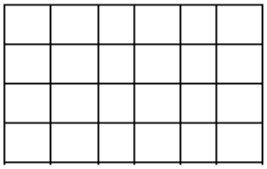
Multiplication Strategies (taken from Hudsonville (Michigan) Central website)





Multiplication and Division Strategies (taken from KATM Flip Book for Grade 3)

Examples of multiplication:
There are 24 desks in the classroom. If the teacher puts 6 desks in each row, how many rows are there? This task can be solved by drawing an array by putting 6 desks in each row. This is an array model



This task can also be solved by drawing pictures of equal groups. 4 groups of 6 equals 24 objects

******	******	******	******

A student could also reason through the problem mentally or verbally, "I know 6 and 6 are 12. 12 and 12 are 24. Therefore, there are 4 groups of 6 giving a total of 24 desks in the classroom."

A number line could also be used to show equal jumps.

Students in third grade students should use a variety of pictures, such as stars, boxes, flowers to represent unknown numbers (variables). Letters are also introduced to represent unknowns in third grade.

Examples of Division

There are some students at recess. The teacher divides the class into 4 lines with 6 students in each line. Write a division equation for this story and determine how many students are in the class. (___ divided by 4 = 6 There are 24 students in the class)

Determining the number of objects in each share (partitive division, where the size of the group is unknown)

Example:

The bag has 92 hair clips, and Laura and her three friends want to share them equally. How many hair clips will each person receive?

Determining the number of shares (measurement division, where the number of groups is unknown)

Example:

Max the monkey loves bananas. Molly, his trainer, has 24 bananas. If she gives Max 4 bananas each day, how many days will the bananas last?

Starting	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
24	24-4= 20	20 –4= 16	16– 4= 12	12-4= 8	8-4= 4	4– 4= 0

Solution: The bananas will last for 6 days

Students use a variety of representations for creating and solving one-step word problems, i.e., numbers, words, pictures, physical objects, or equations. They use multiplication and division of whole numbers up to 10 x10. Students explain their thinking, show their work by using at least one representation, and verify that their answer is reasonable.

Word problems may be represented in multiple ways:

- Equations: 3 x 4 = ?, 4 x 3 = ?, 12 ÷ 4 = ? and 12 ÷ 3 = ?
- Array:

- Equal groups

- Repeated addition: 4 + 4 + 4 or repeated subtraction
- Three equal jumps forward from 0 on the number line to 12 or three equal jumps backwards from 1 to 0

Websites for Parents

For more information on the Common Core State Standards for mathematics, go to http://www.corestandards.org/about-the-standards/key-points-in-mathematics or http://www.commoncoreworks.org.

For more information on the standards in mathematics related to place value (Number and Operations in Base Ten) or fractions, go to http://commoncoretools.me/category/progressions/.

For more information on helping your child learn mathematics (with activities from pre-school to grade five), go to http://www2.ed.gov/parents/academic/help/math/index.html.

For the full text of the Common Core Learning Standards go to: http://www.p12.nysed.gov/ciai/common_core_standards/pdfdocs/nysp12cclsmath.pdf

Additional websites:

www.EngageNY.org

illuminations.nctm.org

www.kahnacademy.org

http://www.pbs.org/parents/earlymath/

Websites for 3rd Graders

www.xtramath.org

www.multiplication.com/games

www.ictgames.com/

www.eduplace.com/math/mthexp

http://www.aplusmath.com/

http://www.aaamath.com/

http://mathforum.org/dr.math/

http://www.coolmath4kids.com/

http://www.funbrain.com/

http://www.mathstories.com/

http://www.teachrkids.com/

http://www.eduplace.com/math/brain/index.html

http://www.mathplayground.com/wordproblems.html

Resources Used in this Publication

East Irondequoit, NY CSD, www.eastiron.org, Parent Center Link on Left

EngageNY, www.engageny.org

Hudsonville, MI CSD Parent Presentation, www.hudsonville.k12.mi.us

Kansas Association of Teachers of Mathematics (KATM) Flip Books, www.katm.org

New York State Education Department, Common Core Learning Standards for Mathematics, K-12

Parent Roadmap: Supporting Your Child in Grade Three Mathematics, Council of the Great City Schools, Washington, D.C.; http://www.cgcs.org

Why Before How: Singapore Math Computation Strategies by Jana Kazenkamp