Fact Sheet

1) What is Reformed Math? Reform math programs are based on student-led discovery of math principles and concepts, with verbal and written explanations. Teacher "facilitation" guides student processes of determining their answers, rather than emphasizing the accuracy of their work. Process is the product in reform math education– Investigations in Numbers, Data and Space (TERC), Connected Math Program (CMP), Contemporary Mathematics in Context (Core-Plus), Everyday Math, MathLand, and Integrated Math Program (IMP).

2) NCTM standards receives letter of opposition from mathematicians: The National Council of Teachers of Mathematics (NCTM) published its *Curriculum Standards* in 1989. A second edition was published in 2000 as Principles and Standards for School Mathematics (PSSM). In Nov. 1999, a letter was drafted to then Secretary of Education Riley and was endorsed by over 200 mathematicians and scientists, including four Nobel Prize recipients, asking for withdrawal of the Department of Educations endorsement of curricula around the NCTM standards. ***http://www.mathematicallycorrect.com/riley.htm***

3) Mathematicians in California create "gold" math standards: Stanford University mathematicians successfully wrote rigorous, focused, and coherent standards that were adopted by California in 1998: ***http://www.cde.ca.gov/re/pn/fd/documents/math-stnd.pdf*** Results show improvements of 30 – 40% for low-income and ELL learners on the SAT 9***. http://www.nychold.com/report-wbwh-040619.pdf***

4) U.S. declines in engineering graduates: "We have lapsed, and lapsed dramatically in a remarkably short period of time. U.S. engineering graduates have declined 20 percent to 59,500 in the past twenty years. Our middle school and high school students are unprepared in math and science and correspondingly uninterested in these careers. Of the nearly 1.1 million U.S. high school seniors who took the college entrance exam in 2002, less than 6 percent had plans to study engineering. That is a 33 percent decrease from 10 years earlier." ***http://news.uns.purdue.edu/html3month/2006/060124.SP-JIschke.rotary.html***

5) U.S. ranks at the bottom in international testing: By 8th grade US students are 2-3 years behind global peers. This gap widens as grade levels rise. In 2003, the U.S. performance on the Program for International Student Assessment (PISA) tests in math literacy and problem solving was lower than the average performance for most participating countries. We ranked 24th out of 29 countries. The normally top 5 performing Asian countries did not participate in the 2003 test, thus inflating our abysmal standing.
http://nces.ed.gov/surveys/pisa/PISA2003Highlights.asp?Quest=2
http://mwhodges.home.att.net/new_96_report.htm#pictures

6) Singapore Method outperforms reform curricula: In 2004, after a 4-year study using the Singapore Math Method, students at four schools in Montgomery County, MD increased math scores on their state annual test from the high 50's/low 60's to the upper 80's/low 90's, translating to a 50% increase in scores.
http://www.npr.org/templates/story/story.php?storyId=4233324

7) There are no reliable studies verifying the effectiveness of reform curricula: In 2004, the highly esteemed National Research Council evaluated all studies of reformed math programs and concluded, "On the basis of the committees analysis of these 147 studies, we concluded that the corpus of evaluation studies as a whole across the 19 programs studied does not permit one to determine the effectiveness of individual programs with a high degree of certainty, due to the restricted number of studies for any particular curriculum, limitations in the array of methods used, and the uneven quality of the studies." ***http://www.nap.edu/books/0309092426/html***

8) Singapore curriculum prepares students better than CMP: "The level of the mathematics in both CMP (Connected Math) and MIC (Mathematics in Context) is not as advanced as that in the Singapore curriculum**…** It is also our prediction that students wishing to take calculus before the end of their 12th grade year are likely not to be on track to do so after completing 8th grade CMP or MIC, but would be ready to do so after completing Singapore's SL2**. …** Moreover, we are skeptical about the possibility of maintaining the interest of high-end students while progressing at the pace necessitated by the "discovery process"."
http://www.amath.washington.edu/~adams/full.pdf University of WA Report: Pp 163-164, Nov 2000

9) Washington State has high math remediation rates: In 2003, 49% of Washington State high school graduates attending two-year colleges needed remediation in mathematics. Those who take remedial math in college only have a 63% rate of graduating. The remedial math rate in 2005 for college freshmen in WA State was 50 – 60%. ***http://www.sbctc.ctc.edu/legislative/BriefingPapers/2005/Remediation-Jan2005.pdf***
Dr. William Schmidt, February 27, 2006, Seattle School District Meeting

10) Washington State students are below average in college readiness: In September 2003 the Manhattan Institute for Policy Research reported that the national average for graduates with college readiness is 32%, Washington State is 24%, a full 25% less than the national average.
http://www.manhattan-institute.org/html/ewp_03.htm

11) Washington State math standards graded "F": The Thomas B. Fordham Foundation, based in Washington D.C., published "The State of State Math Standards" in 2005. The average ranking is "C". Washington State received an "F". Our state standards are "poorly written, needlessly voluminous, difficult to understand, and at times have little to do with mathematics. Standards devoted to problem solving are of especially low quality." ***http://www.edexcellence.net/doc/mathstandards05FINAL.pdf***

12) Pearson, the author of the WASL, has a conflict of interest: Pearson Education is both the distributor of the curriculums used in many of our schools, including TERC and CMP, and under contract with WA State to develop and implement the WASL. This is a major conflict of interest. Pearson is selling us our curriculums *and* is in charge of testing our students to see if their own curriculums are working. Meanwhile, state funding of the ITBS test was cut so we can no longer compare WA students' progress nationally or internationally.
http://www.pearson.com/about/ped/business.htm ***http://www.pearsoned.com/pr_2004/050504.htm***

13) Tutoring is on the rise in the United States: "Tutoring is a $4 billion business, and that figure is rising. It has become a staple of the middle class, with millions of students in both public and private schools using one-on-one tutors as well as supplementary education centers like Kaplan, Princeton Review, and Kumon."
http://www.npr.org/templates/story/story.php?storyId=4676496

14) Poor curriculum worsens the educational gap: "Poor math curriculum is one of the reasons for the racial education gap in math. There is too much flexibility in math standards, requirements and instruction."
Dr. William Schmidt, February 27, 2006, Seattle School District Meeting

15) Reform curricula is not recommended by top mathematics professors: " The NSF funded curricula generally encourage overuse of calculators, do not give students sufficient support to achieve automatic recall of basic number facts, do not teach algorithms properly, and pay insufficient attention to the arithmetic of fractions. We regard the K-5 program "Investigations in Number, Data, and Space" (TERC) as especially deficient." ***R. James Milgram, Professor of Mathematics, Stanford University; Wilfried Schmid, Professor of Mathematics, Harvard University March 2006***

16) We need standards that compete with the top performing nations: Washington State needs math standards that are rigorous, academically focused, and coherent, identifying what all Washington State students should know and be able to do at each grade level. As our students progress from grade to grade there should be requirements in place for increasingly advanced knowledge and understanding of mathematics and for increasingly complex applications and problem solving. Any curriculum adopted by schools/districts must be required to support these standards. ***http://archives.seattletimes.nwsource.com/cgi-bin/texis.cgi/web/vortex/display?slug=global25&date=20060325&query=Kristi+Heim***

17) What can you do?
- Get involved. Go to www.parentsformathmatters.net or www.wheresthemath.com for more information. Tell others and get them involved.
- Write letters to your newspapers expressing the importance of having world-class math standards and curricula.
- Write to your legislators and the Governor demanding quality mathematics standards be adopted by our state, and demanding that our students progress be measured by an independent national test administrator.
- Go to your school boards and district superintendent to demand decent and *proven* math curriculum be used in our schools, and ask that our students not be used as guinea pigs for unproven math curriculum.
- Look at your student's math books. TERC has no textbooks, but they have workbooks. Note: talking about problems rather than actually solving problems is not mathematics and will not help your students in higher level math courses. Students need to learn math skills with fluency.
- Don't be fooled by the apparent success of some students within the school districts, it's not a coincidence that tutoring centers like Kumon and Sylvan are doing a booming business in our state.