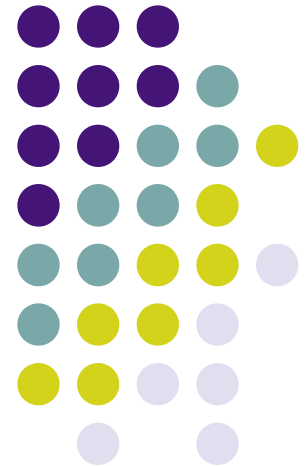


Florida's Sunshine State Standards — Mathematics Revisions

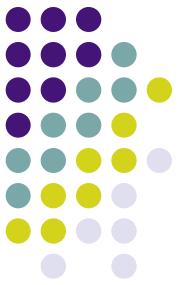
Process and Progression

Mary Jane Tappen, Executive Director
Todd Clark, Deputy Director
Office of Mathematics and Science



Florida, Math Matters!

Florida's Goal



Building world-class mathematics standards
for Florida's students!

*World Class Standards are those standards
that, when implemented through quality
instruction and content, prepare our students
to compete at the highest levels
internationally.*

Florida's New Mathematics Standards, Timeline



- September 2006 – Framers
- October 2006 through January 2007 – Writers Draft K-8 Standards and Secondary Content Standards with Comment and Review from Framers
- February through March 2007 – Public Review and Mathematicians Review
- April through May 2007 – Revisions Based on Review
- June 2007 – Present New Standards to the State Board of Education

What Research Says About Our Current Standards!



Florida's Mathematics Standards – *A Mile Wide, An Inch Deep*

- For Florida's Grades 1-7 the average number of mathematics grade level expectations (GLEs) = 83.3
- Singapore, the highest performing nation as measured by the Third International Math and Science Study now called Trends in International Math and Science Study, has 15 GLEs per grade level



*Example of Variation in Number
of Grade Level Expectations (GLEs -grain size)*

	1st	2nd	3rd	4th	5th	6th	7th	Mean
CA	25	31	38	43	27	36	40	34.3
FL	78	84	88	89	77	78	89	83.3
MO	20	27	31	33	34	38	34	31.0
MN	18	26	26	25	26	30	27	26.3
NY	56	45	52	56	67	64	63	56.4
KS	57	59	57	56	60	69	74	61.7

Mean number of GLEs by grade level across 42 state documents: 47

What Research Says About Our Current Standards!



Research Group

- College Board
- International Center for Leadership in Education
- Singapore's Standards
- Fordham Foundation
- California, Indiana, and Massachusetts Standards
- Koret Task Force
- Achieve's America Diploma Project

Findings — Recommendations

- Too many topics, not enough depth, hodgepodge of topics with little coherence — vertically align topics
- Vague, not sufficiently detailed to guide curriculum — standards should be expressed succinctly, coherently, and with optimum brevity
- Lack of rigor — enhance the rigor from grade 5 on

College Board



- Define grade-level expectations for grade 9-12
- Increase rigor of middle through high school standards
- Increase specificity of standards, showing a progressive development across grade levels
- Increase the depth of knowledge required as grades progress

College Readiness

Florida High School Graduates

Requiring Remediation



2003

- Students entering our State Universities:
 - 7% in mathematics
 - 4% in reading
 - 4% in writing
- Students entering our Community Colleges:
 - 54% in mathematics
 - 42% in reading
 - 29% in writing

2004

- Students entering our State Universities:
 - 6% in mathematics
 - 3% in reading
 - 3% in writing
- Students entering our Community Colleges:
 - 47% in mathematics
 - 36% in reading
 - 26% in writing

What we did?



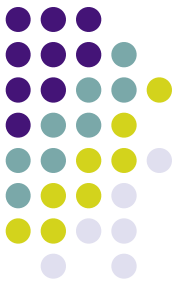
- Formed multiple committees
 - Internal department staff composed of K -12 curriculum specialists, community college staff, and university system
 - External international and national level experts to share the latest research and provide recommendations for improvement throughout the process
 - External Florida level experts including mathematicians, mathematics educators representing colleges and universities, K-12 mathematics teachers, teacher representatives from the Florida Council of Teachers of Mathematics, mathematics supervisors representing Florida's Association of Mathematics Supervisors, parent representative of Florida Parent Teacher Association, assessment specialists, and exceptional student education specialists



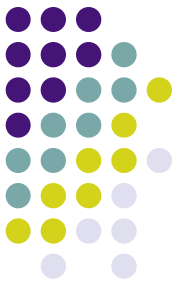
How did the process begin?

- A group of external experts brought us the research
 - **Dr. Barbara Reyes**, Center for the Study of Mathematics Curriculum (CSMC); shared a review of 42 state's mathematic standards
 - **Dr. Jane Schielack**, Member of NCTM committee who wrote the recently released K-8 Mathematics Curriculum Focal Points
 - **Dr. Kaye Forgione**, Senior Associate, Mathematics Benchmarking Initiative, Achieve, Inc.; America Diploma Project, what students need to know and be able to do to be successful in their future workplace
 - **Dr. Alan Ginsburg**, US Department of Education, *What the United States Can Learn From Singapore's World-Class Mathematics System*.
 - **Dr. R. James Milgram**, Dr. Milgram rewrote the California Mathematics Standards for the California State Board of Education, California Standards were graded A
 - View their presentations: <http://flstandards.org>

External International and National Experts and Florida Experts Determined the Following

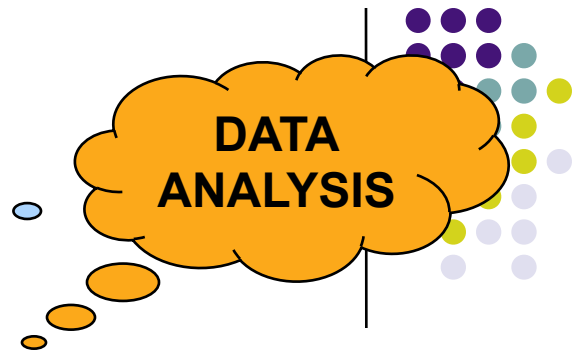
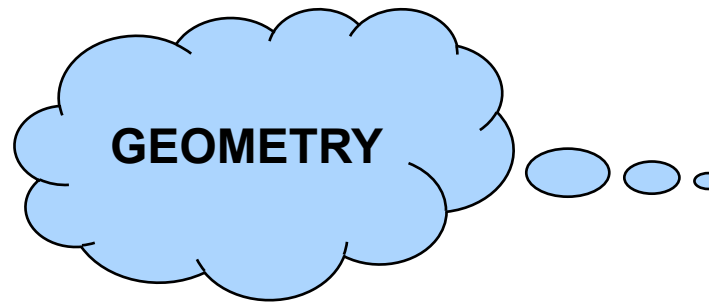
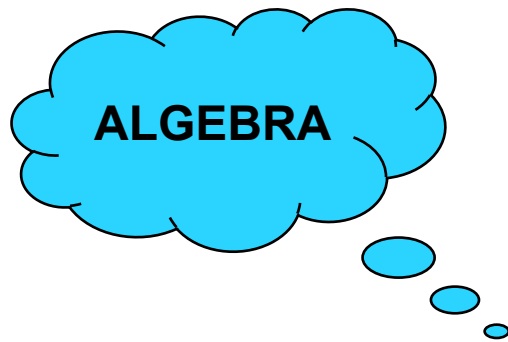


- Increase rigor and specificity all the way around
 - K-8
 - By grade level up to Algebra 1
 - Let NCTM's Focal Points be a guide
 - Reduce number of GLEs, focused in-depth instruction
- Secondary
 - By Bodies of Knowledge
 - Algebra, Geometry, Probability, Statistics, Trigonometry, Discrete Math, Calculus, Financial Literacy
 - "Upper level" mathematics courses will use standards set by AP, IB, College Board, Dual Enrollment course guidelines/standards



Bodies of Knowledge

- Bodies of Knowledge are not courses....
- ... So how are course descriptions made via the Bodies of Knowledge?



Example:

ALGEBRA I REGULAR

**COURSE
DESCRIPTION**

**Solving Linear
Equations**

**Pythagorean
Theorem**

Stem-and-Leaf

Florida's New Mathematics Standards, Example of Increase Conciseness and Rigor (Draft)



Out With the Old

Knows about measurement of time including A.M. and P.M., clocks and calendars

Data Analysis and Probability

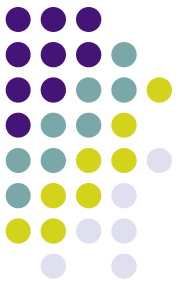
Analyzes real-world data and makes predictions of larger populations by applying formulas to calculate measures of central tendency and dispersion using the sample population data, and using appropriate technology, including calculators and computers.

In With the New

Tells time to the nearest minute and determines amount of time elapsed

Statistics – Summarizing Data

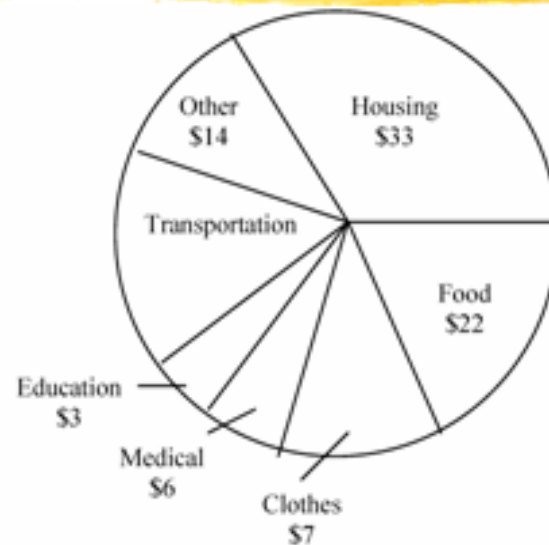
Calculate and interpret measures of variance and standard deviation. Use these measures to make comparisons among sets of data.



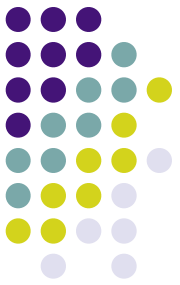
U.S. Textbook Problems Emphasize Mechanical Formulas:

Gr. 6 Pie Chart Requires Summing to a Total

Cost of Raising a Child to Age 18 (for each \$100)



- (a) What is the cost of transportation?
- (b) For each \$100 a parent spends raising a child to age 18, how much more is spent on housing and clothes than on education?
- (c) TEST PREP. For each \$300 spent, estimate how much is spent for food and clothes
1) \$329 2) \$90 3) \$29 4) \$130
- (d) Which costs are about twice as much as the cost of education? Five times as much? Eleven times as much?



Singapore Textbooks Use Scaffolding Within Multi-step Problems :

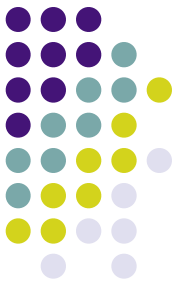
Gr. 6 Pie Chart Problem Incorporating Angles

The pie chart represents the amount of money collected by various stalls at a funfair.



- (a) What fraction of the total amount of money was collected by the games stalls?
- (b) What was the total amount of money collected by the various stalls?
- (c) How much money was collected by the music stalls?
- (d) What was the ratio of the money collected by the food stalls to the money collected by the handicraft stalls?

Florida, Math Matters!



What's Next?

- Complete Mathematics in June
- Begin Science and Social Studies in April
- Begin Professional Development with teachers
- Work with Colleges of Education to Include New Standards in Pre-service Education

How Will Florida Align Standards to Instruction?



- Approved standards are placed in a database and assigned a level of rigor
- Course descriptions are built from this database and assigned a course rigor level based on the standards covered in the course
- Course exit exams are built from course descriptions
- Course descriptions define approved curriculum resources
- Course descriptions guide teacher professional development and required content knowledge



Math and Science

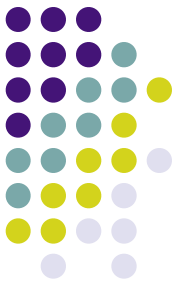
- New K -12 Office dedicated to Math, Science, and Secondary Reform
- New Florida Center Mathematics and Science Education Research

Review, Follow Along



- <http://flstandards.org>
 - View resources
 - Conduct online review
 - Keep track of all standards revisions
 - See Frequently Asked Questions
 - See Timelines for Implementation, Professional Development, Assessment
- For further reading
 - SREB Report: “Getting State Standards Right in the Early and Middle Grades” http://www.sreb.org/main/Goals/Publications/06E19_Getting_State_Standards.pdf

Contact Us



Florida Office of Mathematics, Science,
and Secondary Reform

325 West Gaines Street

Turlington Building

Suite 501

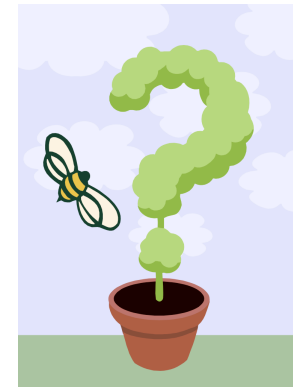
Tallahassee, Florida 32399-0400

todd.clark@fldoe.org

lance.king@fldoe.org

mary.tappen@fldoe.org

Your Questions and Input



Florida, Math Matters!