

# How to help your child learn mathematics



**KINDERGARTEN  
THRU  
2ND GRADE**

What do the new math standards mean for my child?



# Comprehensive and aligned so that each child may be successful in college level mathematics



- Kindergarten-Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations
- 1<sup>st</sup> grade- Students use their growing understanding of place value to develop strategies to compute sums within 100.
- 2<sup>nd</sup> grade- Students become fluent in two digit addition and subtraction using place value and properties of operations.
- 3<sup>rd</sup> grade- Students extend their understanding to include fluent addition and subtraction within 1000 using place value properties and properties of operations.
- 4<sup>th</sup> grade – Students generalize place value understanding of multi-digit whole numbers and learn to fluently add and subtract using standard algorithms.
- 5<sup>th</sup> grade- Students use their understanding of the base ten number system (exponential growth by powers of 10) and apply this knowledge to fluently compute products of whole numbers using the standard algorithm.

# Major areas of focus



Kindergarten	First Grade	Second Grade
Counting- orally, physically counting and understanding quantity	Extending counting ideas through 120, starting from any number	Extend counting ideas to include counting by 5's, 10's, 100's and multiples of 100's, 10's, and 1's
Understanding that numbers 11-19 include a 10 and some ones	Understand that 2 digit numbers include amounts of 10's and 1's	Understand that 3 digit numbers include amounts of 100's, 10's and 1's
Understand that addition means combining and subtraction means taking apart	Understand the ways addition and subtraction are related and use that understanding to add and subtract within 20	Apply understanding of models of addition and subtraction through 3 digit numbers
Identify shapes and know that they can be composed and decomposed	Extend the knowledge of composing and decomposing shapes to 3 dimensional shapes	Analyze, compose and decompose shapes to build a foundation of understanding of ideas such as area and volume.

# Developing Strong Number Sense



- Content is explored deeply for a longer period of time.
- We want students to think about...
  - Why things work as they do in math.
  - How they can know for sure.
  - How they could explain it clearly.
  - Looking for their own mistakes and why they occurred.
- Putting numbers into a context. Taking numbers out of a context.

# Depth and Rigor of the College and Career Ready Standards will lead to...



- Deeper understanding
- Knowledge that is applicable to life and is retained from year to year
- Students that are independent thinkers and problem solvers



# Caution



*Premature experience with formal procedures may lead to symbolic knowledge that is not based upon understanding, or connected to the real world. This may impede students' number and operation sense (Kiernan, as cited in Huinker, 2002).*

*Researchers express concern that this type of learning can be “highly dependent on memory and subject to deterioration.” (Kieran, 1988) This deterioration results when symbol manipulation is emphasized to the relative exclusion of conceptual understanding and adaptive reasoning. (NRC, 2001)*

# We ALL want our children to be challenged in math. What is challenging math?



- NOT paper and pencil math- it is not thought provoking or engaging
- NOT a sheet of 20 or 30 computation problems to solve with rote procedures
- CHALLENGING MATH IS...
  - Something you *want* to figure out
  - Requires logic
  - Puzzling
  - Math Games
  - Reasons to count or compare



# What does math class look like in kindergarten thru second grades?



- Students are given a context or word problem first and asked to think of ways to solve it
- Students often use manipulatives to assist their thinking about the situation
- Students may work alone or in pairs to solve the problem or answer the question
- Students share their solutions, the reasoning behind their solutions and they justify their answers
- Procedures (strategies) grow from these discussions and are refined as ideas are discussed over time
- Accuracy and efficiency are always emphasized!
- Math class is very active and engaging and students usually love math!!

# Why do we want students to think for themselves? Why not just show them how?



- Mathematics is about problem solving and thinking!
- In life, mathematics is rarely used in a routine way.
- We want children to be able to find various ways to attack a problem. The underlying principles of mathematics are discovered in this way.
- Perseverance in mathematics is essential.
- Number talk clip
- Multiple strategies lead to flexibility of thought, greater understanding is a result

# How can I help my child with mathematics at home?



- Teach your child to persevere!
- Give them opportunities to problem solve and to think for themselves.
- Play games, real games with dice and paths!
- Avoid too much time on the computer.
- Give your child lots of opportunities to count things.
- Ask questions like “How many more? How many less? How many will we need for...?”
- Never let your child think some people just aren’t good in math, its not true!

# Math Games



- **Card Games-**

- Go Fish
- Memory
- War
- Double War
- Make Ten
- Tens Concentration

- **Dice Games-**

- Shut the Box
- Sorry
- Parcheesi
- Trouble
- Hi Ho Cherrio
- Any game with dice and a path to move along

- **2<sup>nd</sup> grade-**

- Games to build automaticity with addition facts