

# Math in the Waterloo Schools

-preparing our students for a complex future-



**WATERLOO**  
Community School District

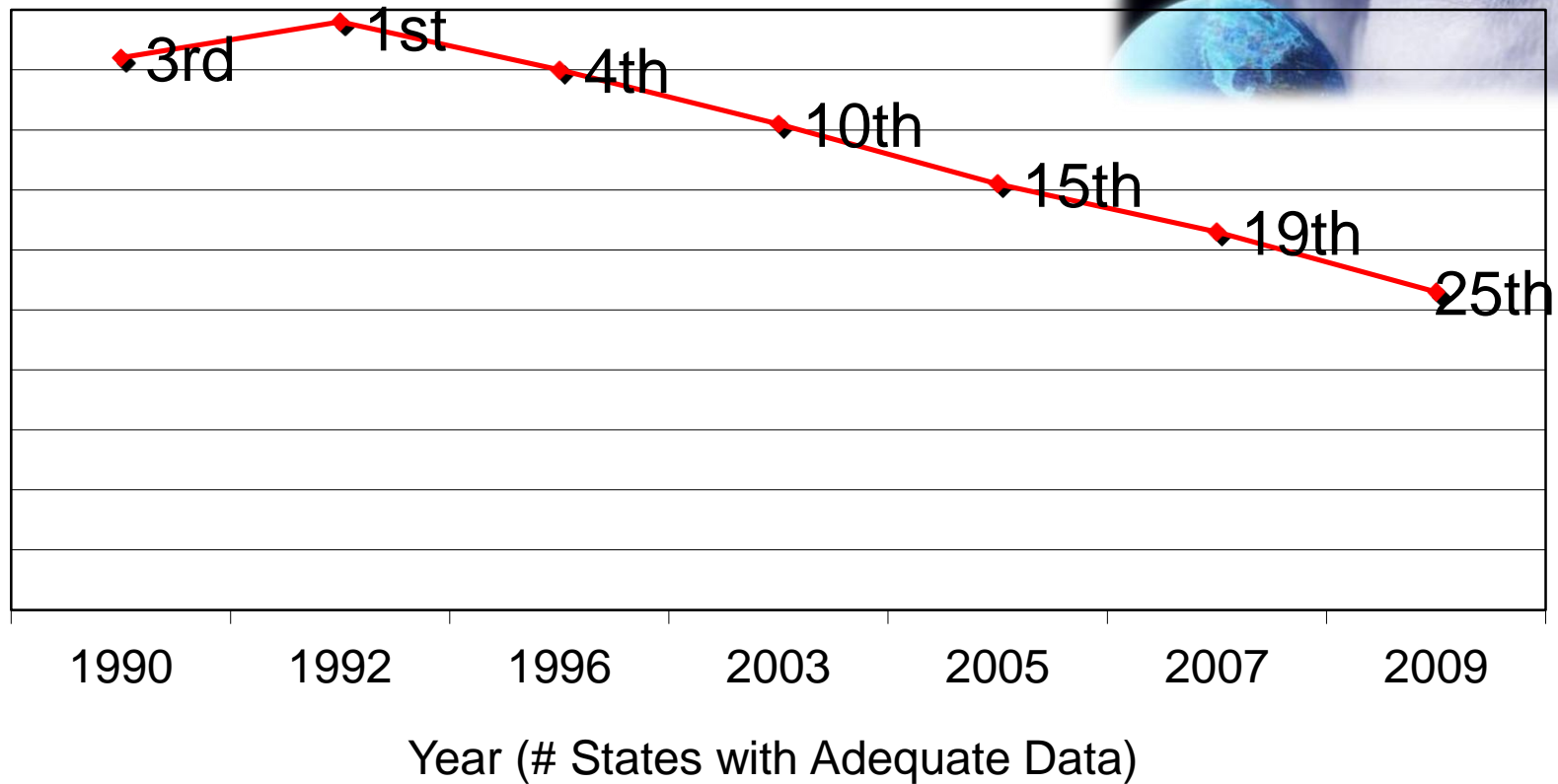
Engaged in Learning • Prepared for Success

# Why did we need to change how we teach math?

- Our children are not prepared to compete globally.
- American 15-year-olds rank
  - 25<sup>th</sup> in math
  - 24<sup>th</sup> in problem-solving  
(compared to other developed nations)



# Iowa ranks 25<sup>th</sup> among the states in 8<sup>th</sup> grade math (NAEP).



# 2009 Program International Student Assessment (PISA) Test Results

	<b>READING</b>	<b>MATH</b>	<b>SCIENCE</b>
1 <sup>st</sup> Place Country	Shanghai-China	Shanghai-China	Shanghai-China
2 <sup>nd</sup> Place Country	Korea	Singapore	Finland
3 <sup>rd</sup> Place Country	Finland	Hong Kong-China	Hong Kong-China
USA	18th	33rd	24th

# The future demands problem solvers.

- Learning is increased when it's connected to the real world.
- Students must think about and understand how they got an answer, not just memorize what the correct answer is.
- Understanding their thought process makes students able to apply that process to new problems.



# The future demands critical thinkers.

- We need more rigorous and relevant instruction to prepare students for a complex society.
- Our students will operate in a world requiring awareness of science, technology, engineering, and math.
- Our students must have a competitive advantage.



# What are our State Standards?

- Iowa has new, rigorous state-wide standards for **what** students should know and be able to do at each grade level.
- The state also defined instructional practices to better prepare our students for success beyond high school—**how** students learn.
- Together, these make up the “Iowa Core”

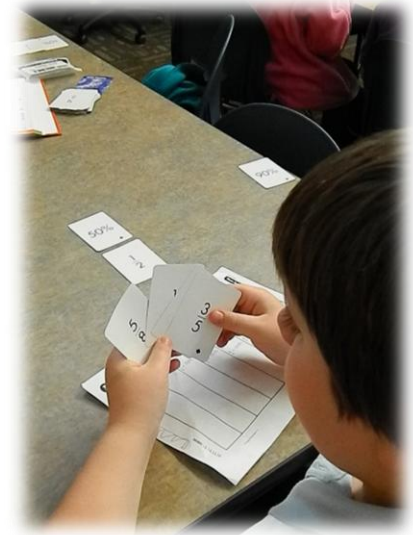


# What does effective math instruction do?

- Teach for understanding
- Create student-centered classrooms
- Teach for student differences
- Use lessons which are rigorous and connect to students' lives
- Know that all students can meet these high expectations



# What do we expect students to learn?



Our State Standards (the Iowa Core) define:

- the “What”—mathematical content students should learn at each grade level, K-12, and
- the “How”—how students should learn mathematics.

# What will students understand and be able to do at each grade level?

The State Standards (Iowa Core for Mathematics) provide the sequence of learning at each grade level. Waterloo students are expected to master these expectations by the end of each school year.



# How will students learn math?

- Make sense of problems and persevere in solving them
- Reason abstractly and quantitatively
- Construct viable arguments and critique others' reasoning
- Model with mathematics
- Use appropriate tools strategically
- Attend to precision
- Look for and make use of structure
- Look for and express regularity in repeated reasoning

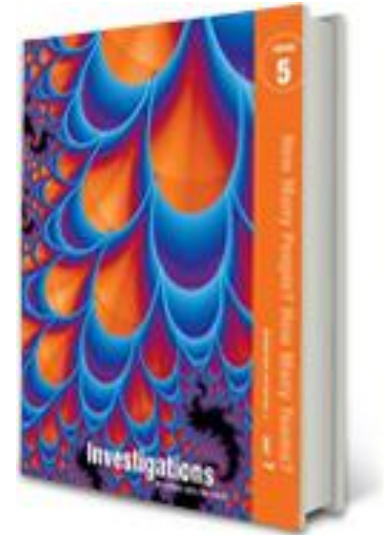


# What makes up the elementary Waterloo Math Curriculum?



- Standards defined by the Iowa Core Mathematics
- Foundational Resource—*Investigations Materials*, 2<sup>nd</sup> Edition, Common Core
- “Thinking with Numbers”—a math program developed to help students develop mental math skills and learn basic math facts

# What about negative reviews of *Investigations*?



- We're using the 2<sup>nd</sup> Edition with the Common Core additions--it's been field-tested and improved to address concerns with the earlier edition.
- The 2<sup>nd</sup> edition provides lessons to develop both mathematical concepts and basic skills.
- We're adding another curriculum resource, *Thinking with Numbers*, to strengthen students' fluency with basic math facts.

# What makes up the secondary Waterloo Math Curriculum?

- Standards defined by the Iowa Core Mathematics
- Middle School Foundational Resource—*Connected Mathematics 2 (CMP2)*
- High School Foundational Resources—*Center for Mathematics Education-CME Project (CME)*

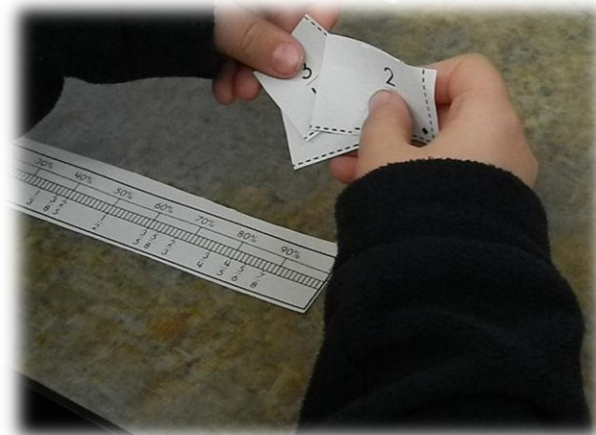


# What's our timeline for implementation?

- Elementary, Fall 2011
- Middle School, Spring 2012
- High School, Fall 2012



# How does our math curriculum benefit students?



Our curriculum and instruction:

- Increase engagement and excitement for math.
- Allow time for students to make sense of mathematical ideas.
- Provide students with opportunities to understand and explain mathematical ideas.
- Lead students to the most efficient way to solve problems once they understand what they are doing.

*Students who can explain a mathematical process have a better chance of applying that process to other situations.*

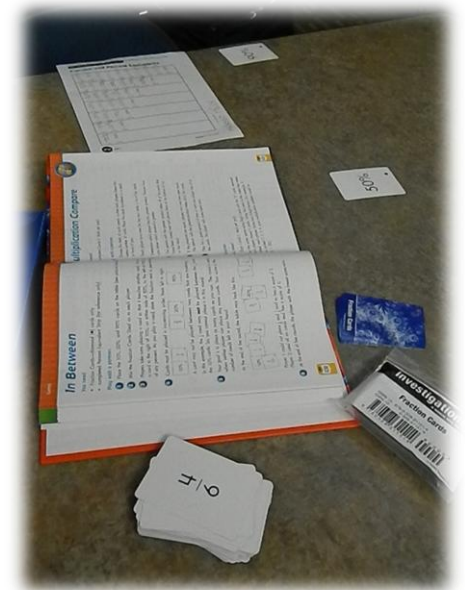
# Goals of Instruction

- Make sense of mathematics
- Teach basic math facts
- Emphasize reasoning and how all the different areas of math fit together
- Provide students with materials which promote their understanding of math content and instruction
- Engage the range of learners in understanding mathematics



# Support and Resources for Students and Parents

- Parent activities at the building level
- Student handbook at elementary level
- Textbooks at middle and high school levels
- Links and resources on the Waterloo schools website



# Coming Next

- More parent meetings
- More chances to experience the curriculum
- More chances to dialog with your teacher and child
- More resources on the web, including a FAQ, testimonials, the experiences of other districts



# This is the Right Path...

Dr. Larry Leutzinger  
UNI Math Professor



<Click on box to hear Dr. Larry Leutzinger>

# District Contact Information:

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