A Letter For Anyone Concerned About K-12 Mathematics Education.

This letter summarizes my views on the Common Core Math Standards.

My name is Bert Fristedt. I was a member of the National Mathematics Advisory Panel. Within that Panel I belonged to the Assessment Task Group and to the Instructional Materials Subcommittee. I am on the mathematics faculty on the Twin Cities Campus of the University of Minnesota---my title is Morse-Alumni Distinguished Teaching Professor of Mathematics. Although I have been involved with various aspects of K-12 mathematics education for several years, I have no official role with the state of Minnesota Department of Education. It is with this background that I write this letter, but the opinions I express in this letter should not be construed as opinions of the organizations mentioned above or of their members.

I will be recommending to the Minnesota Department of Education that Minnesota reject the Common Core Standards and stay with the 2007 Minnesota Mathematics Standards. I will do this despite the fact that, in principle, I think that common mathematics standards for the states (and D.C.) is a desirable goal. And my recommendation for rejection will not be because of the Common Core Standards being of a too high or a too low level overall as compared with the Minnesota standards; indeed, the algebraic aspects of Grade 8 in both the Minnesota and Common Core Standards emphasize linear relations, and I think this points to an appropriate level for Grade 8.

The following paragraphs describe in general terms some of my reasons for recommending rejection of the Common Core Standards; I can give more extensive details for those interested, details involving specific instances of concern from the March 2010 draft.

If the Common Core Standards are adopted, textbook publishers, teachers, and constructors of broadly given assessments will think that they need to use them. My opinion, however, is that they are not usable. If textbook writers try to use them the result is likely to be overly long fragmented textbooks.

Their use by teachers, possibly at the direction of school administrators, can cause math to seem like a long sequence of somewhat unrelated tasks. And because of the ambiguity in the large number of `understand' items in the Common Core Standards as well as in other items, test writers will be unclear as to what kinds and distributions of problems are fair. The fact that so

many items in the Common Core Standards can be read with very different meanings by different people indicates that the word 'Common' doesn't actually fit.

My judgment is that the things mentioned in the preceding paragraph will magnify various achievement gaps, rather than shrink them. The disadvantages of fragmented materials can be partially overcome with a mathematically knowledgeable person available at home.

The imposing and, at some places, overly prescriptive character of the Common Core Standards could, one the one hand, steer teachers away from practices that they have found useful for helping students reach the goals that both they and the Common Core Standards have, and, on the other hand, lead some of the best teachers to think about other employment avenues for their skills.

For a couple different reasons, I was given permission to see some earlier versions of the Common Core Standards. Based on the type and extent of the modifications from version to version, my judgment is that a revision of the March 2010 draft will continue to be far from satisfactory. That is the reason I am making my recommendation for rejection at this time.

For success in algebra related to graphs of lines in Grade 8, work with proportions is an important aspect of Grade 7. The Common Core Standard make it clear that proportional relations such as $y = kx$ are essential in Grade 7, but different textbook writers could arrive at different conclusions about whether solving proportions such as $2/3 = s/4.5$ is included in the Common Core Standards.

I close with a few of the many other issues of concern. The Common Core Standards give the impression that students, at the Grade 3 level, need not memorize that 6 times 8 = 48 but that, nevertheless, they should be able to calculate 6 times 8 using the distributive law.

Even though the exponent 3 is mentioned for Grade 7, the understanding of positive integer exponents does not appear until high school, and even there insufficient emphasis is given to what a student should be able to do---say calculating the fifth power of 3 by multiplying 27 and 9. The connection of the laws of exponents to scientific notation is obscure in the Common Core Standards. More generally, the treatment of exponents and exponential expressions is not done in a smooth-flowing coherent manner from Grade 7 onwards.

Even though probability and statistics are somewhat related, placing them in the same category creates confusion, especially since the various items have been interlaced in a haphazard fashion. And I find the treatment of them in the standards to be open-ended in some respects---thus prone to generating too many textbook pages---and unfocused in other respects.

In a way, my listing of a few issues with the Common Core Standards is misleading. I can envisions someone saying: Can't these be fixed? My reply is that these are merely a sample of things that need fixing, and when one does lots of fixing it is a formidable task to do so in a manner that achieves coherency and doesn't create more issues than it resolves.

Sincerely,

Bert Fristedt